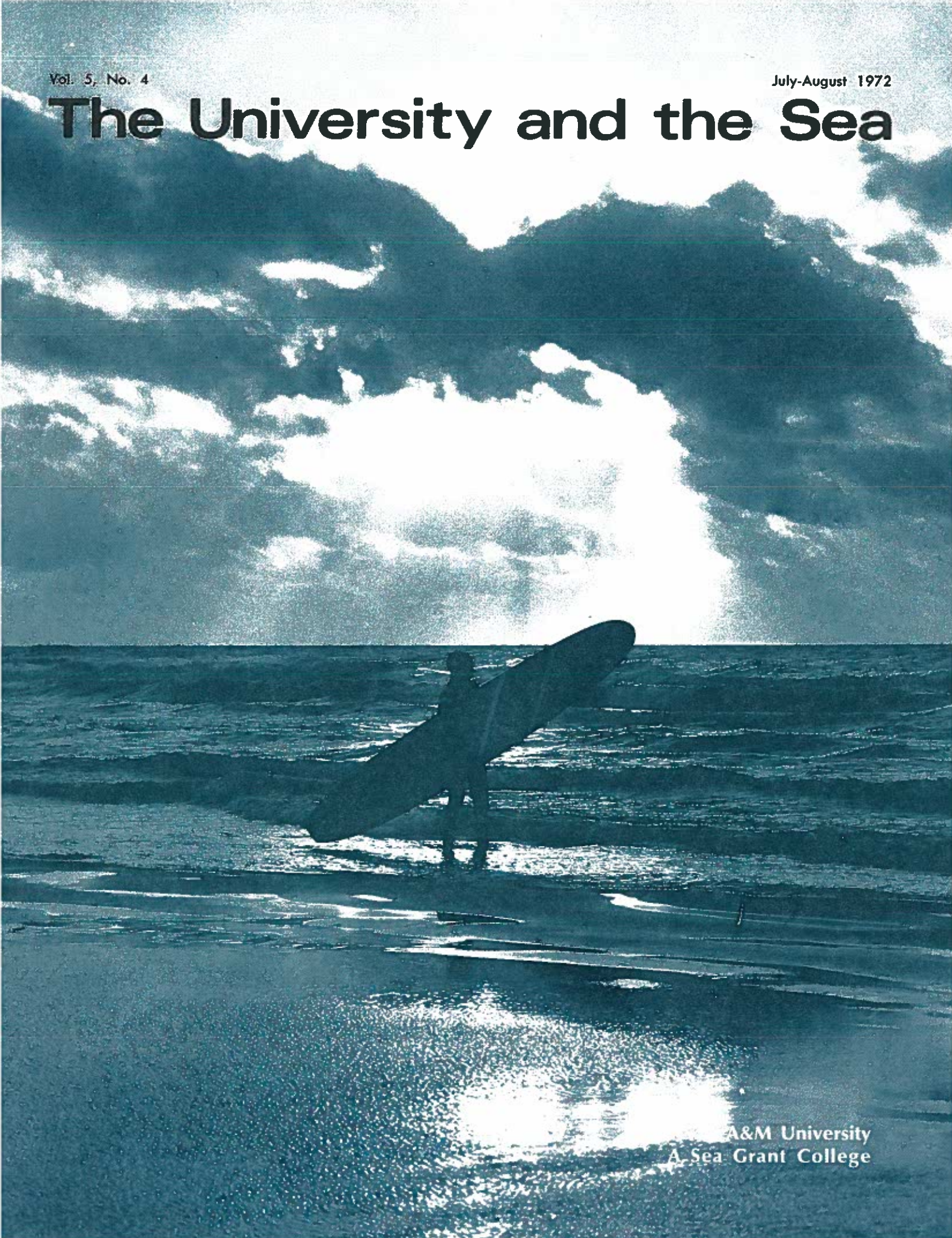


Vol. 5, No. 4

July-August 1972

# The University and the Sea



A&M University  
A Sea Grant College



# TAG Explores Age-Old Mystery

On July 5 marine scientists from five nations began exploring the Mid-Atlantic Ridge — a giant submerged mountain range in the Atlantic Ocean — in search of valuable mineral deposits and possible clues to the origin of oceanic crust and of earthquakes.

Participating in the scientific investigation is **Robert B. Scott**, associate professor of geology at Texas A&M University. Scott joined the cruise August 23 for the final phase of the expedition which is primarily concerned with collecting basalts and sampling manganese deposits on the Atlantic fracture zone, an offset in the Mid-Atlantic Ridge.

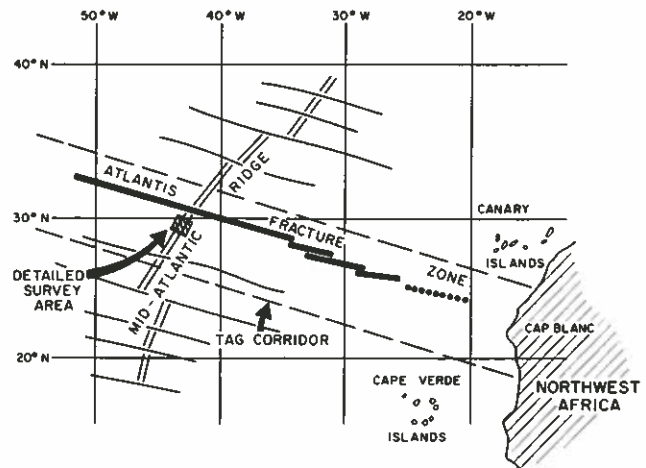
This 10-week expedition is part of the Trans-Atlantic Geotraverse project (TAG) initiated in 1970 by the Department of Commerce's National Oceanic and Atmospheric Administration (NOAA) to conduct the first comprehensive study of a corridor across an entire ocean floor. Chief scientist for TAG is Pete A. Rona of NOAA's Atlantic Oceanographic and Meteorological laboratories in Miami.

Part of an undersea mountain range extending around the world, the Mid-Atlantic Ridge is the largest geographic feature on the earth.

One clue to the earthquakes along the Ridge is the sea floor spreading theory. According to this theory a continuous stream of molten rock flows from the earth's interior, cools and solidifies near the earth's surface. It then becomes welded onto the sea floor, spreading out on either side of the ridge. This continuous spreading of the ocean floor has been forcing North America and Africa apart at a rate of about one inch per year. Samples of these newly solidified rocks will be taken in search for sea floor minerals along the Ridge in water depths up to 12,000 feet.

"The samples will be brought back to Texas A&M where their origin and the formation process of the ocean crust will be studied through chemical analysis," Scott reports. "We hope to determine the possible volcanic influence on deposition of manganese nodules."

The scientists are also charting the shape of the Mid-Atlantic Ridge and measuring the intensity of the associated magnetic and gravity fields. Information ob-



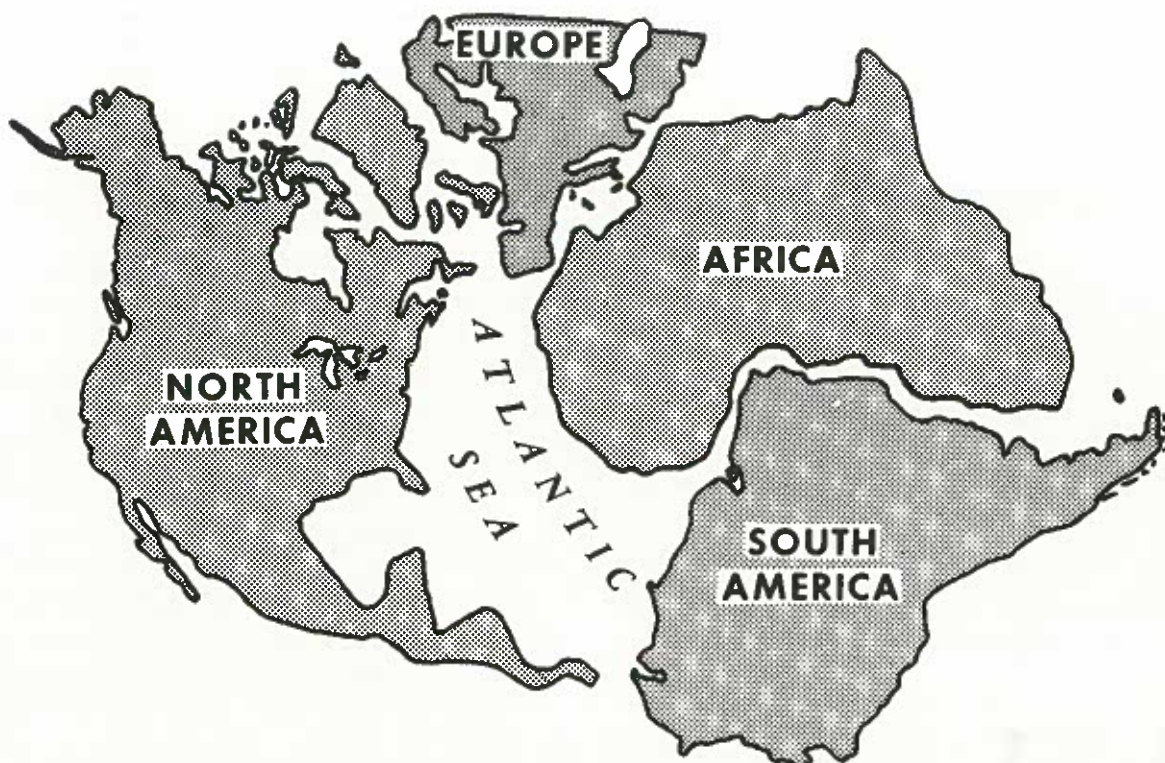
Eastern sectional map of the Trans-Atlantic Geotraverse corridor shows area of concentrated research along the Mid-Atlantic Ridge.

tained from these studies will be used to build hypotheses to explain the mechanism of earthquakes beneath the Ridge and will then be used in predicting earthquakes.

Extending from Cape Hatteras, N. C., to Cap Blanc, Mauritania, in northwest Africa, the Trans-Atlantic Traverse, a 200 by 3,500 mile corridor, represents the path along which North America and Africa are believed to have separated after a prehistoric cataclysm of nature split what may have once been a single landmass. If the continents are reassembled to their original positions as prior to continental drift, South America fits together with southwest Africa and North America with Northwest Africa.

From aboard NOAA's National Ocean Survey 305-ft. research vessel, the **DISCOVERER** and the University of Miami's **R/V ISELIN**, the scientists are using seismic refraction to probe the ocean bottom in search for clues to this single continent theory. These sound waves are capable of penetrating several miles of sand and mud built up over Africa's original edge for the past 200 million years.

On board for this summer's expedition are investigators from England, Portugal, Spain and Mauritania, along with NOAA scientists. In addition to Scott, oceanographic personnel from the Universities of Miami, Wisconsin and Connecticut are among the researchers. ■



TAG scientists are studying the continental drift theory of the North Atlantic Ocean. In this interpretive sketch, the continents are shown as they existed over 200 million years ago. (NOAA)

## TAMU AWARDED \$1.5 MILLION

Texas A&M University received a \$1.5 million grant from the U. S. Department of Commerce for continuation of its Sea Grant College activities, announced Sen. John Tower August 17.

The award, made by the National Oceanic and Atmospheric Administration, will provide partial funding for the university's diverse marine projects during the 1972-73 academic year. The grant is matched by \$750,000 in non-federal funds by the university. The state has appropriated \$200,000 for the program with the remainder coming from the university and private sources, bringing the total Sea Grant College effort to \$2.25 million for the coming year.

"The state's vast marine resources are critically important to all Texans," TAMU President Jack K. Williams said in receiving the new grant. "Continuation of federal funding for Sea Grant is evidence of the national concern for wise use of our marine and coastal resources and a recognition of the university's leadership in these areas."

Texas A&M's program supports a wide variety of projects in marine education, research and advisory services. In addition to the work conducted at the university, the funds also will support work at the University of Houston, Lamar University, Brazosport College, Baylor College of Medicine, the Region II

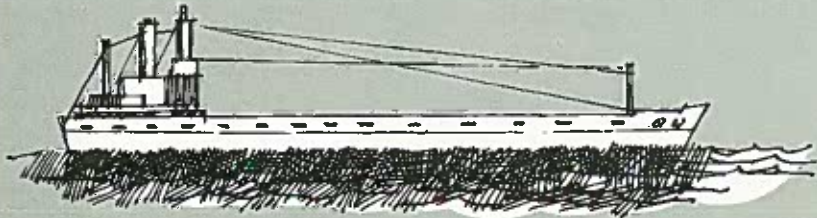
Education Service Center in Corpus Christi and Southwest Research Institute.

According to John C. Calhoun, Jr., vice president for academic affairs and director of TAMU's Sea Grant College program, research efforts to be undertaken include work on shrimp mariculture in man-made ponds in Brazoria and Nueces counties, investigation into the economic and environmental impact of an offshore port facility, environmental quality analyses of the Houston Ship Channel and bay waters and assessment of the underutilized fishery resources of the state.

Marine advisory services will receive accelerated support under the new grant year. Marine specialists will be located in Harris, Calhoun and Brazoria counties, and a marine education specialist will be placed in Corpus Christi to work with 43 school districts in South Texas. An environmental quality advisory team will operate from the College Station campus, serving on an on-call basis to tackle environmental problems in coastal communities.

Seven TAMU colleges participate in the program which involves some 50 individual projects under eight major program areas: Fisheries and Seafood Technology, Shrimp Mariculture, Environmental Quality, Offshore Technology, Commerce and Resources Management, Medicine and Public Health, Education and Training and Marine Advisory Services. ■





The socio-economic impact of a deep-water terminal in the Gulf of Mexico off the Texas coast is being investigated by Texas A&M University's Industrial Economics Research Division (IERD) under a joint project funded by the Texas Superport Study Corporation and the TAMU Sea Grant Program.

Part of a broad feasibility investigation into establishment of an offshore port to handle "superships," the study is directed by **James R. Bradley**, IERD head. Working with him are Assistant Research Engineer **Dan Bragg** and several graduate students. Total funding for the study is \$45,000 with \$20,000 provided by the Texas Superport Study Corporation and \$25,000 in Sea Grant funds.

#### The Need

"As Texas depends more and more on raw materials brought into its coastal zone, one of the key factors to consider is the ability to handle the vessels transporting them," says Bradley. "Developing as a new technology in ocean transportation, these gigantic vessels are estimated to reduce transportation costs of raw materials to one-fourth of what they are now," he adds.

"But no port in the U. S. can now accommodate these huge ships, and it is impractical to deepen existing channels enough to provide sufficient water for them.

"Industries located in the Gulf Coast area of Texas cannot remain in a competitive market position unless we take advantage of these new developments in transportation," Bradley emphasizes. "Not only is it vital to know how a superport could affect the state's economy, but it is also important to determine how not building it could affect Texas."

#### The Study

Bradley states that the first phase of the socio-economic investigation will identify the economic criteria to be used in evaluating various terminal designs and site locations. Cost-benefit studies will be undertaken in the latter part of the study to determine the dollars-and-cents benefits that an offshore terminal could bring to the state and to compare those benefits with the costs of construction and operation.

Existing data, studies and projections will be used when possible to determine volumes of commodities such as crude oil, refined petroleum products, petrochemicals and natural gas that will move to or from the major industrial centers along the Texas coast for the years 1980 and 1985. Where data exist, extrapolation will be made to the year 2000. The degree to which such volumes will grow in response to national energy demands will be estimated.

Also examined will be probable sources of commodities, average voyage lengths, approximate vessel operating costs, projected vessel availability and the environmental impact of construction and operation of an offshore terminal. Additionally, an economic rationale will be established for incorporating anti-pollution features into the design of an offshore terminal.

#### Future Investigations

"After this initial phase of the socio-economic study is completed," Bradley notes, "more in-depth studies will be needed, particularly in the areas of new technology and the 'new town' concept, i.e., going into a relatively undeveloped area and creating a community from the ground up, which is being widely discussed as a possible answer to overcrowded urban areas."

"Planning and building an offshore port could be the vehicle to encourage such long-range planning in Texas," Bradley states.

Five studies needed to determine the feasibility of an offshore terminal were identified in a work plan prepared by IERD in June, 1971. In addition to socio-economic studies, other areas to be investigated include legal implications of an offshore terminal, engineering, site location factors and port management. The legal studies are slated to begin in the near future, Bradley said.

The Texas Superport Study Corporation is a non-profit organization formed by businessmen in the Texas Gulf Coast to aid in accomplishment of the five investigations identified by the IERD team. Ray R. Brimble is president of the organization. ■

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# SUPER-PORT: Socio-Economic Impact

# NOAA Charts, Tests in Gulf

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## GALVESTON BAY SHIPPING DANGERS

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A four-month search for dangers to shipping is underway off Galveston, Texas. The project, which began in late July, is being conducted by the Department of Commerce National Oceanic and Atmospheric Administration's ships **RUDE** and **HECK**.

The 90-foot, 190-ton sister ships, the nation's only ocean wire drag vessels, are investigating the entrance to Galveston's harbor and four shipping lanes leading into it for navigational hazards. Under the command of Cdr. James Collins of Hyannis, Mass., the research crew is searching the fairways and harbor entrance for partially removed oil platforms, pilings, pipes, sand bars and rocks, wrecks or any submerged object hazardous to vessels.

First charted by NOAA's National Ocean Survey in 1966, these shipping lanes, designated safety fairways, were then placed on NOAA's nautical charts to guide coastal and ocean-going vessels safely between the numerous oil platforms which rise above the Gulf surface as far out as 60 miles.

Several known possible navigational hazards will be included in the search, such as the **M/V CAROL**, sunk in September 1971 near the Calcasieu Ship Channel; the double bottom section of a Liberty Ship (formerly the **SS WILLIAM BEAUMONT**); and the sunken tanker **V. A. FOGG**, a portion of whose superstructure has been reported at or near the surface.

The vessels are using a searching method perfected by the Coast and Geodetic Survey (predecessor of the National Ocean Survey) more than a half a century ago. **RUDE** and **HECK** tow between them a quarter-inch steel wire suspended underwater from surface buoys as they sweep assigned areas. The wire is towed at various distances up to two miles and at depths down to 60 feet. As the wire catches on an obstruction, it becomes taut, and the surface buoys form the letter "V." Scuba divers then investigate the obstruction.

Each obstruction is identified; the depth over it determined; and its position plotted on a NOAA chart. Shipping is advised immediately, through the Notice to Mariners, of obstructions considered hazardous, and all pertinent charts are corrected.

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## EXPERIMENTAL DATA BOUYS

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The first two in a series of advanced experimental deep sea buoys equipped to automatically gather, record and sort oceanographic and meteorological data from the marine environment are currently in operation, transmitting valuable data from Gulf of Mexico waters.

Anchored approximately 300 miles off the coast of Louisiana in June, the two buoys are part of the National Oceanic and Atmospheric Administration National Data Buoy Center's research program for the development of a network of similar buoys throughout the world's oceans, coastal waters, bays, estuaries and large lakes. Prepared for testing at the Center's facilities at the National Aeronautics and Space Administration's test facility in Bay St. Louis, Miss., these instrumental platforms are capable of predicting and reporting weather, sea conditions, fish migration and other environmental conditions—information designed to fill an environmental data gap in maritime areas of the globe.

Largest of the two is a 100-ton round-hulled platform buoy stationed 225 miles from Gulfport, Miss., in waters two miles deep. It is scheduled to remain on site through 1974.

A smaller 25-ton buoy with a unique boat-shaped hull, made by Lockheed Missile and Space Company, is moored 300 miles south of New Orleans. A study is being made on the advantages, if any, of this type hull with a stabilizing keel.

Six additional large buoys will be stationed in the Gulf during the next two months as part of this project. Each platform is designed to withstand 150-knot hurricane winds, 60-foot waves and 10-knot currents and can carry more than 100 sensors to measure and report oceanic and atmospheric conditions.

The buoys are transported and anchored at their appropriate stations by the Coast Guard Cutter **ACUSHNET**, based at Gulfport. The Coast Guard is also providing the necessary servicing and maintenance support for the buoys at sea and communications services at the Coast Guard Radio Station in Miami, Fla.

The Guard's shore receiving station relays environmental data transmitted from the buoys every three hours or on demand to NOAA's National Meteorological Center in Suitland, Md., while engineering data is transmitted to the National Data Buoy Center in Bay St. Louis.

The Buoy Center plans to test and evaluate the buoys to determine the most acceptable model for a national data buoy program. The systems under development by NOAA will also be adaptable to allow satellites to collect and store the data for readout by a NOAA command and data acquisition station. ■

**THE UNIVERSITY AND THE SEA** is published bi-monthly by the Texas A&M University Sea Grant Program, College Station, Texas 77843. Leatha Miloy, Editor; Ronda Reagan, Assistant Editor. Vol. 5, No. 4. July-August 1972. Application for second-class postage rates is pending at College Station, Texas 77843.





# Texas' Legendary Isle

Shipwrecked by a storm in 1847, John Singer and his family discovered the island. They stayed and began the Las Cruces ranch. However during the Civil War, Singer found it necessary to leave Padre because of his Unionist sympathies. It is believed that Singer buried approximately \$80,000 in coins and jewelry before leaving which has never been found.

Cattle ranching thrived on Padre under the direction of Patrick Dunn in the 1880's. Operations of his ranch were continued until July, 1971. At that time all cattle grazing on the island was prohibited as naturalists felt that the introduction of cattle to the island had drastically changed the vegetation and continued to be harmful. At one time Padre was covered with live oak trees as evidenced by several lonely trees remaining.



*Ship wreckage is often found along Padres' shores, some dating back to the sixteenth century. (Texas Highway Department)*

These tiny shells mixed with the sand generate a surface which can only be traversed with four-wheel drive vehicles.

Just beyond the four-wheel drive warning sign at the north end of the Island is Little Shell, an area which gets its name from the multitude of tiny shells washed up there. This area, beginning within walking distance of the sign, provides some of Padre's best beachcombing. Floats, bottles, shells, driftwood and nets are just a few of the items which can be found. In the early morning, beachcombers find hunting along the high tide mark more rewarding than at the edge of the surf.

As one travels further south, the slightly larger, heavier quahog (a type of clam) shell lines the beach



*Padre is the beachcomber's delight. Washed ashore are glass floats, beautiful shells and even Spanish coins. (Texas Highway Department)*

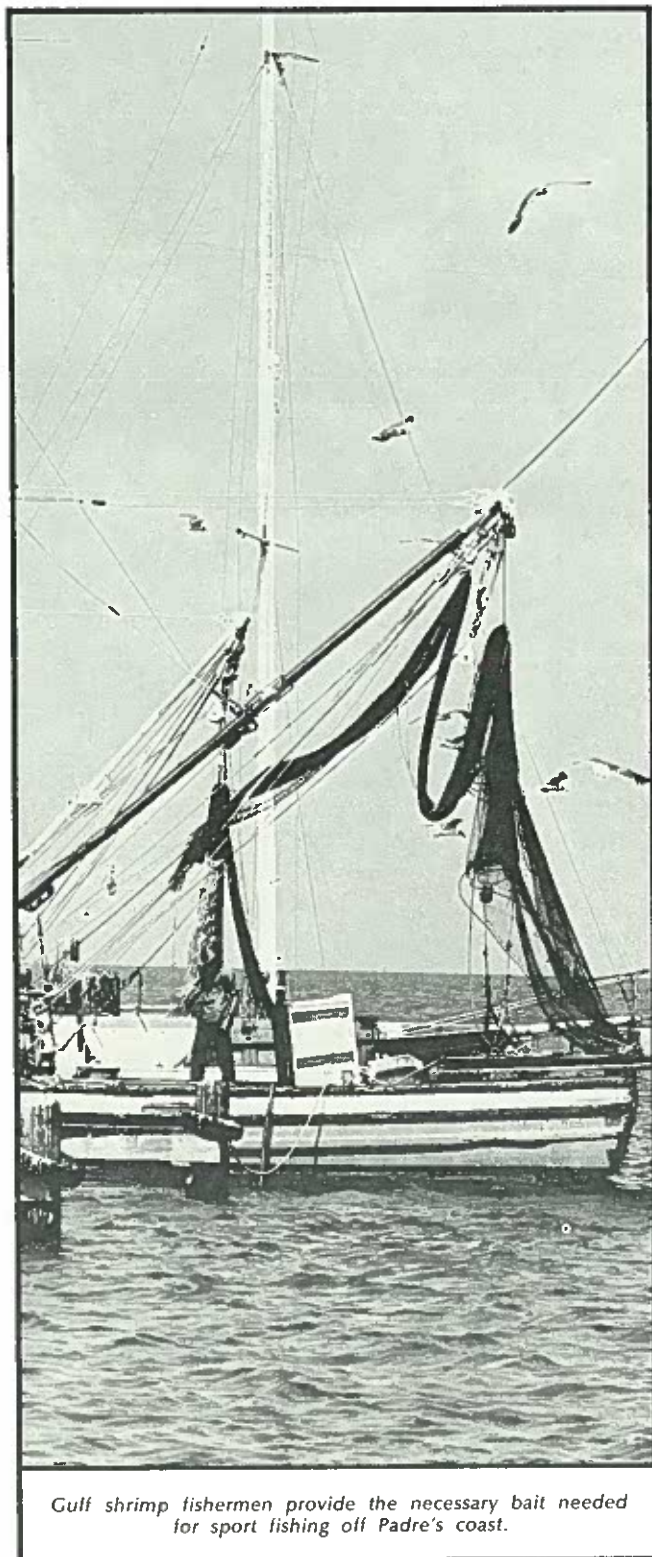
## TODAY . . .

Causeways link the north and south ends of the National Seashore to the mainland, making it easily accessible. However, conventional cars can only be driven 14 miles southward from the northern boundary and about five miles north from the southern boundary. Between these areas, the same currents which tossed up Spanish galleons upon Padre's shores have for centuries been depositing shell fragments on the beach.

giving it its name, Big Shell. Here the beach is much narrower and steeper.

Even with 4-wheel drive vehicles one cannot drive the entire length of Padre as the Mansfield Channel at Port Mansfield intersects the island about 60 miles south of the ranger station. In addition, all traffic is restricted to the shoreline area and to the few roads in the park so that the island vegetation is disturbed as little as possible.





*Gulf shrimp fishermen provide the necessary bait needed for sport fishing off Padre's coast.*

### TOURISM AND RECREATION

Since 1968, when the middle 80.5 miles of the island were designated national park land, visitor statistics have skyrocketed. During the summer of 1971, over 900,000 travelers visited the island.

The average temperature of 71.1°F makes Padre generally warm enough the year-round for such water

activities as swimming, surfing, scuba-diving and water-skiing.

Certainly one of the most popular pastimes at Padre the year round is fishing. Flounder, shark, red-fish, pompano, black drum and ocean trout are just a few of the game fish caught in the surf. Outside the National Seashore are several fishing piers into the Gulf, and deep-sea fishing boats are always available for charter.

For the casual or serious bird-watcher, Padre offers more than 350 species of birds as permanent residents or seasonal visitors. The great blue heron, sanderlings, pelicans and several species of gulls and terns are some of the most common found year-round, while large numbers of ducks and geese migrate to Padre for the winter season, as well as sandhill cranes. Although hunting is not allowed within the National Seashore, it is permitted in the Laguna Madre during the open season on some waterfowl.

### MALAQUITE BEACH

In the northern part of the park, a pavilion overlooking Malaquite Beach offers a snack bar, gift shop, free showers, locker rooms and rental recreation equipment for beach use. A look-out platform atop a 300,000-gallon water tower is accessible by a 400-foot walkway from the concession area. In the summer lifeguards are on duty during the day.

Malaquite Beach's Public View Tower is also the center of the seashore's naturalist program. Monday through Saturday, evening talks are presented on the island's animal and plant life, beachcombing finds and the history of the island. During the day, various guided tours of the beach and the island are offered to acquaint visitors with Padre's secrets. Short, informal talks are given every afternoon. On Tuesdays and Wednesdays, nature craft classes in sand sculpturing, fish printing and glass mosaicking are held.

At the Park Ranger headquarters and the National Seashore Headquarters in Flour Bluff, exhibits and literature about the seashore are available. Complete lists of plants, mammals, reptiles and birds found in the park can be obtained. Both naturalists and rangers are always willing to answer questions from visitors.

### FUTURE

As more people hear about Padre, Superintendent of the National Seashore, **James McLaughlin**, anticipates a growth in the number of visitors each summer. With this increase, he hopes to expand Padre's facilities, for at the present time there are no camping facilities although it is permitted on the beach. McLaughlin is proposing to put a paved road behind the dunes ten miles beyond the 4-wheel drive limit with several parking areas along it, making the Little Shell beach area accessible by a short walk over the dunes.

Throughout the Seashore, preservation of Padre's natural wilderness is stressed. The philosophy behind its development is explained by McLaughlin, "The park is for the nation's use, so we are attempting to provide as wide a spectrum of usage as possible while still preserving the natural beauty at Padre." ■



# UT Releases Geologic Atlases

THE GALVESTON/HOUSTON AREA, first volume of a seven-part series of environmental geologic atlases on the Texas Coastal Zone, is now available in print.

Compiled by the University of Texas' Bureau of Economic Geology, the coastal zone atlas is the product of more than 15 man-years of research, analysis and cartography and covers approximately 20,000 square miles extending from the 5-fathom line offshore to 50 miles inland and from the Sabine to the Rio Grande River.

The six remaining folios depicting the areas of Bay City-Freeport, Beaumont-Port Arthur, Brownsville-Harlingen, Corpus Christi, Kingsville and Port Lavaca will be released for distribution at two-month intervals.

Available either in bound text folios with folded maps in individual pockets or in separate text form with rolled maps, the atlases are individually sale priced at \$6.75 or may be ordered as an entire set of seven at a discount price of \$42. Orders for the entire set may be placed at any time as atlases will be mailed as each becomes available.

Area atlases consist of one basic environmental geologic map scaled at 1:125,000 and a series of eight special-use maps, scaled at 1:250,000. Each map is cartographically scribed from 7.5-minute (1:24,000) work maps and presented in full color.

The atlases were prepared by L. F. Brown, Jr., project coordinator; W. L. Fisher, J. H. McGowen and C. G. Groat, with cartography by J. W. Macon and the Bureau's cartographic staff. Detailed photographic mosaics, topographic maps and several existing maps were referred to in preparing the atlases. Low-level aerial reconnaissance and selected field studies were used to supplement photo-mapping.

A total of 130 separate resource and environmental units (geologic substrate and soils), biologic units, active and potentially active physical-process units and man-made units are presented on the environmental geologic map.

The eight special use maps derived from the basic geologic map include: (1) the Physical Properties Map, (2) the Mineral and Energy Resources Map, (3) the Environments and Biologic Assemblages Map, (4) the Man-Made Features and Water Systems Map, (5) the Active Processes Map, (6) the Currents Land Use Map, (7) the Rainfall, Stream Discharge and Surface Salinity Map, and (8) the Topography and Bathymetry Map.

Each map is accompanied by descriptive text with statistical tables and subject indexes.

Send orders to the Bureau of Economic Geology, University Station, Box X, Austin, Texas 78712. ■

## SEA DOC

**SEA DOC**, a second documentary film depicting Texas A&M University Sea Grant Program efforts, is now available for loan free of charge for showing to civic groups, government agencies, conservation clubs, educational institutions and other interested groups.

This 16mm film in full color shows glimpses of the university's numerous and widespread endeavors toward the accelerated and wise development of marine resources—the ultimate goal of the national Sea Grant Program.

"Sea Doc" is Bill Klontz, veterinarian to the sea who headed the nation's first Aquatic Animal Medicine Program at Texas A&M's College of Veterinary Medicine. "Sea Doc" is one of the many scientists and educators at Texas A&M who are searching for a better understanding of the sea, one which will bring man and his natural environment back in harmony.

The film shows Sea Grant researchers working with shrimp mariculture ponds—a project to raise safely and economically a marine food product in captivity. The problems faced by Gulf coast shrimp fishermen are also discussed.

**SEA DOC** is available for television broadcast. Interested station managers and sponsors should contact the address below.

Send film requests to the Center for Marine Resources, Texas A&M University, College Station, Texas 77843 or (713) 845-3854. Please include one preferred and two alternate dates with your request. Confirmation will be mailed within two weeks of receipt of request. ■



# A National Coastal Zone Policy

Guidelines and recommendations for the development of a coastal zone master plan are presented in a prepublication proceedings summary of the Coastal Zone Workshop held in May and June, reports **Bostwick H. Ketchum**, workshop chairman.

Approximately 100 representatives from industry, educational institutions, research organizations and both state and federal agencies composed ten working

committees making up the seminar, co-sponsored by The Institute of Ecology and Woods Hole Oceanographic Institution.

The committees focused on identification of existing information of coastal zone problems, applying their diversified knowledge to develop guidelines for decision-making agencies. They worked on the basis that "the coastal environment constitutes a complex ecosystem which is an important and unique resource of [all] nations which must be maintained for the benefit and use of mankind. Maximum rational use of coastal resources consistent with the retention of life-support systems, beauties and amenities of the coastal zone for the enjoyment of future generations must be the objective of coastal zone management," according to the report.

An interdisciplinary assessment of the effects of man's various activities on coastal zone processes; definition of what is known and what needs to be learned about man's activities; and identification of scientific, legal, social and economic constraints that prevent the rational management of coastal resources were other workshop objectives.

The publication of the workshop proceedings is intended to provide a source for centralized, reliable and available data related to coastal zone management.

General and specific recommendations felt to be central to each of the basic concepts relating to man's use of the coastal zone are listed in the 43-page summary. Requiring general changes in attitudes, activities, legal structures, management arrangements and information availability, the recommendations are aimed primarily at providing for evaluation and development of the coastal zone without destroying its ability to renew its resources.

Primary purpose of the recommendations is establishment of a **national coastal zone policy** which places management responsibility at the state level, with active participation of local governments and federal support in the form of grants and guidelines for creative and effective programs. Some of the general recommendations include:

- Creation of a multidisciplinary **Coastal Zone Task Force** to assist in designing the national program and evolving model guidelines for state coastal zone management authorities.
- Development of legal institutions and procedures to make coastal management more effective. Suggestions for improving existing decision procedures and laws include: (a) regulation of coastal development by means other than the taking of private property; (b) increased access

## new publications

Requests for the following new Texas A&M publications should be mailed to the Center for Marine Resources, Texas A&M University, College Station, Texas 77843. Please request by title and publication number; prices are indicated where applicable.

### **MARINE COMMERCE ADVISORY BULLETIN: NOISE POLLUTION — EFFECTS AND CONTROL**

Norman C. Whitehorn, TAMU-SG-72-510. June 1972.

Effects of and objections to high levels of industrial noise, termed as "noise pollution," and several noise control methods are presented.

### **MARINE FISHERIES ADVISORY BULLETIN: FISHERIES NEWSLETTER NO. 3**

Ranzell Nickelson, II, TAMU-SG-72-512. June 1972

Included in this periodic newsletter are reports on four Texas county fishing workshops; a vignette on Parks and Wildlife Department's Marketing Specialist, Bill Schwartz; and announcements of a new research technique, new equipment and proposed FDA labeling requirements.

### **MARINE FISHERIES ADVISORY BULLETIN: SEAFOOD QUALITY CONTROL — PROCESSING PLANTS**

Ranzell Nickelson, II, TAMU-SG-72-511. June 1972.

Quality control of seafood in the processing plants is reported in terms of sources of bacterial contamination and recommendations for improving product quality through proper refrigeration and freezing techniques, cleaning and sanitizing methods and waste disposal systems.

### **MARINE RESOURCE CAPABILITIES IN TEXAS: DIRECTORY OF FACILITIES**

Norman C. Whitehorn, TAMU-SG-72-603. May 1972, 59 pp. Cost: \$3.

This directory lists and identifies 37 facilities in 11 educational institutions and four government agencies in the state whose sole use is to support marine activities in Texas.

### **MARINE EDUCATION ADVISORY BULLETIN: MARINE AFFAIRS — THE STUDENT VIEW**

Roger D. Anderson, TAMU-SG-72-513. July 1972.

Proceedings of the 1971 marine affairs conference for university students with a list of participants are given.



of individuals, groups and governmental and judicial proceedings; (c) establishment of **Environmental Review Boards** for appeals of local administrative decisions concerning activities with environmental impact, and of a federal **Environment Court** with broad jurisdiction over private persons, state and local government agencies and federal agencies in controversies with environmental impact.

- Establishment of regional **Coastal Zone Centers** to develop and coordinate natural science, social science and legal research and to provide relevant information about the coastal zone to government agencies and the public.
- Creation of a national system of **Coastal Area Preserves** for permanent protection of the basic genetic stocks of plants and animals and the essential components of their environments, which together constitute ecosystems. These preserves should be severely restricted in use.

In addition, the workshop participants named 21 specific recommendations focusing on improvement of existing knowledge, effective allocation of political responsibilities and provision for special uses.

A full 600-page report of the workshop proceedings will be available sometime in September according to Chairman Ketchum. ■

## SG Institutions Meet in Houston

Plans are being finalized for the fifth annual meeting of the **National Association of Sea Grant Institutions** set October 10-12 in Houston, Texas. Topics to be discussed are designed to be interesting and informative to Sea Grantees across the nation and include national marine programs, aquaculture, technician training, deepwater ports and industry's role as a partner in marine enterprises.

Keynote speaker at the first day's luncheon will be **Ralph Huitt**, executive director of the National Association of State Universities and Land Grant Colleges. Banquet speaker will be **Howard Pollock**, deputy administrator of the National Oceanic and Atmospheric Administration. **Robert MacVicar**, president of Oregon State University will be guest speaker at the second day's luncheon meeting.

Plans are also being made for a tour of marine facilities on Galveston Island, located 50 miles south of Houston.

Registration information is available from **Willis Clark** or **Leatha Miloy**, Center for Marine Resources, Texas A&M University, College Station, Texas 77843 or (713) 845-3854. ■

## sea notes

► **John W. Antoine**, TAMU Department of Oceanography research scientist, recently received a \$165,000 U. S. Geological Survey grant to study approximately 7,000 line miles of high resolution marine geophysical data over selected blocks of the Louisiana outer continental shelf.

► **State Rep. Ray Lemmon** was elected chairman of the Texas Council on Marine-Related Affairs in its organizational meeting July 25 at Houston.

Chosen to serve as vice-chairman was **Sen. A. R. Schwartz** of Galveston. **Joe B. Harris**, director of Coastal Resources Management Program, Office of the Governor, was named secretary.

Other members of the Council include: **James C. Jernigan**, Texas A&I; **John G. Mackin, Jr.**, Engineering Consultants of Houston, **George Kozmetsky**, University of Texas at Austin; **John C. Calhoun, Jr.**, Texas A&M University; **John J. Pepe**, Consulting Engineers, Houston, Texas; **James J. Flanagan, Jr.**, Port Arthur, Texas; **Truman T. Blocker, Jr.**, University of Texas Medical Branch, Galveston, Texas; **R. N. Conolly**, Stewart and Stevenson Services, Inc., Corpus Christi, Texas; and **Cecil Reid**, Sportsman's Clubs of Texas, Austin, Texas.

The Council was created by the legislature to advise the state on planning for marine-related activities.

► **Rear Admiral J. Edward Snyder, Jr.** recently assumed the duties of Oceanographer of the U. S. Navy. His appointment follows an assignment as Commander of Training Command, U. S. Atlantic Fleet with additional duty as Commander of Fleet Training Group, Norfolk, Va.

As Oceanographer of the Navy, the 47-year-old Admiral will direct the Naval Oceanographic Program for the Chief of Naval Operations. This program, which includes divisions of Ocean Science, Ocean Engineering and Development, Oceanographic Operations and Environmental Prediction Services, receives policy direction from the Secretary of the Navy through the Assistant Secretary of the Navy for Research and Development.

► **Industrial engineering research professor, C. S. Shih** recently received an \$83,875 research grant to determine water quality standards accounting for uncontrollable pollution due to mechanical failures and unusual environmental problems.

Appropriations for the grant include \$76,695 from the federal Environmental Protection Agency and the remainder from TAMU's Texas Engineering Experiment Station.

The environment and computer expert says he will gather data from the San Antonio River Basin and evaluate San Antonio's waste-water treatment facilities and fresh water inflow systems. During the 18-month research period, he will also study the effects of the natural environment on water quality and cost analysis for maintaining desired water standards.



► Monterey, Mexico is the site for the **1972 World Mariculture Society meeting**, January 24-26. A title and brief descriptive paragraph of papers should be sent to **Jack C. Parker**, Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station, Texas 77843 no later than October 1, 1972. Formal papers and abstracts are due December 1.

Free display space for commercial organizations will be offered by Monterey's Ramada Inn during the meeting. Applications should be made as soon as possible, as displayers must obtain a permit at least three months prior to the meeting. Permits will be processed by Juan Mathieu, Instituto de Tecnológico, Monterey, Escuela de Agricultura, Sucursal "J," Monterey, N. L., Mexico.

For information on meeting registration contact **Wallace Klussman**, WMS Secretary, Biological Sciences Bldg., Texas A&M University, College Station, Texas 77843.

► "Applications of Marine Technology to Human Needs, is the theme for the **Eighth Annual MTS Conference and Exposition** slated for September 11-13 in Washington, D.C. The conference will include 25 sessions and over 120 papers covering a wide range of topics in areas such as offshore development along the Atlantic Coast, marine environmental quality and reports on recent marine science and technological developments. The conference will also feature exhibits of oceanographic equipment, services and government programs and underwater film showing by top photographers.

Keynote speakers are **William Nierenberg**, chairman of the President's National Advisory Committee on the Oceans and Atmosphere and director of Scripps Institution of Oceanography, who will address banquet participants, and **Paul Fye**, president and director of Woods Hole Oceanographic Institution, who will give the Second Annual MTS Memorial Lecture honoring the late **Columbus Iselin**.

► Results of three energy research studies conducted under National Science Foundation grants are now available in published form. Two of the reports can be obtained from the National Technical Information Service, U. S. Department of Commerce, Springfield, Va. 22151, upon request by title and order numbers.

**THE U. S. ENERGY PROBLEM**, (Vol. 1. Summary, No. PB207517, \$4.85; Vol. II, Appendices Part A, No. PB207518, \$12.50; Vol. II Appendices Part B, No. PB207519, \$12.50) by the InterTechnology Corporation, identifies important energy research needs involving physical sciences and engineering. Also included are statements related to energy policy. **ENERGY RESEARCH NEEDS**, (No. PB207516, 13.50) by the Resources for the Future, Inc. and the MIT Environmental Laboratory, seeks to define those energy research needs involving economics and energy policy. It includes a component on energy research needs in technology.

The third report **AN INVENTORY OF ENERGY RESEARCH**, printed in two volumes, is available from the Task Force on Energy of the Subcommittee on Science, Research and Development of the Committee on Science and Astronautics, House of Representatives. Compiled by the Oak Ridge National Laboratory this report includes a list of current energy research activities. ■

**LEATHA MILOY, Editor; RONDA REAGAN, Assistant Editor**

Texas A&M University's Sea Grant Program is made possible through an institutional award from the National Oceanic and Atmospheric Administration, U. S. Department of Commerce. More than sixty individual marine resource development projects are carried out under the Program which involve 16 departments and divisions of the University. Dr. John C. Calhoun, Jr., is Sea Grant Program Director.

**THE UNIVERSITY AND THE SEA** is published regularly by the Center for Marine Resources. Subscriptions are available upon written request. Address all inquiries to the Editor, Center for Marine Resources, Texas A&M University.

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