

TEXAS SHORES

Wide
Load
Ahead

Set Sail
For A Texas
Port Of Call



WE'RE ON YOUR TIDE.

There are oceans of information on marine transportation and economics waiting for you at our port. Just drop us a line. You'll find a remarkable array of meticulous studies available from the Texas A&M Sea Grant Program. From cost-efficient cargo distribution to budget simulations, we've got what you need. It couldn't be easier. Just call (409) 845-7524. Or contact the Marine Information Service, Sea Grant College Program, Texas A&M University, College Station, Texas 77843.



The Ports and Waterways View. 13 pages. TAMU-SG-70-114. NTIS-PB-98-090.

Work Plan for a Study of the Feasibility of an Offshore Port Terminal in the Texas Gulf Coast Region. Dan M. Brag and James R. Baradley. 30 pages. TAMU-SG-71-212. NTIS-COM-71000876.

Port and Harbor Development System. Russell L. Stogsdill. \$4. TAMU-SG-71-216. NTIS-COM-72-10238.

Texas Waterborne Commerce Commodity Flow Statistics. Jack T. Lamkin, W.R. Lowery. 115 pages. \$3. TAMU-SG-73-207. NTIS-COM-74-10083.

Cost-Efficient Cargo distribution Among Transportation Modes. Christian Phillips. 78 pages. \$3. TAMU-SG-76-206. NTIS-PB-253-1369.

Mexico's 200-Miles Offshore Fishing Zone: Its Impact on the U.S. Gulf of Mexico Shrimp Fishery. Wade L. Griffin and Bruce Beattie. 35 pages. \$2. TAMU-SG-77-210. NTIS-PB-273-665/AS.*

Economic Impacts of Recreational Boat Fishing in the Houston-Galveston Area of the Texas Coast. Robert B. Ditton, Alan R. Graefe and Gary Lapotka. 46 pages, 3 figures, 16 tables. \$2. TAMU-SG-80-206. NTIS-PB-81-140-980

A Generalized Budget Simulation—Installation Manual for Budget Simulation System. Wade L. Griffin, Charles M. Adams, Linda A. Jensen. 92 pages. \$3. TAMU-SG-83-201.

A Survey of the Economic and Environmental Aspects of an Onshore Deepwater Port at Galveston, Texas; Part I: Potential Economic Effects; Part II: Environmental Considerations. Daniel M. Bragg, Roy W. Hann, Jr. and Wesley P. James. Part I - 57 pages. \$3. Part II - 45 pages. \$3. TAMU-SG-74-213 and 214. NTIS-COM-74-11030/AS and COM-74-11031/AS.

CONTENTS

Volume 18

Number 4

2

SEA NOTES

A brief look at the news of the day in the marine world.

4

PORT

The experts say Texas is headed for rough water.

10

PILOT ON DECK

Take a cruise down the Houston Ship Channel.



Texas Shores

It's time to ship out here at Texas Shores. The call of the coast today leads us to a detailed examination of the state's marine transportation industry. In this issue we look at what America's oil glut hath wrought upon our ports. We'll examine the day-to-day duties of a marine business specialist, who's trying to save marine-related firms from going under. And then we dredge up one of the most important, if not controversial, water transportation topics facing Texas — the Gulf Intracoastal Waterway. From there we'll spend a day at the office with a "danger is my business" harbor pilot on a cruise down the Houston Ship Channel and see who has come home to Corpus Christi. The cover photograph was taken by Randy Green.

12

INFORMATION PLEASE

At the service of marine business is Dewayne Hollin.

16

ROLL ON

Get the facts behind the Gulf Intracoastal Waterway.

22

MARINE ADVISOR

A statewide review of news on the Texas Marine Advisory Service.

Texas Shores is published quarterly by the Sea Grant College Program at Texas A&M University in an effort to promote a better understanding of the Texas marine environment.

Dr. Tom Bright, *Texas A&M Sea Grant Director*; Amy Broussard, *Head of Marine Information Service*; Norman Martin, *Editor of Texas Shores*; Celia Jeter, *Graphic and Printing Consultant*.

Sea Grant is a partnership of university, government and industry focusing on marine research, education and advisory service. Nationally, Sea Grant began in 1966 with the passage of the Sea Grant Program and College Act. Patterned after the Land Grant Act of the 1860s, the Sea Grant concept is a practical, broad-based scientific effort to better the world for all those living in and out of the sea.

In 1968 Texas A&M received the distinction of being named among the nation's first six institutional award recipients. Three years later the school was designated a Sea Grant College. The university has a rich heritage of oceanography research dating back to 1949 when the program began. In addition there is an on-going program to get marine information to the public.

The effort is aided by seven county marine extension agents serving the nine coastal counties of Texas. These individuals are backed by a group of specialists in marine recreation, fisheries and business management, as well as sea food marketing and consumer education.

Sea Grant is a matching funds program. The Texas A&M Sea Grant College Program itself is made possible through an institutional award from the National Oceanic and Atmospheric Administration, U.S. Department of Commerce, and appropriations from the Texas Legislature and local governments.

Change of Address, Subscription Information or Other Questions: *Texas Shores*, Sea Grant College Program, Texas A&M University, College Station, Texas 77843. Or call 409-845-7524. Please include old label when changing mailing address.

Texas Shores (ISSN 0747-0959), is published quarterly by the Sea Grant College Program, Texas A&M University, College Station, TX 77843. Second class postage is paid at College Station, TX. **Postmaster:** Send address changes to the Sea Grant College Program, Texas A&M University, College Station, TX 77843. ■

SEA NOTES

New leadership on deck for Texas A&M Sea Grant

Dr. Thomas Bright, professor of oceanography, has been named director of Texas A&M University's Sea Grant College Program.

University President Frank Vandiver says with Bright's appointment, Feenan Jennings, Sea Grant director since 1978, will become the fulltime Executive Director of the Office of University Research Services. Jennings has been serving in a dual capacity at Sea Grant and OURS since September 1, 1983.

As director of the Sea Grant College Program, Bright will administer \$3.5 million in marine-related research, education and public service programs.

Funding is from private sources, state and local governments, and the National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

Bright has been a member of the Texas A&M faculty since 1968, and has been a full professor in the Department of Oceanography since 1981. He has a strong background in marine research, with particular emphasis on coral reef, estuarine and nearshore ecology.

He has served as chairman of the Oceanography Senior Advisory Committee and as coordinator of the Biological Oceanography Division.

In other Texas Sea Grant related activity, Amy Broussard has been named Head and Editor of the program's Marine Information Service.

Broussard had previously served as education publications editor with the Texas A&M marine research program since 1979. She is a graduate of the University of Missouri School of Journalism and has been involved in journalism from more than 20 years.

Texas marine symposium spotlights ocean craft

Science, social studies, literature and music headline the seventh annual Marine Education Symposium set for Saturday, March 1, at Texas A&M University.

Highlighting the program is William Marquet, senior research specialist and instrumentation engineer at Woods Hole Oceanographic Institution, who will be the symposium's keynote speaker.

Marquet's address — "Vehicle Systems for Deep Ocean Exploration" — will begin at 9 a.m. in the J. Earl Rudder Conference Center Auditorium.



Research and exploration in the deep ocean requires a family of vehicles with specialized instruments. Marquet will illustrate the way in which both manned and unmanned vehicles are used by scientists today. He will discuss such manned vehicles as ALVIN and SEA CLIFF. The unmanned vehicles include ARGO, which found the Titanic, and ANGUS, which conducted the photographic survey of the ship.

The symposium, sponsored by the Sea Grant College Program at Texas A&M University in cooperation with the Department of Educational Curriculum and Instruction, is open to all students in grades 9 through 12 and teachers at all grade levels.

As in previous years, there will be three sessions on either scientific research or more general topics from 9:15 a.m. until noon, followed by field trips and workshops in the afternoon.

Exhibits representing various Texas A&M departments and coastal organizations will be displayed throughout the day, and general campus tours will be available for those wanting to learn more about the University.

The pre-registration deadline is February 3, 1986, and the cost is \$3 per student or accompanying adult. All registrations will be on a first-come, first-served basis, and the registration fee is non-refundable.

Teachers interested in receiving a registration packet are urged to write Marine Education Symposium, Sea Grant College Program, Texas A&M University, College Station, Texas, 77843-4115. Further information is available by contacting Amy Broussard, symposium coordinator at (409) 845-7524.

Team discovers sea life flourishing in deep Gulf

Exotic sea creatures have been discovered thriving deep in the Gulf of Mexico in a region polluted by oil and gas seeping naturally from beneath the ocean floor.

A six-man team of Texas A&M University oceanographers say they found dense communities of clams, tube worms and other animals at a depth of about 1,800 feet in an area 150 miles off the Louisiana coast. The creatures apparently feed on bacteria that exist with no sunlight. Sunlight is required for photosynthesis.

Rather than photosynthesis, the scientists speculate the bacteria use a process called chemosynthesis as an energy source for growth. These bacteria also appear to be feeding on the hydrocarbons that seep from the Gulf floor.

"This report significantly expands the geographical area in which one would expect to find such communities in the deep ocean," says Dr. Mahlon Kennicutt II. "It also suggests that oil and gas seeping to the surface from deeper hydrocarbon reservoirs can support, by chemosynthesis, vent-type organisms in the deep ocean."

Hydrocarbon seepage occurs naturally in many ocean shelf and slope regions, Kennicutt says, making it probable that these sea creatures are more widely distributed than previous discoveries suggested.

The discoveries were made in 1985, when the research team — made up of Kennicutt, James Brooks, Robert Ridigare, Roger Fay, Terry Wade and Thomas McDonald — trawled through a region where they had earlier discovered the occurrence of gas hydrates, icelike formations of methane and water that may have potential as an unconventional energy source.

State announces release of Texas bird checklist

Serious birders or those considering taking up bird watching as a hobby may wish to obtain a free booklet from the Texas Parks and Wildlife Department.

"A Checklist of Texas Birds" is a handy 36-page booklet designed for recording bird observations by location or in a diary fashion.

To obtain copies, write to Park Operations, Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, Texas 78744.

Nautical archaeologists want cannons given back

Two cannons from a 1500s shipwreck that once was touted as the *Pinta* have been found rusting away in the hands of a Miami collector who refuses to hand them over to university researchers unless he's paid, says a Texas A&M University nautical archaeologist.

The university scholars won't pay, saying it violates their ethics. No price was quoted, says researcher Don Keith of the Institute of Nautical Archaeology, a scientific group affiliated with Texas A&M.

Keith declined to identify the collector but says the man was not involved when the cannons were taken from the shipwreck without permission in 1976, before Texas A&M began studying the site for the government of the Turks and Caicos Islands.

The Turks & Caicos, a small British protectorate in the Caribbean, wants to use the recovered artifacts for a museum.

Markings on the cannons could help uncover the vessel's identity and the guns themselves could help define why the ship was in the New World, says Keith.

"If this wreck is a ship of exploration, it would be the only one ever excavated and probably the oldest shipwreck in the New World," he says.

Deep, cold polar waters help in cooling climate

Very cold water found deep in the oceans may have an important effect on the world's climate, say Texas A&M University scientists.

"Cold water from the polar regions helps offset the heat input from solar radiation (the sun) in the tropics," says Dr. Thomas Whitworth III. "Much of that cold, deep and bottom water in the ocean has its origin in the Antarctic, and in particular, the Weddell Sea."

Whitworth and Dr. Worth Nowlin of the Department of Oceanography are studying the role of the oceans in influencing climate in a joint study with Dr. R. Dale Phillipsbury at Oregon State University.

The researchers are looking at the exchange of heat within the ocean. Their studies are funded by a four-year grant from the National Science Foundation.

Because the currents of cold, dense water occur at the bottom of the ocean — at depths of more than three miles below the surface — they cannot be sensed by satellites.

Instead, scientists will use shipboard



measurements and an array of meters to study these ocean currents. They will also look for traces of elements such as tritium from atmospheric nuclear testing in the 1950s to determine how long it has been since deep water was exposed to the atmosphere, and map flow patterns.

Poll indicates seafoods are high on health list

A Gallup survey indicates a majority of Americans have shifted their diets at home toward healthier foods, and that a substantial number are ordering more nutritious meals while dining out.

The poll, commissioned by the National Restaurant Association, shows that 60 percent of respondents already have changed their diets while eating at home, while 50 percent have made the switch at restaurants.

Seafood is the biggest beneficiary of the changing attitudes, with 20 percent of those surveyed ordering more seafood when eating away from home.

Consumers who have made the decision to order more seafood meals at restaurants include individuals 50 years or older (25 percent), working women (24 percent) and those who dine out four or more times a week (30 percent).

The preference for nutritious food is a continuing trend restaurateurs may want to consider to ensure customer satisfaction and repeat patronage, say officials of the association.

They may want to consider making menu changes, such as adding more broiled or baked foods, particularly seafood and poultry, and a variety of fresh and salads.

Flipse assumes new post at Texas A&M TEES unit

Texas A&M University professor John E. Flipse, president of the Marine Technology Society and chairman of the National Advisory Committee on Oceans and Atmosphere, has been promoted to deputy director of the Texas Engineering Experiment Station (TEES), announced Dr. Herbert H. Richardson, director of TEES.

Flipse also is associate vice chancellor for engineering and associate dean of the Texas A&M College of Engineering. As deputy director, Flipse will have overall management responsibility for TEES, reporting to Richardson.

TEES is a statewide research agency within the Texas A&M University system that conducts more than \$25 million in research annually.

A member of the National Academy of Engineering and a distinguished professor of civil and ocean engineering, Flipse has been a leader in the development of technology for mining deep ocean minerals.

Prior to joining the Texas A&M Engineering Program, Flipse was president and chief executive officer of the Texas A&M Research Foundation, where he oversaw a \$49 million research program.

El-Sayed given award in biological sciences

Texas A&M University oceanographer Dr. Sayed Z. El-Sayed, a leading Antarctic researcher and chief scientist of a joint Egyptian-Israeli-American marine research program, has been named winner of a national biological sciences award.

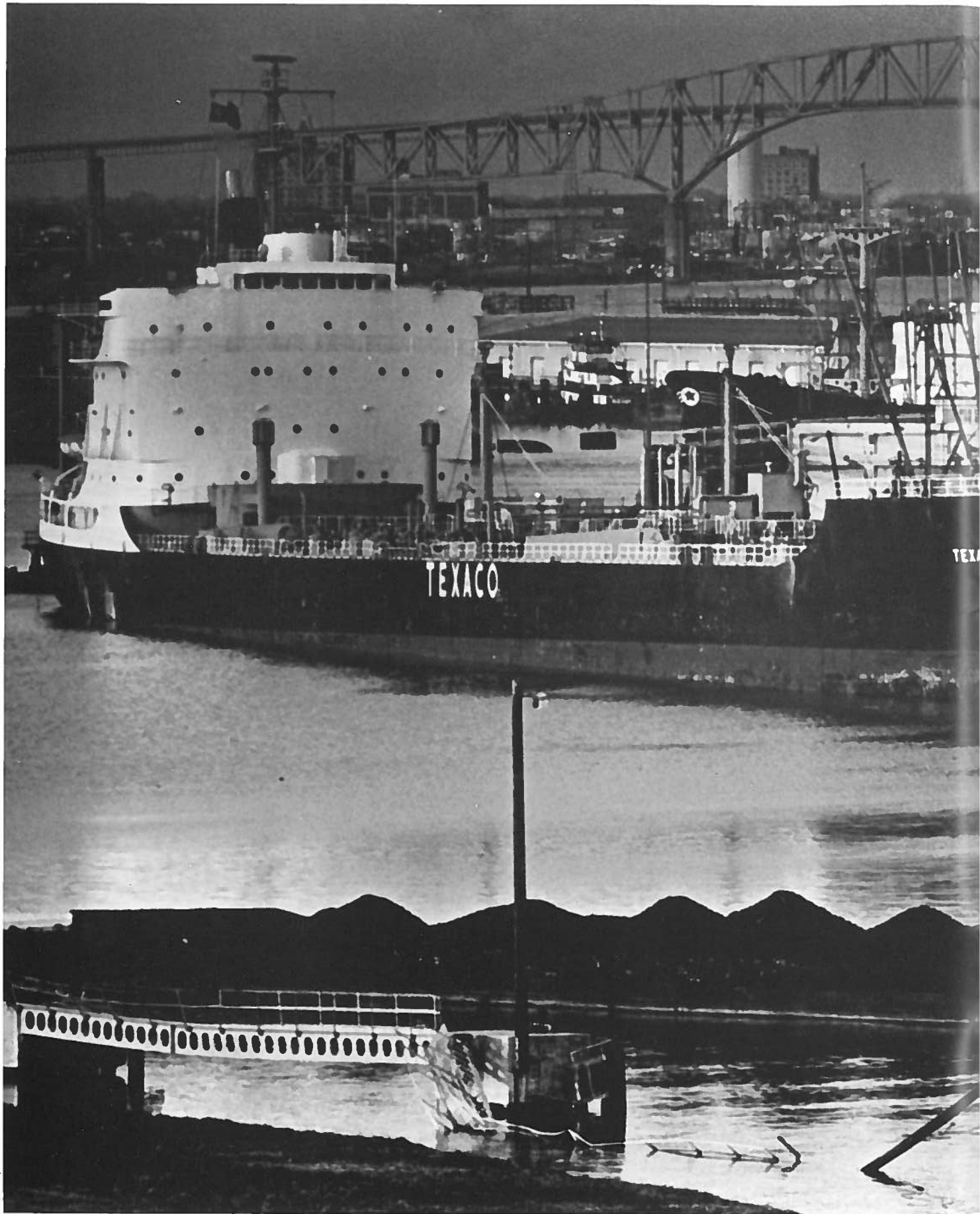
El-Sayed is a leading figure in a decade-long, 12-nation study of Antarctic ecosystems and already has a South Pole glacier named after him.

The Texas A&M researcher received the 1985 American Institute of Biological Sciences Distinguished Service Award during ceremonies at the University of Florida.

El-Sayed is the first Texas A&M recipient of a prize otherwise associated with Ivy League researchers.

Dr. Robert Abel, former head of the National Sea Grant Program and now president of the consortium which manages the Middle East research project, says the program is one of only two between Israel and Egypt.

Abel called the award "one of the most prestigious to which a biologist can aspire."



Randy Green



PORT

At last. It's time to dredge up the facts behind the Gulf Intracoastal Waterway. One, it's big. Two, it means big bucks for Texas.

AS FOREIGN TRADE WARS BEGIN TO HEAT UP, A dependence by Texas ports on oil and petrochemicals remains a loose gun on the deck of the Texas marine economy.

While many of the country's major ports are gearing up for a good year thanks to a full head of steam in the Far Eastern export economy, some big Texas ports are playing a different kind of game. They are waiting for the tide to turn again, bringing back better days when oil was king and their Latin American trading partners had some semblance of fiscal stability.

Meantime, it's a rough fight down on the docks. "We're all hustling right now," says Ben Goldstein, acting director of the Port of Port Arthur. "The ports are battling one another like never before." Dr. Bernie Milstein, chairman of the Galveston Wharves Board of Trustees, adds, "There is only so much cargo."

"We reflect the general health of our economy," explains Al Cisneros, president of the Texas Ports Association and a member of the Gulf Ports Association. Jim Pugh, managing director of the Port of Houston, points out total waterborne commerce is predicted to grow somewhere between 3 and 6 percent per year in U.S. international commerce. In Texas, though, he says, "We're looking for relatively slow growth over the next few years."

There was a time, not that long ago, when Texas seemingly had it made. Then two years ago Texas ports underwent a downturn on the heels of a recession in the oil and gas industry. A number of the Texas port facilities were and remain closely tied to the offshore oil industry that hugs the state's coastline. Indeed, oil and petrochemical products make up roughly 80 percent of the tonnage that moves through Texas ports annually.

If this weren't problem enough, Texas, due to its geographic location, is economically linked to the economies of the Latin American world, a sphere that has lately fallen on hard times.

BY NORMAN MARTIN



Norman Martin

The disadvantage of Texas Gulf ports is geographical — most world trade moves in an east-west direction.

Says Cisneros, "Brownsville, Corpus Christi and Houston all are quite active in handling Mexican commerce and that has declined." Mexico alone is the third largest trading partner of the United States, with American products making up about 65 percent of the Mexican import market.

Texas ports are in a difficult situation, but there are several suggestions and signposts that could indicate the state's marine transportation industry is back on course. Among these are:

- A recovery of Latin American economies.
- Continued movement by the federal government to lower the value of the American dollar. This, in turn, should enable the United States to export its petroleum products and be more competitive with other countries.
- Maintaining the United States' ability to produce and export agricultural commodities.
- Putting more effort into attracting new industry to Texas, particularly at the state level.
- Increasing Texas port productivity and continuing to modernize facilities.
- And, most importantly, a resurgence and recovery in the oil and gas industry. The Texas coast has 25 percent of the nation's oil refining and 40 percent of its petrochemicals.

And yet another blow has hit the U.S. literally in the breadbasket. America's highly valued dollar has curtailed agricultural exports this past year. Little grain has been sent overseas. As a result, Texas grain tonnages are down. "The total agricultural picture in this country is in a very depressed stage," says Milstein, "largely as a result of some current administration policies pertaining to the export of grain."

"We've had a period of depression in international trade, definitely," adds Jim Martin, port director of the Port of Beaumont. "But I'm inclined to feel optimistic, at least more so than I was before, about next year.

"Things are looking up," he says. "The strengthening of foreign currencies against the dollar should help American exports."

"We're cautiously optimistic," adds Pugh in Houston. While there are some signs of guarded optimism among port officials, several troubling trends in transportation remain that will have long-term effects on the state's coastal communities.

Briefly, railroads and ocean carriers are writing "port blind" contracts directly with shippers, which means the shipper does not indicate through which port he wants his cargo to move. "His cargo goes out the door in a container," says Pugh, "and he

doesn't care how that container gets to its foreign destination."

These contracts are a result of railroad deregulation in the form of intermodal rate structures. Trains move a mountain of goods as it is — more than a third of all commodities shipped nationwide.

According to a federal Railroad Administration consumption study, railroads move 36 percent of the nation's freight, and use only three percent of the transportation industry's total fuel consumption to do it.

Martin at the Port of Beaumont says intermodal movement today involves ocean transport to U.S. West Coast ports and rail right on through to destination.

"The trade area that really has been booming is the Far East — Japan, China, Hong Kong, Formosa (Taiwan) and Korea," says Pugh. "And most all the business has been going to the West Coast ports, moving overland rather than by ocean carriers from those countries coming to the Texas ports." Martin agrees, "It's tough on Gulf ports."

The disadvantage of Texas and the Gulf ports is geographical. Most of the trade in world markets moves in an east-west direction. That makes ports on the East and West Coast the major source of competition for Gulf ports, especially when coupled with an inland transportation system.

"It's somewhat difficult for us to compete in some of the higher-value cargoes that are more time sensitive," Pugh says.

Meanwhile, again due to geography, the South Atlantic and Atlantic ports have been dominating the flow of trade to Europe and the Mediterranean. Texas does have one significant geographical strength — access to Latin and South American ports. On north-south cargos, particularly from Latin America, the state has a distinct advantage for distributing imports in the western two-thirds of the United States, as well as consolidating exports to Latin America.

"We're trying to gear a lot of our marketing efforts for the long-term development of that north-south cargo," Pugh says.

Still, Gulf ports in general are in a slow growth position. "It's kind of leveled out," concedes Cisneros, who also is the director of the Port of Brownsville. The American Association of Port Authorities reports that Gulf ports in the first half of 1983 handled 149.4 million tons. In 1984 the tonnage rose to 161.6 million, but this year the six-month total has nosedived to 146.9

million tons. Texas ports account for about half of that tonnage. "We still handle the largest tonnage in the country," Cisneros says.

The Port of Corpus Christi is a good example of a Texas port's dependence on oil and petrochemical traffic. The massive South Texas port has traditionally ranked

among the nation's top 10 largest ports in terms of tonnage.

In 1984 the port moved 52 million tons of cargo. "We're rocking along this year at

There's No Place Like Homeport

S O U T H T E X A S



N A V Y C O U N T R Y

TEXAS IS HOME TO HOMEPORT.

An economic battle of dollars and wits among several U.S. Gulf Coast cities ended this summer with the announcement that the U.S. Navy would designate Corpus Christi as the homeport for the U.S.S. Wisconsin, several support vessels and the training aircraft carrier U.S.S. Lexington, currently based in Pensacola, Fla.

Construction on the Ingleside site could begin as early as the fall of 1987 if Congress approves the funding requests submitted by the Navy.

The site, just east of Port Aransas, is only 10 miles from deep water in the Gulf of Mexico and has unlimited expansion potential should the Navy decide to berth additional ships there.

"This will give us that major boost we've been looking for the last couple of years," says James Storm, chairman of the Port Commission of the Port of Corpus Christi.

Corpus Christi officials estimate the Navy facility will have a nearly \$600 million a year impact on the Coastal Bend region of Texas. More than 5,000 permanent civilian jobs are expected to be created by the new base.

Corpus Christi today has a population of 267,000.

"It's just staggering," says Jimmy Lyles, executive director of the Corpus Christi Chamber of Commerce.

Statewide, Texas will realize some \$5.3 million a year in additional tax revenues from Homeport. Local communities and local governments should see an increase of \$7.5 million a year in sales tax revenues.

The Homeport proposal is expected to begin the budget hearing process in January. If approved by Congress by early Fall 1987, construction can begin by December 1987 or January 1988. The entire project should be completed by 1990. ■

—By Norman Martin

WHERE'S THE PORT?

Port of Beaumont

The Port of Beaumont is located on the Neches River at the head of deep water navigation and is 47 miles from the Gulf of Mexico. Entrance to the Port from the Gulf of Mexico is through Sabine Pass, thence through the Port Arthur and Sabine-Neches canals and the Neches River.

Port of Brownsville

Brownsville is located on the Rio Grande River at the southernmost tip of Texas. The port of Brownsville is about 5 miles northeast of the city proper and 17 miles from the Gulf. It is reached through a deep channel from the Gulf of Mexico through the Brazos Santiago Pass across the Laguna Madre and through the Brownsville Ship Channel to Port Brownsville.

Port of Corpus Christi

The Port of Corpus Christi is situated on the west side of Corpus Christi Bay, 209 nautical miles southwest of Galveston and 156 miles north of Brownsville, Texas. Port facilities at Corpus Christi are located along a 9 mile stretch of dredged channels and basins, beginning about 21 miles from the Aransas Pass entrance at the Gulf of Mexico.

Port of Freeport

Freeport Harbor is 47 miles southwest of Galveston and is the general harbor area at Freeport, Texas. The harbor was formed by improvement of the Brazos River. The river was dammed above the jettied entrance to the harbor and now flows through a diversion channel.

Port of Galveston

The Port of Galveston is in the southeastern part of the state, 437 nautical miles west of New Orleans, Louisiana, and 283 nautical miles northeast of Brownsville, Texas. The Port's principal waterfront facilities are along the northerly side of the eastern portion of Galveston Island and on the south side of Pelican Island.

Port of Houston

The public Port of Houston is located on the Houston Ship Channel about 50 miles inland from the Gulf. The entrance of the port is through a channel extending from the Gulf through jetties between Galveston Island and Bolivar Peninsula across Galveston Bay, up part of the San Jacinto River, then up the Buffalo Bayou to the turning basin at Houston.

Port of Orange

The Port of Orange is located on the Sabine River about 10 miles above its entrance into Sabine Lake and about 42 waterway miles from the Gulf of Mexico. The Sabine-Neches Canal, a continuation of the Port Arthur Canal, parallels the shore of Sabine Lake west of the narrow strip of land to the mouth of the Neches River.

Port of Port Arthur

The Port of Port Arthur is located on the west shore of Sabine Lake at the junction of Taylor's Bayou and the Port Arthur Ship Channel 17 miles above the Sabine Pass entrance to the Sabine-Neches Waterway.

Port of Port Lavaca

The Port of Port Lavaca is located on the Point Comfort side of Lavaca Bay. A 26 mile long deep draft ship channel through Lavaca and Matagorda Bay connects the Port with the Gulf of Mexico. The Channel enters Matagorda Bay through an artificial pass cut through Matagorda Peninsula, crosses the Intracoastal Waterway, and terminates in a turning basin at Point Comfort. ■

about 8 percent below that clip," says Doug Marchand, managing director of the Port of Corpus Christi.

"As goes the petroleum business, so goes our total tonnage," he says. "Right at 80 percent of it is petroleum-related."

There are other economic factors affecting the Texas marine scene. Lester Winfree, vice president of the Orange County Port District Board of Commissioners, says America's strong dollar, coupled with the high productivity of foreign farms, has certainly slowed the export of agricultural products. "I don't know when we will become competitive again on the world market," he says.

"Everybody is looking at bottom-line costs," says Winfree. "We're not alone here on the Gulf coast."

"We're all fighting over our share," says Ben Goldstein of the Port of Port Arthur, who adds that the ports don't create world markets. "We only go after our share of those markets that are there."

"It's not where any of us would like it to be," he says. "There's just not that much cargo moving."

George Krohn, a regional representative of the U.S. Maritime Administration in Houston, says conducting world trade successfully entails three major functions. They are finding, selling and transporting products in exchange for payment.

In international dealings, the transportation part of the mix is at least as crucial as the other two components, he believes. "U.S. business has been too slow in realizing this fact, as has the U.S. government." As a result, Krohn says, "Most U.S. export expansion efforts have missed the mark."

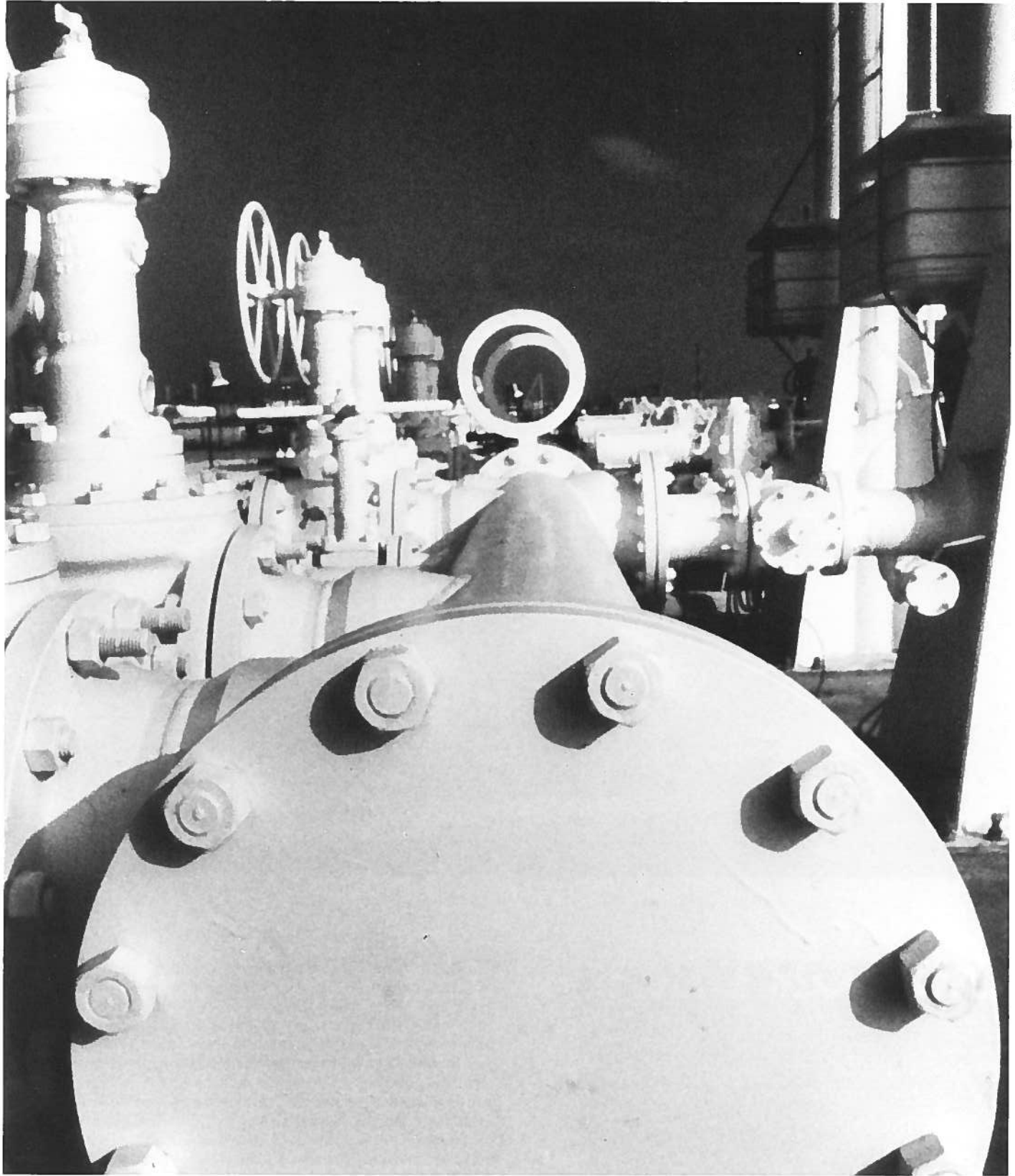
Solutions are not simple. They lie in a national realization of the importance of transportation to this country's potential in world trade, he says. Also, individual firms must recognize the importance of using highly trained international transportation managers when attempting to trade overseas.

Although these indicators do hold potential for bettering the Texas marine transportation situation, there are other factors waiting in the wings that could have an effect on the industry.

Historically, environmental concerns, particularly related to dredging projects, have topped media and legislative oversight. As a result, many port organizations

Please Turn To Page 23

Texas ports are major movers of crude oil and other petroleum products.



Port of Corpus Christi



PILOT ON DECK

They are the elite of the docks. The special crew that cruise the Houston Ship Channel every day of the year.

At first glance Richard Schultheis might be just another Houston businessman going to work.

He parks his car, walks into the huge, modern structure where he earns his living and takes the elevator to the top floor. As he steps out into the passageway, he murmurs a few good mornings, and walks on down the hall to his workplace.

But he isn't a businessman, not in the traditional sense. He's a Houston Ship Channel pilot. And the elevator hasn't delivered him to a suite in a steel-and-glass high-rise office building, but to the bridge of the *Olympus Ace*, an 18,000-ton automobile carrier docked at the Port of Houston.

Schultheis is one of the 56 pilots who earns his living guiding the big ships in and out of the twisting Houston Ship Channel.



The city of Houston, about 60 miles inland, is the third largest foreign-trade port in the United States.

More than 4,700 ships visited Houston in 1984, and every one of them came and went by way of the city's man-made link to the sea. About 40 feet deep, 53 miles long and seldom more than 400 feet wide, the channel rolls from the Turning Basin near Houston's high-tech downtown office district to Bolivar Roads, off Galveston, where it spills into the Gulf. It's in constant use, 24 hours a day, 365 days a year, and along its entire length is spread the core of Texas' industrial prosperity.

Around the docks, pilots are considered an elite class. The high pay — about \$120,000 annually — and the prestige make them the envy of the waterfront. "It's a job that requires the guts of a riverboat gambler," says Captain Robert Adams, the

Houston Pilots Association's top official. "If you ain't got 'em, you're not going to be a pilot."

Despite the heavy traffic, Adams says, "we'll match our safety record with anybody's. We think we're the best pilots anywhere."

Statistics compiled by the U.S. Coast Guard back the pilots' claims. Between 1981 and 1984, some 300,000 ships, including tugs, freighters, tankers and barges, travelled the Houston Ship Channel. Of that number, only 286—less than 1 percent—were involved in any kind of accident. And fewer than 24 incidents each year involved pilots on ocean-going vessels, and of those, most were minor, the Coast Guard says.

Please Turn To Page 23

INFORMATION PLEASE

There are no simple answers to what is ailing Texas marine business. But there is someone who can help find a solution.

Dewayne Hollin is a domino player of sorts. Actually the Texas A&M marine business specialist lately has more accurately been a watcher of the domino effect that has stunned firms operating along the oil-rich Texas coastline.

The road marine-related businesses have travelled in the past two years is long and filled with pitfalls. Despite the drumbeat of headlines about a bright outlook for the U.S. financial system, marine operations increasingly face loan defaults, big write-offs and bankruptcy.

For most of Hollin's clients, financial trouble came in the form of a world oil glut that caused Texas offshore oil operations to take a nosedive. Prospects that seemed so positive in the early 1980s have faded.

"Across the board, the industrial marine sector has been adversely affected," says Hollin. "One industry's failure produces another failure."

An unfortunate example, he says, is in offshore drilling. "If the offshore drilling industry isn't doing well, then the offshore service boat industry isn't doing well. If that happens, boat building and repair doesn't do well because they're not building and servicing boats."

The severity of the decline has certainly been much deeper than most people expected, Hollin says. "There's been a considerable number of failures in offshore businesses."

The result has produced a shock wave effect within the industry. "The guy selling equipment to a shipyard

that goes out of business loses an account he can't replace."

Staying abreast of modern business trends, technical innovations and government regulations is essential to the life of any firm. The job of coping with vast amounts of information can be overwhelming for a small businessman, especially in the marine fields.

As a result, the Texas Marine Advisory Service has quietly, and without much attention, developed an advisory program for marine business management.

Funded by the Texas A&M University Sea Grant College Program, the marine business effort offers a variety of information and counseling services to small and medium-sized businesses. These offerings include keeping track of potential markets, business trends and regulatory developments.

Often people in the marine industry need, but don't know where to find, information that is readily available in libraries, government agency reports, technical journals and trade publications. "That's why I'm here," Hollin says.

"Dewayne has pioneered the application of business management techniques to solve problems in marine industries," says Dr. Lauriston King, deputy director of the Texas A&M Sea Grant Program. A testimony of the success of this bridge between the university and marine businesses is that many of the nation's Sea Grant College Programs have duplicated Hollin's efforts within their own organizations.

STORY AND PHOTOGRAPHY BY NORMAN MARTIN



E.D. Middleton, manager of safety and training at Zapata Gulf Marine Corporation in Houston, says efforts like Hollin's have "effectively boosted the marine industry in Texas and nationally." Rosemary Ryan of the Clydesdale Bank PLC, adds "Mr. Hollin has a particular talent for knowing the problems facing the marine industry."

Perhaps the best known aspect of Hollin's program is the series of seminars he arranges along the Texas coast. These relate closely with his work with trade associations such as the Marine Services Association of Texas and the International Transportation Management Association, as well as service to coastal area chambers of commerce like the Ports and Waterways Committee of the Greater Port Arthur Chamber of Commerce and the Offshore/Marine Committee of the Brazosport Chamber of Commerce.

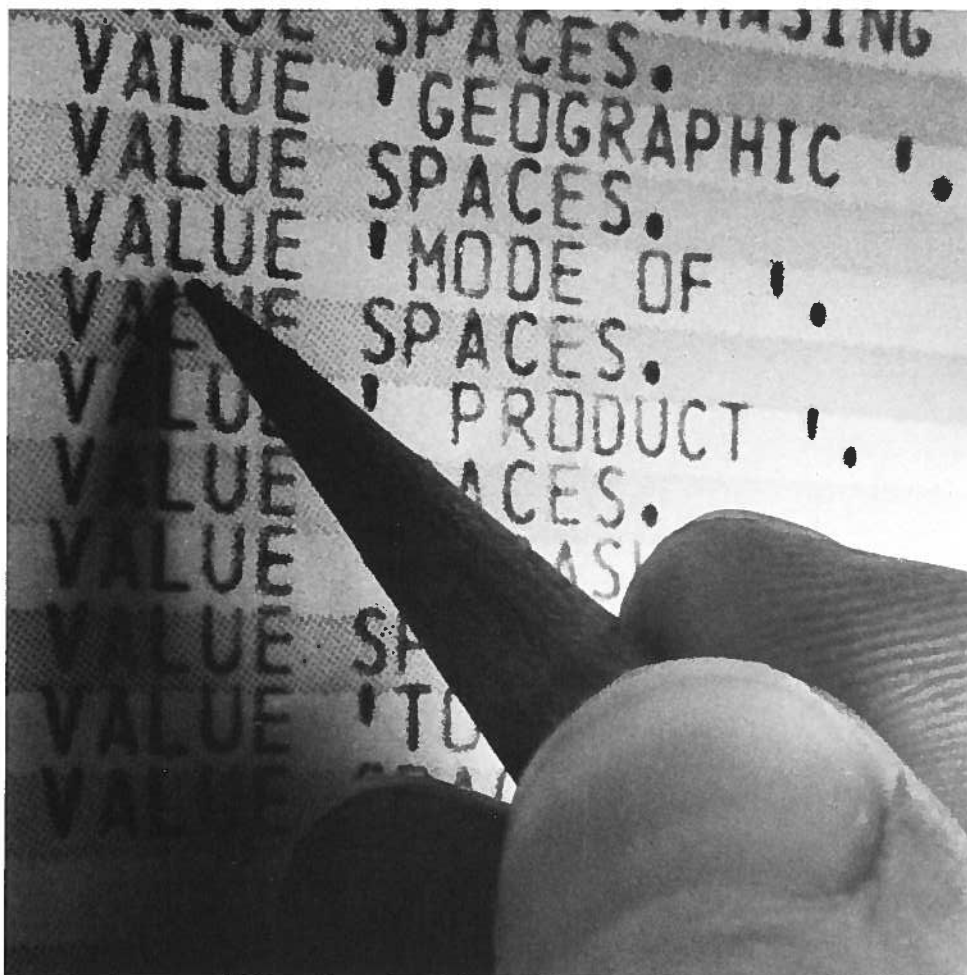
"These seminars serve as effective tools for informing, training and providing communication and cohesiveness to the Texas marine industry population," says John Ryan, president of the MSA of Texas and vice president of Alexander Industries, Inc. Jerry Mahoney, president of Baker, Luman and Co., a Houston-based manufacturer and distributor of nautical instruments, adds the seminars "open channels of communication" within the marine industry.

Seminar topics have included marine insurance and safety, product liability, international trade documentation, deepwater terminals, financial planning, workmen's compensation, cost evaluation and even bankruptcy procedures. Also, the Marine Advisory Service supports an annual update or outlook conference to monitor significant changes taking place in the industry.

The Marine Advisory Service group works primarily with three marine user groups — ship builders and people involved in offshore support activities; recreational groups including marinas, boating dealers and service companies; and commercial fisherman, charter boat operators and those directly involved in harvesting a resource.

Hollin's responsibility as a business management specialist is to enhance these groups' management capabilities by supplying management information, financial planning suggestions, business development tips and basic information on regulations in the industry.

"We basically work in all areas of management, such as evaluating marketing strategies and business development programs," Hollin says. "We even get involved in providing new tax information, particularly for the commer-



Despite a bright outlook for the U.S. financial system, marine operations increasingly face loan defaults, big write-offs and bankruptcy.

cial fisherman."

The economic importance of marine-related businesses to the state's overall economy shouldn't be underestimated. The Houston-Galveston area alone has some 300 companies directly involved in some type of offshore production and exploration activity, he says.

The economic decline is mirrored in the size of offshore industry as well. During the past four years, Hollin says, there have been an unprecedented number of consolidations and mergers. "We've seen the industry shrinking in terms of numbers and nobody's really out of the woods yet," he says.

One facet of the industry that has been especially hard hit is shipyards. Prior to an early 1980s recession, shipyards were booming. In 1981 there were some 100 shipyards in Texas. Today the count is closer to 50. "It's just dwindled," Hollin says.

New vessel construction fell nationwide from 443 units in 1981 to 86 last year. Hollin says 24 shipyards closed last year and 20 went out of business the year before. Employment in ship-

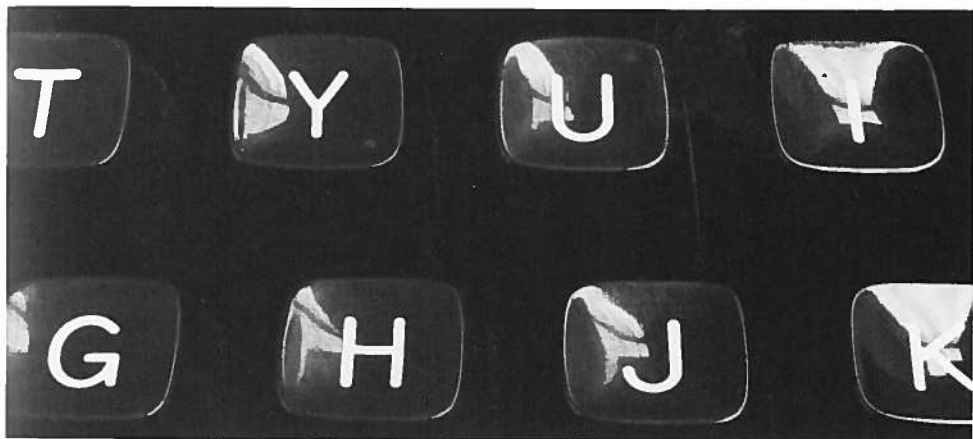
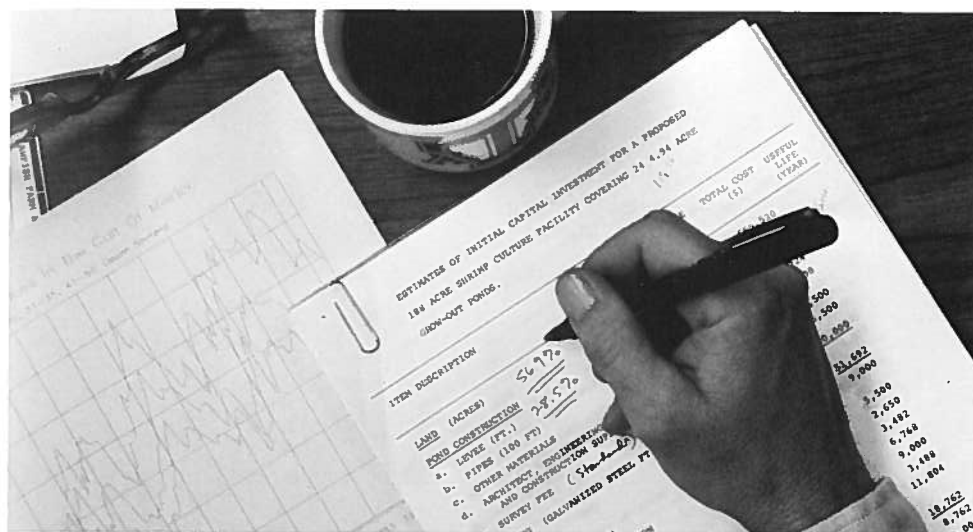
yards has dipped as well. In 1981 that ship building sector had almost 25,000 employees. In 1984 there were slightly less than 10,000 employees, more than a 60 percent decline.

Meanwhile, he estimates that during the same period the number of barge and towing companies has been sliced almost in half, about 40 percent. The slowdown affects those in the repair business, too. "If the equipment isn't being used there's no reason to repair it," Hollin says.

But the news isn't all bad. There is a bright spot, so to speak, in the recreational sector. "In spite of the economic conditions this sector seems to be doing reasonably well," Hollin says.

Several factors are pushing this resurgence, but the leader is construction of new marina space. "We assume somebody's going to be buying boats to put in those slips. Of course, this may not stand the test of time," he says.

Today the leader among the state's recreational areas is the Houston-Galveston region. This is directly attributable to the massive population on hand to use marine-related facilities.



Top: A considerable number of failures in offshore businesses has produced a shock wave effect within the industry, **Bottom:** so staying abreast of modern technical innovations is essential.

"In terms of dollar size, it's probably four times larger than the next leader, Corpus Christi. Houston-Galveston simply has the larger area in terms of overall recreational opportunities and businesses."

One project the Marine Advisory Service has developed in the past few years is a marina directory for Texas, a roster of waterfront facilities serving the marine recreational boating industry. Hollin says a new project set for completion in 1986 is an inventory of marine businesses not just within the state, but within a six-state region.

"Eventually it will be part of a national inventory," he says. "It's something we've needed for a long time because it should add significantly to planning and evaluation efforts." The regional directory will include saltwater and freshwater marinas in Texas, New Mexico, Oklahoma, Arkansas, Tennessee and Kentucky. Hollin estimates there are more than 290 marinas in Texas alone.

One of the most beneficial programs offered by the Marine Advisory Service during the past six years has been in

fishing vessel safety. Among the most effective efforts has been in the development of risk management programs for fishing vessel owners and operators.

"We're now trying to identify problems in the fisheries management area that can contribute to a safer working environment," Hollin says.

Another development taking a bite into the marine fields is the development of computer programs for marine-related business use. "We've developed computer programs that can evaluate where these people are in terms of returns on their investment, how they evaluate the cost of their operation, and how they keep control of different cost centers," Hollin says.

"We take their information, evaluate it, and then we get back with them one-on-one to discuss what they need to do to make some improvements in their business," he says.

That individual attention is an integral ingredient in the success of the marine business program. Seminars and publications help get information back to a broad-based audience. But

when it gets down to basics, an individual's problem may be somewhat different.

"The one-on-one is almost a necessity, particularly with smaller businesses," he says.

In order to help a marine businessman, Hollin says he needs fairly specific requests on the type of information or assistance that is required. Written requests are much easier to deal with and they are certainly needed where a detailed response is indicated, he says.

"Frequently I can suggest sources that are available directly to the requester or I may have the information right in my own files. But either way I'll respond to all requests personally. I never like to turn anyone down," he says with a laugh.

All requests are handled in confidence. More detailed requests should be made in writing to ensure clear identification of the problem. Also, Hollin advises, all previous information sources should be identified, if possible, to avoid duplicated effort.

Once the request is received — either in an interview or letter — Hollin says he reviews the request and suggests information sources either available directly to the individual or through the Texas A&M University library.

If required, he says, additional information outlets within the Texas A&M University System, other public institutions or industry sources can be contacted for assistance. When the information is collected, it's personally delivered and reviewed with the individual making the request.

If a pattern begins to develop among the requests for information, Hollin says that often a special program is presented to bring together experts from industry, government and education for a comprehensive examination of the issue. Frequently, he says, these programs are presented in cooperation with trade associations and professional groups.

The marine industry isn't the sole beneficiary of this effort. Hollin says this special relationship between university and industry serves as an early warning system for altering or determining needed research.

The 20-year-old National Sea Grant Program is part of the National Oceanic and Atmospheric Administration in the U.S. Department of Commerce. Its purpose is to encourage the development of marine resources in the oceans, the Great Lakes, and the Gulf of Mexico through locally-matched grants to universities, laboratories and other institutions. Texas A&M has participated in the program since 1971. ■





ROLL ON

At last. It's time to dredge up the facts behind the Gulf Intracoastal Waterway. One, it's big. Two, it means big bucks for Texas.

IF YOUR IDEA OF MARINE TRANSPORTATION IS A SKI boat slicing across a scenic Texas lake, you aren't ready for the Gulf Intracoastal Waterway. In this world tons upon tons of cargo glide slowly along a channel of economic bounty that benefits all the state's residents.

But the 426-mile waterway that cuts through Texas on its track to Florida is not without controversy. To keep the channel open, it must be dredged. This may be hard to believe, but in an environmentally wary section of the state not that many people want to be the proud owners of a dredge disposal site — at least not yet.

"There are lots of people up on the High Plains that haven't heard of the Gulf Intracoastal Waterway," says B.C. Gersch, supervising waterway planning engineer with the State Department of Highways. "They don't realize they're being touched by this mode of transportation."

More than 60 million tons of cargo makes its way annually along all or a part of the protected waterway that stretches in the Texas portion from Sabine Pass in East Texas to Brownsville at the southern tip of the state.

"The commercial fishing industry, oil and gas industry, and the recreational boating industry would be virtually landbound without that channel and the ability to move up and down the coast," says John Gosdin, director of the Governor's Division of Natural Resources in Austin.

State officials estimate some 20 percent of the Texas gross state product is linked to this narrow stretch of water. And more than 145,000 jobs are involved when the major industries affected by the waterway are considered. Water transportation alone in Texas employs some 22,000 people.

Maintenance of the waterway is performed periodically, but not without increasing opposition due to the impact on the environment. To keep the waterway open along the Texas coast, the U.S. Army Corps of Engineers oversees the dredging of some 400 million cubic yards of silt a year.

BY NORMAN MARTIN



For small and less seaworthy vessels, the waterway offers protected passage from the stormy nature of the Gulf.

A dredge works like a giant vacuum cleaner. A cutter head in front slices up material, and the dredge vacuums it into a pipe and onto disposal sites.

The engineers work through a local sponsor, which is each port authority in their respective areas. For stretches of the waterway between ports, the highway department is the sponsor, handling questions of right of way and acquisition of disposal sites.

The highway department got the job of policing the waterway in 1975 when the State Legislature passed the Texas Coastal Waterway Act. This act authorized the State of Texas to act as the local non-federal sponsor of the Gulf Intracoastal Waterway in Texas and designated the department to act as the agency for the state in fulfilling the responsibilities of the non-federal sponsor.

It isn't surprising that there are controversies surrounding the dredging process. The route of the Gulf Intracoastal Waterway leads through some of the most productive, yet sensitive areas of the Texas coast. These wetlands, as they're called, are widely recognized as nurseries for commercially and recreationally valuable finfish and shellfish. The environmentally delicate wetlands are also the nesting or feeding grounds for vast num-

bers of waterfowl, mammals and reptiles.

The unfortunate fact is that 90 percent of the disposal areas available to the Corps of Engineers along the Texas coast are in the open waters of the Gulf and bays.

Spurred by a fiery 1983 dredging dispute over East Matagorda Bay, there are now efforts to assist disputing parties in working together. A Gulf Intracoastal Waterway Advisory Committee was organized in late 1983. It includes state agencies that are most closely concerned with different aspects of the waterway. And, of course, the immediate objective of the committee is to address the acquisition of disposal sites to assure continued operation of the waterway.

The committee includes representatives of the State Department of Highways and Public Transportation; Governor's Office of Budget and Planning; General Land Office; Texas Parks and Wildlife Department; Texas Department of Water Resources; Texas Economic Development Commission; Texas Historical Commission; and the Texas Antiquities Committee.

"The Governor's office has encouraged, supported and participated in this endeavor," says Gosdin of the Governor's Division of Natural Resources.

"We've been supportive in bringing in

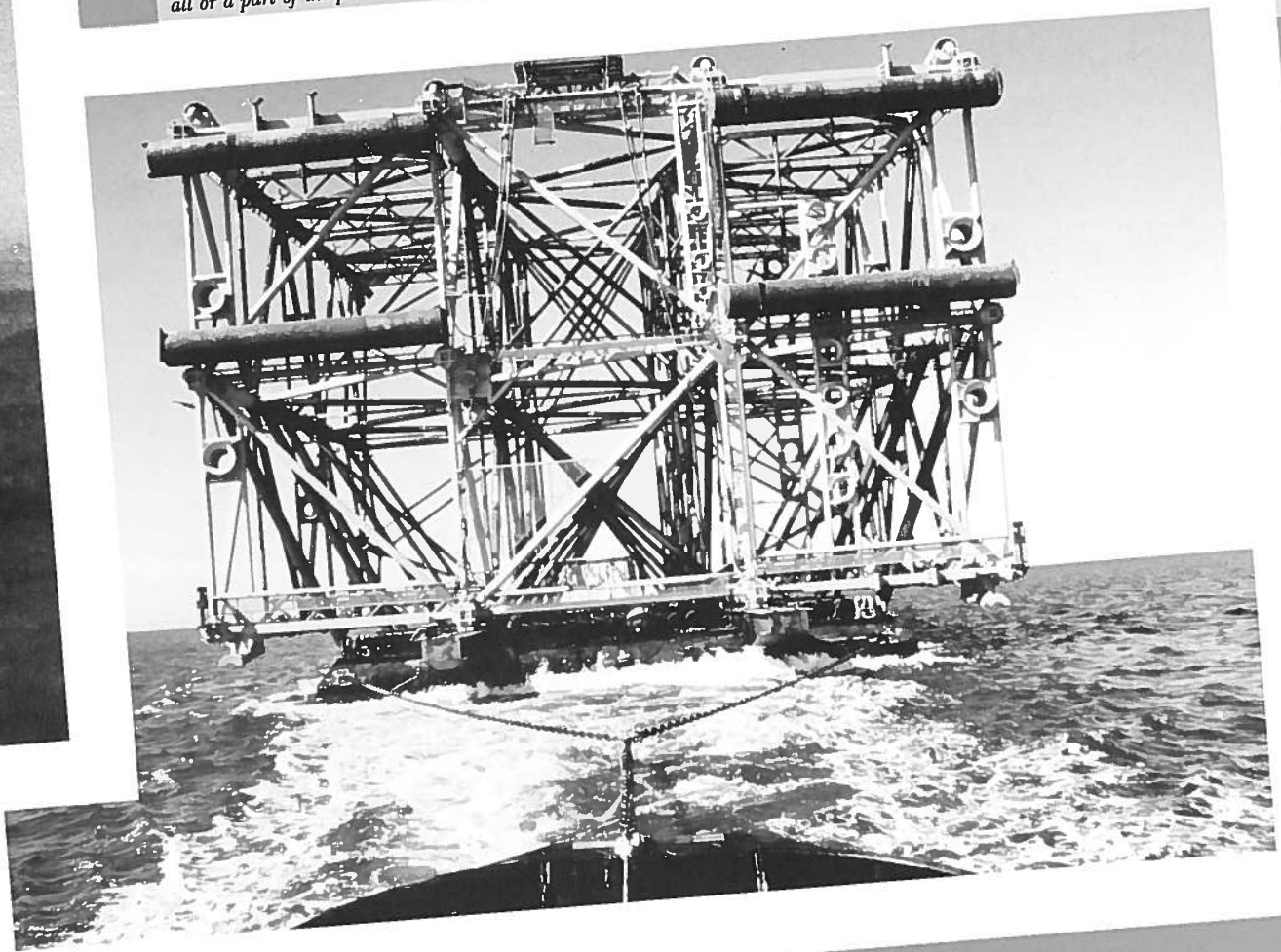
other non-state agency folks," he says. "That way you get the best information from all perspectives in trying to deal with marine transportation and dredging."

The process of turning over the helm of the waterway to Texas hasn't always gone smoothly. In fact, there was trouble from the beginning in 1975. The initial problem was a contract dispute of sorts between the state and the federal government. The agreement switching sponsorship from the federal government included holding the United States free of any legal damages should there be any construction operation or maintenance throughout the waterway.

"Of course that caused a problem," says B.C. Gersch, supervising waterway planning engineer with the state department of highways. In essence there was a direct conflict between the Texas constitution and this contract.

"We can't pledge the credit of the state," Gersch says. "We can only commit ourselves according to what is appropriated during each biennial session." Between the bureaucratic bickering, it took some six years to rectify the conflict. But by that time the state legislature had stopped funding the highway department's role in the waterway except in an administrative capacity.

More than 60 million tons of cargo makes its way annually along all or a part of the protected waterway.



"We're still fighting the last one," laments Gersch.

The reason for the economic doldrums is that the highway department needs a place to dump the dredged material pulled out of the waterway and it doesn't have any money to buy land for disposal sites. The highway department has been asked by the Corps of Engineers to furnish some 1,900 acres for new disposal areas. The sites include 400 acres in the Freeport area; 300 acres in the High Island area; 300 acres in the Bolivar area; 400 acres in the West Bay area; and 500 acres in the East Matagorda Bay.

With no funds in hand, the department is trying to locate state-owned land near the channel that could be used for more than 30 years. Private land owners are also being asked to contribute with the lure that their land values will climb as the elevation rises. These disposal sites might be used for mariculture — shrimp farming — as well. The state is also examining the possibility of recycling existing sites.

"Freeport is our critical area right now," Gersch says. The highway department is working with the state parks and wildlife department in a proposed plan to use part of the state park in the region that is not under development at this time.

Since the waterway's traffic never stops, dredging to keep the channel clear is a full time job.

The entire Texas portion of the channel is dredged on a 24-month basis. Some areas are cleared more often than others because of high siltation rates. Those portions may be dredged on a 12- or 18-month schedule.

"When we look for disposal area lands, we also look at the environment," Gersch says. "Of course, we don't want to destroy anything if at all possible.

"But there's going to have to be some give and take," he says. "You're looking at about a \$16.5 billion industry to the state. You just can't afford to let something like that go by the wayside. It must be maintained."

The business of maintaining the waterway isn't based solely on economic potential, though.

Many parts of the Texas coast are a treasure trove of major historical significance. When the waterway is dredged or widened, historic shipwrecks can be damaged or destroyed. Depending on placement of dredge disposal areas, archaeological sites on land can be damaged and destroyed.

As a result, groups like the Texas Historical Commission and the Texas Anti-

quities Committee keep a close watch on all construction projects on public lands, including the waterway, which is one of the largest.

The historical watchdogs try to help construction and dredging contractors from disturbing known cultural resources. Another avenue is to request surveys in areas where historically significant areas haven't been explored yet.

Says Barto Arnold, state marine archaeologist for the Texas Historical Commission in Austin, "We would never expect to stop a major project, unless it was the Alamo or something like that. But before a site is destroyed in one of these projects, we do like to see some archaeological data salvaged."

LeLand Roberts, assistant director of Texas Parks and Wildlife's Resource Protection Division in Austin, adds, "We want to make sure that the highway commission is aware of the fish and wildlife values of the area the GIWW goes through."

Roberts points out a continuing concern that dredged material — either original or from widening and maintenance — not be placed in open water situations in a manner that degrades fish and wildlife resources. It's his contention that the dredged material be contained, hopefully on an upland situation.



"If you go out in the bay and dike up an area," Roberts says, "you're still losing many acres of open water that are productive fishery resources. It shouldn't be a trade of water transportation values at the expense of other values, whether it's fish and wildlife or something else."

The Texas coast is primarily composed of a series of shallow bays that are separated from the Gulf by low barrier islands. It definitely was not a natural site for modern navigation.

But that didn't stop Clarence Holland, a pioneering Victoria banker, at the turn of the century. In 1905 he called for a convention to outline "the feasibility, plans, and final construction of an intercoastal canal" to connect "all our deep water ports and all the tributaries . . . and all the rivers and bayous . . . and also the great Mississippi River and all its tributaries, which spread over the country like a great hand

laid over the face of the United States."

The convention met in August 1905, chartered the Interstate Inland Waterway League, and pledged the goal of a continuous system that would tie together the 18,000 miles of navigable waters that extend from the Great Lakes through the Mississippi Valley and along the Louisiana and Texas coastlines.

Congress passed the Rivers and Harbors Act in 1909 and ordered surveys for a continuous waterway from Boston to the Rio Grande. But the Intracoastal Canal itself was not authorized until 1925 when legislation called for a canal from New Orleans to Corpus Christi, nine feet deep and 100 feet wide.

The waterway section was so successful that in 1942 Congress extended the canal to the Mexican border. It also increased the depth to 12 feet deep and a width of 125 feet.

The waterway proved its worth long before it was completed. Not only did it immediately protect Gulf sailors and ships from the squalls and sudden storms for which the Gulf of Mexico is noted, but it also proved a lifesaver during World War II. While tankers were being sunk by submarines within sight of the coast, the waterway barges were safe from attack. Canal shipping was 7 million tons before the war. It soared to 17.6 million tons by 1944.

The peak year for the waterway in terms of tonnage moved was in 1978 when some 68 million tons of goods moved along the channel. Last year the total was approximately 59 million tons.

While the working end of the channel clears the way for millions of tons of cargo, boaters and fishermen benefit from the combination of sheltered waters and easy routes to the open Gulf. State officials

Top: State officials estimate some 20 percent of the Texas gross state product is linked to this narrow stretch of water. Bottom: Texas boaters and fishermen benefit from the combination of sheltered waters and easy routes to the open Gulf.



point out that the waterway enhances access to several state parks, passes by a number of wildlife refuges and skirts a national seashore.

In addition, many creeks and streams empty into the waterway, and two major rivers flow directly into it - the Colorado and the Brazos.

For small and less seaworthy vessels, the waterway offers protected passage from the stormy nature of the Gulf. Moorings are located periodically along the canal for those who may need them.

A 1980 survey of recreational boat owners in Texas, which is the latest data available, determined that 2.4 million recreational boat trips originate in Texas coastal waters annually. It also indicated 1.9 million or 79 percent of those 2.4 million recreational trips used the Gulf Intracoastal Waterway.

From its southern-most point at

Brownsville, the channel moves up the Laguna Madre between Padre Island and the Texas mainland. It passes by Laguna Atascosa National Wildlife Refuge and comes to Corpus Christi, one of the nation's top 10 port facilities.

Continuing northward, the waterway passes popular resort cities like Aransas Pass and Rockport, the Aransas National Wildlife Refuge and Goose Island State Park, and approaches the heavily industrialized coastline on the way to the Port of Orange.

The waterway, coupled with the petroleum and other mineral resources of the state, encouraged the development of this area into the nation's leading petrochemical center.

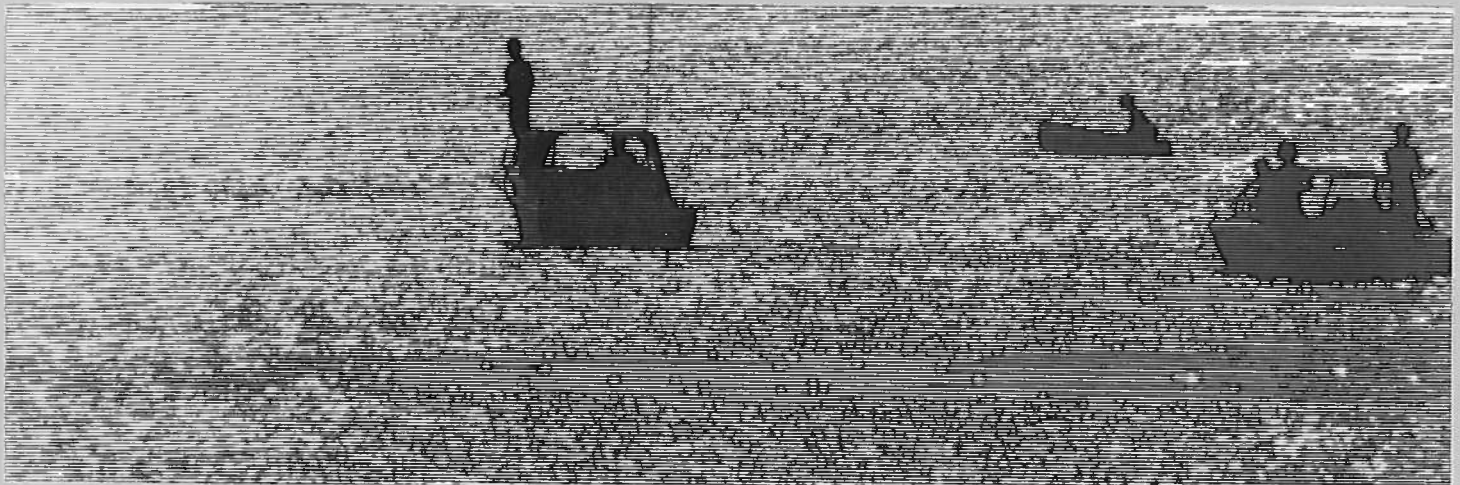
Safe behind barrier islands and peninsulas, the canal mirrors the coastline and bays to Sabine Lake at Port Arthur. At the state line, it appears to turn landward,

entering Louisiana more than 20 miles north of the coast.

The waterway not only links Texas deep-water ports, but connects the state's crucial oil and petrochemical industrial complex to midwestern markets.

Besides massive amounts of crude petroleum and residual fuel oil, other shipments seen daily on the waterway include basic chemicals, gasoline, and distillate fuel oil. Also high in the ranking are petroleum solvents, marine shells, sand, gravel and crushed rock, benzene and toluene, and alcohols.

Agriculture harvests the benefits of the waterway, too. Soybeans, cotton, wheat and other products come and go from Texas ports by way of the canal. Almost three-fourths of all goods leaving Texas are shipped by water, and some 40 percent of each Texas port's receipts are from goods shipped along this waterway. ■



Community effort backs Cedar Bayou pass project

Its non-profit status in hand, Save Cedar Bayou, Inc. is zeroing in on the \$100,000 it has pledged to the Texas Parks and Wildlife Department to help dredge and maintain the Cedar Bayou fish pass.

Rich Tillman, Aransas and San Patricio counties marine agent, along with recreation specialist Ken Pagans, have helped citizens of Rockport, Aransas Pass and Port Aransas form the non-profit corporation to raise funds and public support for the project.

Texas Parks and Wildlife is considering chipping in approximately \$300,000 in Wallop-Breaux monies, a federal conservation fund created from taxes on boats and other outdoor equipment.

Cedar Bayou, located between Matagorda and San Jose islands, is the only natural pass to the Gulf of Mexico between Port O'Connor and Port Aransas. In recent years, it has gradually sanded over due to natural and man-made causes.

Parks and Wildlife biologists say a reopened pass will provide the exchange between Gulf and bay waters that fish and shellfish need to live and breed. Community leaders say tourism in the area has declined by as much as 30 percent because the choked pass hampers fisheries production.

Save Cedar Bayou, Inc. has already raised almost \$50,000, but officials are hoping to exceed the \$100,000 goal and provide for continued maintenance of the pass. Contributions can be sent to First National Bank, Rockport, Texas, 78383.

MARINE ADVISOR

BY DOTTY CURTSINGER

Turtle protection aids Gulf shrimping success

What began as a piece of equipment to protect the endangered sea turtle could become a big time and money saver for Texas shrimpers.

In fact, the trawl efficiency device is doing such a good job of weeding out turtles, trash fish and other bycatch from shrimpers' nets that fisheries specialist Gary Graham hopes it will become standard equipment on many Texas shrimp boats.

More commonly known by its acronym, TED, the device is sewn into each of a shrimp boat's four nets. As the vessel's nets drag the Gulf's bottom in search of valuable shrimp, the TED acts to funnel large objects away from the smaller shrimp and back into the sea.

It's a simple enough principle, and seems to satisfy environmental groups who worried that shrimp nets were trapping the endangered Kemp's Ridley sea turtle, Graham says.

One shrimper testing the TED reports it consistently excluded as much as 60 to 80 percent of the bycatch, while not appearing to affect the overall shrimp catch, Graham says.

Additional testing of the device, which was developed by the National Marine Fisheries Service, will continue during the next shrimp season.

High-tech used to study shrimp trawl efficiency

The need for shrimp net efficiency and fuel conservation has spurred fisheries specialist Gary Graham to go high-tech.

With all the performance testing prowess usually reserved for the labs at General Motors, Graham plans to rig underwater sonar equipment to the nets of Gulf shrimp trawlers, then follow their execution from the decks above by means of an echo sounding recording.

The gear is expected to measure differences in the nets' performance associated with any rigging changes from above.

It will also measure the amount of pull the nets exert on the vessel, and can identify the boat's optimum trawling speed, which should result in better fuel use.

The gear is portable, and available for demonstrations to any fisherman who needs help solving rigging problems or wants to compare his trawl's efficiency to others currently used by the industry. Interested shrimpers should contact their local county marine agent.

Discovery suggests fish have beneficial effects

The recent discovery of highly beneficial fatty acids in fish is fueling arguments by health experts who say regular consumption of fish can decrease the risk of heart disease.

In what could be one of the most exciting developments for the seafood industry in decades, researchers are touting the

Please Turn To Page 24

■ADMINISTRATION ■ Marine Advisory Project Supervisor: *Donn Ward*; 442 Kleberg Center; Texas A&M University; College Station, Texas 77843; (409) 845-8557. ■COUNTY EXTENSION AGENTS - MARINE ■ Aransas and San Patricio Counties: *Richard Tillman*; 953 N. Commercial; Aransas Pass, Texas 78336; (512) 758-0001. Brazoria County: *Charles G. Moss*; Rt. 2, Armory; Angleton, Texas 77515; (409) 849-5711, ext. 1564 or (409) 265-4261, ext. 1564. Calhoun County: *Joe T. Surovik*; P.O. Box 86; Port Lavaca, Texas 77979; (512) 552-9747. Cameron County: *Tony Reisinger*; County Building; San Benito, Texas 78586; (512) 39922448. Chambers and Jefferson Counties: *Robert Nailon*; Courthouse Annex, 225 Main Street; Anahuac, Texas 77514; (409) 267-3185. Galveston County: *Mel C. Russell*; 5115 Highway 3; Dickinson, Texas 77539; (713) 534-3413; Houston: (713) 33722575, ext. 296; Galveston: (409) 94822581, ext. 296. Matagorda County: *Willie Younger*; County Courthouse, Room 326; Bay City, Texas 77414; (409) 245-8415. ■SPECIALISTS ■ Business: *Dewayne Hollin*; Marine Business Management Specialist; Sea Grant College Program; Texas A&M University; College Station, Texas 77843; (409) 845-8554. Recreation: *Ken Pagans*; Marine Recreation Specialist; Texas A&M Research and Extension Center; Route 2, Box 589; Corpus Christi, Texas 78410; (512) 265-9203. Seafood: *Michael Haby*; Seafood Marketing Specialist; P.O. Box 158; Port Aransas, Texas 78373; (512) 749-5207. *Annette Reddell Hegen*; Seafood Consumer Education Specialist; P.O. Box 158; Port Aransas, Texas 78373; (512) 749-5207. Mariculture: *George Chamberlain*; Extension Mariculture Specialist; Texas A&M Research and Extension Center; Route 2, Box 589; Corpus Christi, Texas 78410; (512) 265-9203. Fisheries: *Gary Graham*; Marine Fisheries Specialist; Rt. 2, Armory; Angleton, Texas 77515; (409) 849-5711, ext. 1564 or (409) 265-4261, ext. 1564. *Russell J. Miget*; Marine Fisheries Specialist; Texas A&M Research and Extension Center; Route 2, Box 589; Corpus Christi, Texas 78410; (512) 265-9203 or (512) 749-5207. *Thomas L. Linton*; Marine Fisheries Specialist; Department of Wildlife and Fisheries; Texas A&M University; College Station, Texas 77843; (409) 845-57941

Continued From Page 8

spend money to ensure protection of the environment in port areas in order to protect local fisheries and recreation. "People that enjoy those activities will not be affected negatively by the industrial development that goes on around ports," Cisneros says.

Texas ports are in a competitive situation. To attract different types of industry, they must continue to improve and modernize port facilities to handle cargo more efficiently. "There are pressing demands on ports to modernize," says Cisneros.

Another impediment looming over the state's marine industries is the federal gov-

High speed bulk facilities can unload more than 30 trucks an hour.



Port of Corpus Christi

ernment's threat to impose user fees. A user fee is a shift of the cost burden for the construction and maintenance of the nation's waterways away from total federal funding. One proposal in Congress would shift about 25 percent of the deepening and widening costs to the local community.

Despite the unwanted federal attention, some port officials believe a little more government action is needed at the state level in terms of industrial development. "Compared to some other states, Texas is quite a ways behind," says Pugh at the Port of Houston. Today much of the industrial development activity is being done by local interests because of the vacuum at the state level, he says.

"We'd like to see more active state participation in the promotion of Texas for industrial investment, as well as tourism and other things," Pugh says. ■

Continued From Page 11

When accidents do take place, help may arrive from different sources. The Coast Guard keeps specially trained and equipped crews on alert, as does the city, whose Hazardous Materials Response Team is stationed nearby. Private industry has also established an emergency response mechanism that addresses incidents within or alongside plants.

Equating the ship channel to a highway, Chief Warrant Officer Jim Hall of the Coast Guard's marine inspection division says they get more fender-benders than head-on accidents. "Statistically, travelling on the channel is probably about as safe as driving your car."

Maybe as safe, but probably not as easy. Part of the problem has always been the size of the channel. It's never been all that big or deep. In 1899, Congress approved a plan to dredge the channel to 25 feet along its entire length, but it wasn't until 1910 that funds were appropriated to actually complete the job. In 1914, President Woodrow Wilson fired a cannon heralding Houston's deep-channel era. Just six years later, work to deepen the channel began again, to 30 feet this time, and in the intervening years it has been dug ever deeper to accommodate even larger ships.

Back on the bridge of the *Olympus Ace*, Schultheis is about to turn his 625-foot vessel around at the Brady Island Turning Basin, an area only 75 feet wider than the ship is long. At first glance, the maneuver looks like the equivalent of turning the family car around inside the garage.

In preparation, Schultheis talks softly into his portable radio, getting information on the other channel traffic and ordering the two tugs, the *Judge* and the *Sea King*, into position. He presses the mike button and gives directions to the tug pilots, and the tiny boats begin to move. The tugs will turn the *Ace* with help from the *Ace's* own massive engines.

The Japanese captain of the *Olympus Ace* looks concerned as he watches, but doesn't question the pilot's judgment.

As the tugs labor, black diesel smoke pours from their stacks and great, foaming eddies swirl around their sterns. Suddenly, they stop. The ship is in position now. Schultheis gives the word again and the tugs roar. The *Ace* begins to arc.

In a minute or two it's over. With her nose pointed downstream, she's ready to go south.

With a wave and a word from Schultheis, the tugs slip away and the *Ace* is outbound, slowly making its way down the 53-mile-long channel to Galveston Bay. The Japanese captain, looking relieved, goes below. He won't be needed again until his ship arrives at the sea buoy several hours later.

If conditions are favorable and there are no complications, a complete transit of the channel takes about six hours. The voyage provides an object lesson in the economic importance of what the Port of Houston Authority likes to call the "Fabulous Fifty Miles."

The corporations lining the channel's banks read like a selection from the Fortune 500: Arco and U.S. Steel, Champion International and Diamond Shamrock, Phillips Petroleum, U.S. Gypsum, Union Carbide and Rohm & Haas.

Cargill, the multi-national grain merchant, maintains a mammoth grain elevator that alone goes a long way toward supporting Houston's claim to being the top wheat port in the nation. Grain and grain products were the port's premier export by tonnage in 1983. Crude petroleum led the list of imports, with automobiles first by dollar value.

In addition, there are close to 40 public wharves where a variety of cargoes are loaded and unloaded. At the Port Authority's Barbours Cut Container Terminal, eight giant cranes can lift whole tractor-trailer-size shipping containers on or off vessels in minutes. In 1982 a study concluded that 160,000 jobs in Texas and \$1.6 billion of the state's income were port-related.

The port is also a major distribution point for automobiles imported from Europe and Japan, making it a regular port-of-call for the *Olympus Ace* and others like her.

Meanwhile, back again on the bridge, Schultheis is worrying about what's ahead of him on his own side of the channel. He listens to his radio, talking to other pilots, making plans to meet incoming ships.

Because the bends are tight, pilots often meet at the center of the channel. Safe passage requires careful coordination. The pilots plot a head-to-head course over the radio, then agree to break to the right at the widest point, allowing the ships to slip past each other.

What sounds simple in theory, however, doesn't always work out that way.

"Sometimes you can get into the position, start making the turn, and the ship just doesn't start swinging," Schultheis says. "It's happened to me and I've thought, 'Well, there goes my career,'" he laughs. In his 10 years as a pilot, Schultheis has never had a ship that didn't eventually swing. Some just waited a little long to do it.

Such stories explain why many seamen have no interest in becoming pilots, says Schultheis, a former ship's officer himself.

"When I got word that I was accepted as a pilot, I was on a tanker in Jacksonville," he remembers. "The captain on that ship told me he'd rather go to jail than be a pilot." He shrugs, then adds, "He was one of those guys who got nervous as soon as he got near the sea buoy. When you're at sea, if somebody's 5 miles away, he's close."

A few more miles melt away and the industrial look of the channel disappears. Trees dot the passing landscape and the waterway appears to widen. Past Morgan's Point, the halfway

mark, the *Ace* enters the gray-green waters of Galveston Bay.

As the ship advances, the bay fans out before it. The added width is only an illusion, however. Outside the dredged channel, the water is only 6 feet deep. The *Ace* must keep to the center until it reaches the sea buoy, another 25 miles out.

The lower part of the channel is picturesque. The bay is dotted with fishing boats, pleasure craft and an occasional tug or Coast Guard buoy tender.

It is 2 p.m. as the *Ace* nears the sea buoy. On a good day, the trip might take five hours. Today it took a bit longer. "Every run down the channel is different," Schultheis says.

At the marker, Schultheis turns the ship back over to the captain, packs his binoculars and radio and prepares to leave the ship. Since there is no curb service at sea he must climb down a rope ladder and jump onto the pitching deck of a waiting pilot boat.

The small craft will lay at anchor for several hours, until it's time for the pilot to climb the ladder again, next time onto the deck of an inbound ship. ■

— By J. Michael Douglas/Port of Houston Magazine

Continued From Page 22

Omega-3 constituents of the fat in fish as blood-thinning agents that prevent heart attacks and strokes.

"Current research concludes that fish in the diet is even more important in preventing coronary heart disease than previously thought," says seafood consumer education specialist Annette Reddell Hegen.

She says Omega-3 acids are found in especially high amounts in the deep saltwater species of the North Atlantic and Pacific, because scientists suspect they act as a marine anti-freeze against the frigid waters.

"A fish a day may prevent heart disease doesn't have quite the ring of an apple a day, but it may mean more in terms of good health," Hegen says.

Marina survey expected to identify access areas

The first and only national survey of marinas, boatyards, yacht clubs and condominium marinas has begun and is expected to reveal key boater recreation trends for the marine industry and managers of public waters.

Results will be sent to the President's Commission on American's Outdoors to identify where there is need for public access to the water, according to business management specialist Dwayne Hollin.

"The placement of boating facilities determines the location, the kind and the amount of recreational boating and sport fishing possible in any area," he says.

Hollin's directory of Texas marinas has already been included in the survey. He will also supply information for Oklahoma, Arkansas and New Mexico.

Hollin says he expects the final listing to be complete as soon as this spring. The survey is being conducted by the University of Rhode Island Sea Grant Marine Advisory Service, with assistance from Texas A&M and other Sea Grant programs with water-access concerns.

Hungry market could spur Texas crawfish industry

Plans by two national restaurant chains to add crawfish tails to their menus, and the construction of a crawfish processing plant in Port Arthur are signs that Texas crawfish farmers could be on the verge of finally reaping a profit from an aquaculture industry whose returns have been sporadic at best.

One area of the state that stands to benefit from this surge in market demand includes the mid-coast, says Matagorda county marine agent Willie Younger.

Although the area's crawfish farms have a way to go before they rival the production of their counterparts in the upper Texas coast region and Louisiana, Younger is optimistic that some operations could succeed.

At his recent workshop on crawfish production, Younger noted that many of the area's rice farms could be ideally suited to crawfish culture because they already

have the necessary expertise, equipment, soil type and access to labor.

Crawfish, which are raised in shallow ponds, feed mainly on tender young rice shoots.

Winter signals beginning of sport oyster season

Like tiny sandpipers that peck along the shore, coastal residents are now taking to the Texas oyster reefs to gather by hand what most shoppers find only on restaurant menus.

Using equipment as simple as hip waders and plastic buckets, sports oyster fishermen can enjoy as high of quality shellfish as what's served in the most chic oyster bar, says Galveston County marine agent Mel Russell.

Galveston Bay produces nearly two-thirds of the state's commercial and recreational take, he adds, but reef pickers can also find good hauls in San Antonio, Lavaca and Matagorda bays.

Sports oyster fishermen must purchase a fishing license if they're between the ages of 16 and 65, and the new \$5 state saltwater fishing stamp.

Russell says they should also obtain charts from the Texas Parks and Wildlife Department indicating open oyster areas, or those closed for health reasons. Oysters smaller than 3 inches may not be retained.

The season, which opened Nov. 1, will continue through April 30, unless closed early by the parks and wildlife commission.

PUBLICATIONS

The following publications are available from the Marine Information Service, Sea Grant College Program, Texas A&M University, College Station, Texas 77843. Prices quoted are for single copies, write for prices for multiple copies. Request publication by both title and TAMU-SG number, and send a check payable to Texas A&M University.

Port and Harbor Development System. TAMU-SG-71-216. \$4.

Control of Oil Spills. *Herbich.* TAMU-SG-72-102. \$3.

Effects of Inclined & Eccentric Load Application on the Break-out Resistance of Objects Embedded in the Sea Floor. *Colp, Herbich.* TAMU-SG-722204. \$3.

Artificial Reefs for Texas. TAMU-SG-732214. \$3.

Emergency Service for Boat Operators Along the Texas Gulf Coast. *Whitehorn, Miore.* TAMU-SG-73-603. \$2.

Resource Evaluation Studies on the Matagorda Bay Area, Texas. *Ahr, Doubenspeck, Harry, Miloy, et al.* TAMU-SG-74-204. \$3.

A Survey of the Economic & Environmental Aspects of an Offshore Deepwater Port at Galveston, TX: Part I: Port Economic Effects. *Bragg.* TAMU-SG-742213. \$3.

An Investigation into the Characteristics Behavior of Homogeneous Tapered Cables. *deCastongrene, Dominguez.* TAMU-SG-75-211. \$3.

Recreational Guide to the Central Gulf Coast. *Doran, Brown.* TAMU-SG-75-606. \$2.

Feasibility, Management, & Economic Study of Marinas on the Texas Coast. *Crompton, Ditton.* TAMU-SG-762201. \$2.

Shoaling Characteristics of the Gulf Intra-coastal Waterway in Texas. *Atturio, Basco, James.* TAMU-SG-762207. \$5.

Seafood Retailing. *Gillespie, Schwartz.* TAMU-SG-77-401. \$5.

Supplemental Aeration System Design for the Houston Ship Channel. *Hookings, Reynolds, Hann.* TAMU-SG-782201. \$5.

Use of Non-Explosive Mixtures of Hydrogen Oxygen for Diving. *Fife.* TAMU-SG-792201. \$5.

Sea Sources: Bibliographic & Resource Material About Children's Literature of the Sea. *Bagnal.* TAMU-SG-79-402. \$4.

Bibliography of Maritime & Naval History Periodical Articles Published 1976-77. *Schultz.* TAMU-SG-79-607. \$4.

Hurricane Message Enhancement. *Ruch, Christensen.* TAMU-SG-802202. \$5.

Marine Organisms in Science Teaching. *Hunt.* TAMU-SG-80-403. \$4.

Shrimp in Microwave Cookery. *Reddell.* TAMU-SG-80-505. \$2.

Guidelines for Establishing Open-Water Recreation Beach Standards-Proceedings. *McCloy, Dodson (ed).* TAMU-SG-81-116. \$5.

Mini-Learning Station Set I; Language Art I. *Hunt.* TAMU-SG-81-401. \$5.

Fairy Tales of the Sea (reader). *Cowan, Davis.* TAMU-SG-81-402. \$4.50.

Fairy Tales of the Sea; Teachers Guide. *Wiseman.* TAMU-SG-81-403. \$2.



Hurricane Relocation Planning for Hardin, Jasper, Jefferson, Newton, and Orange Counties. *Ruch.* TAMU-SG-84-620. \$5.

Understanding Involved Fishermen: A Survey of Members of the Gulf Coast Conservation Assoc. *Ditton, Holland.* TAMU-SG-84-623. \$2.

Airphoto Analysis of the Impact of Hurricane Alicia on Galveston Island. *Broussard (ed), Benton.* TAMU-SG-85-201. \$2.

Nocturnal Activity of Birds on Shrimp Mariculture Ponds. *Beynon, Hutchins.* TAMU-SG-85-805. \$1.

Economics of Harvesting and Market Potential for the Texas Blue Crab Industry. *Miller, Nichols.* TAMU-SG-86-201. \$5.

Bird Island Basin-An Environmental Study Area. *Harris.* TAMU-SG-86-401. \$2.

Hurricane Relocation Planning for Cameron and Willacy Counties. *Ruch.* TAMU-SG-86-601. \$8.

Sea Grant Aquaculture Plan. *Jennings.* TAMU-SG-82-114. \$5.

Proceedings of the Second Annual Tropical & Sub tropical Fisheries Technological Conference. *Nickelson.* TAMU-SG-78-101. \$10.

Proceedings of Third Annual Tropical & Subtropical Fisheries Tech. Conference of the Americas. *Nickelson.* TAMU-SG-79-101. \$10.

Proceedings of the Fifth Annual Tropical Subtropical Fisheries Technology Conference of the Americas. *Nickelson.* TAMU-SG-81-101. \$10.

Proceedings of the Sixth Annual Tropical Subtropical Fisheries Technology Conference of the Americas. *Nickelson.* TAMU-SG-82-101. \$10.

Proceedings of the Seventh Annual Tropical & Subtropical Fisheries Technology Conference of the Americas. *Nickelson.* TAMU-SG-82-110. \$10.

Proceedings of the Eighth Annual Tropical & Subtropical Fisheries Technological Conference of the Americas. TAMU-SG-83-112. \$10.

Proceedings of the 11th Dredging Seminar. *Herbich.* TAMU-SG-80-103. \$12.

Proceedings of the 12th Dredging Seminar. *Herbich.* TAMU-SG-80-112. \$10.

Proceedings of the 14th Dredging Seminar. *Herbich.* TAMU-SG-83-103. \$5.

Proceedings of the 15th Dredging Seminar. *Herbich.* TAMU-SG-83-111. \$10.

Proceedings of the 16th Dredging Seminar. *Herbich.* TAMU-SG-85-105. \$10.

Hangs & Bottom Obstructions of the Texas/Louisiana Gulf-Loran C (3rd. Rev). *Graham.* TAMU-SG-81-501. \$5.

Summary of Shrimp Mariculture Production Data at Texas A&M, 1968-78. *Johns, Holcomb, Griffin, Hutchins.* TAMU-SG-81-603. \$5.

Hurricane Relocation Planning for Brazoria, Galveston, Harris, Fort Bends, & Chambers Counties. *Ruch.* TAMU-SG-81-604. \$5.

Predicting Marine Recreational Fishing Patterns from Boat Characteristics & Equipment. *Ditton, Grefe, Fedler.* TAMU-SG-81-814. \$1.

Nutritional Response of Two Penaeid Species to Various Levels of Squid Meal in a Prepared Feed. *Fenucci, Zein-Eldin, Lawrence.* TAMU-SG-82-813. \$1.

Generalized Budget Simulation Model for Aquaculture. *Griffin, Jensen, Adams.* TAMU-SG-83-202. \$5.

User Guide for General Bioeconomic Fisheries Simulation Model (GBFSM). *Adams, Jensen, Griffin.* TAMU-SG-832204. \$5.

Marine Education: A Seagoing Experience. *Tinnin.* TAMU-SG-83-401. \$1.

Life On Board An American Clipper Ship. *Schultz.* TAMU-SG-83-402. \$1.

Bibliography of Maritime & Naval History Periodical Articles Published 1978-79. TAMU-SG-83-602. \$5.

Computer Accessible Annotated Bibliography of the Corpus Christi Bay Estuary. *Flint.* TAMU-SG-83-605. \$5.

Saltwater Fishes of Texas: A Dichotomous Key. *Murdey.* TAMU-SG-83-607. \$7.

Microbial & Chemical Changes During Storage of Swordfish (*Xiphias gladius*) Steaks in Retail Packages Containing CO₂ Enriched Atmosphere. *Finne, Hanna, Vand., Nickelson.* TAMU-SG-83-808. \$1.

Western Gulf of Mexico Sea Turtle Workshop: Proceedings. *Owens et al.* TAMU-SG-84-105. \$3.

The Economic Viability of a Four-Metal Pioneer Deep Ocean Mining Project. *Andrews, Brown, Flipse.* TAMU-SG-842201. \$3.

The Texas Shrimp Fishery: Analysis of Six Management Alternatives Using the General Bioeconomic Fishery Simulation Model. *Warren, Grant, Nichols.* TAMU-SG-842202. \$5.

Reproductive Activity & Biochemical Composition of *Penaeus setiferus* & *Penaeus aztecus* in the Gulf of Mexico. *Chamberlain, Lawrence.* TAMU-SG-842203. \$7.

Marine Offshore Outlook 1984. *Hollin, (Arnold).* TAMU-SG-84-509. \$5.



SEA GRANT COLLEGE PROGRAM
TEXAS A&M UNIVERSITY
COLLEGE STATION, TEXAS 77843
PHONE (409) 845-7524