

# MARITIME REPORTER AND ENGINEERING NEWS



Lester Rosenblatt

Robert T. Young

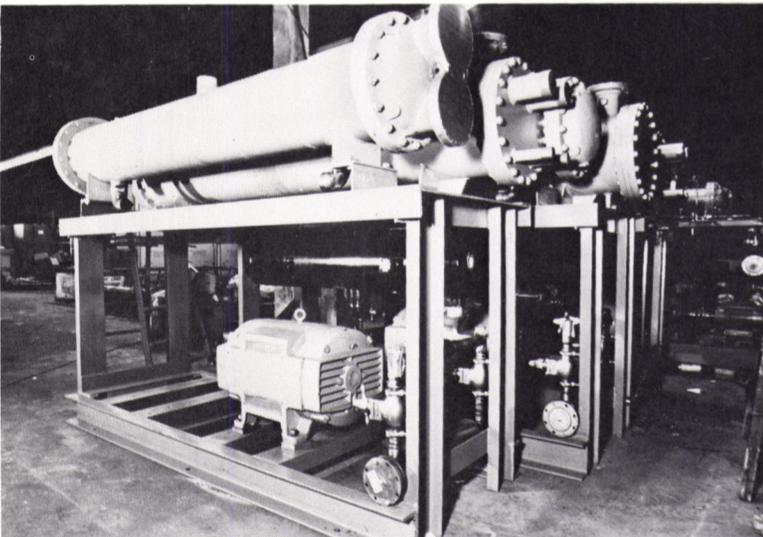
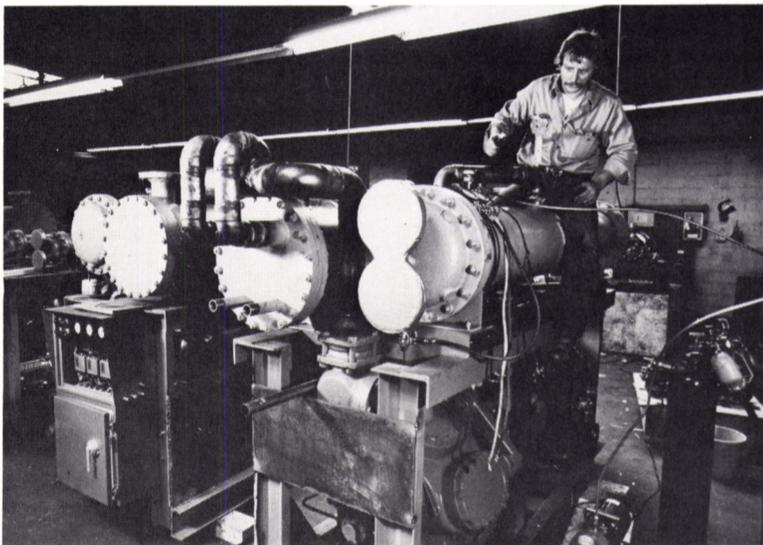
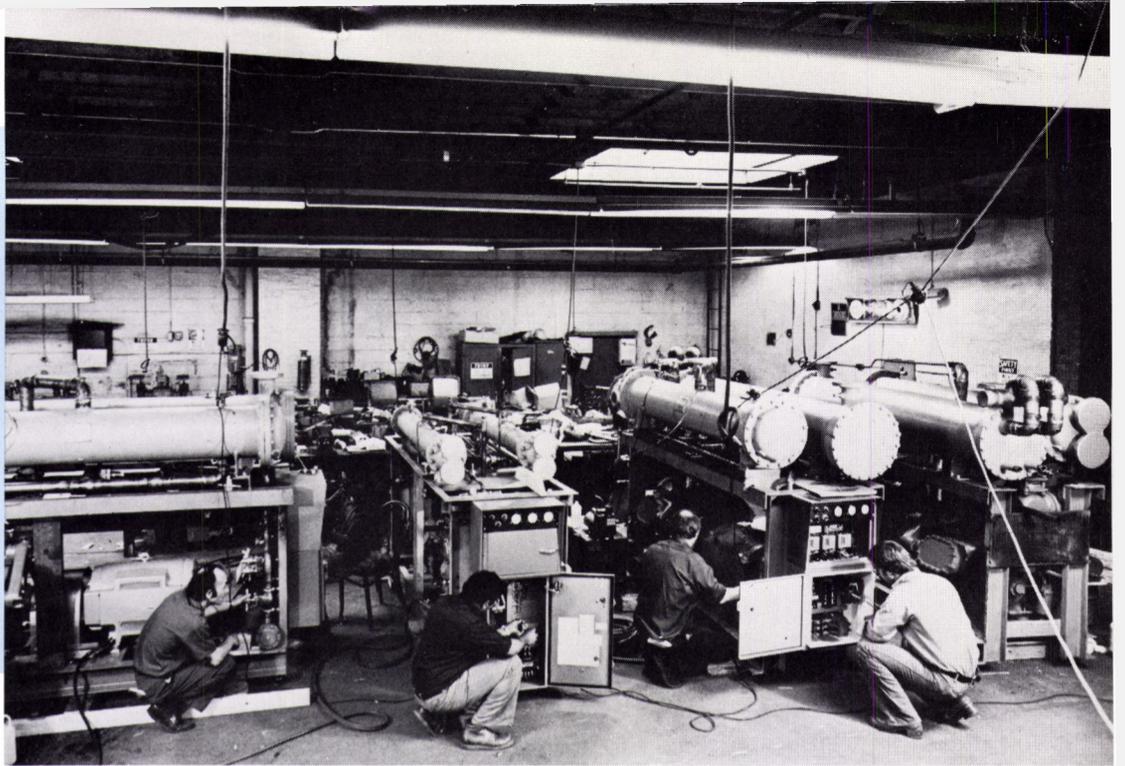
**86th Annual SNAME Meeting—  
Lester Rosenblatt Elected President**

(SEE PAGE 9)

**DECEMBER 15, 1978**

# BAILEY

can do it  
faster!



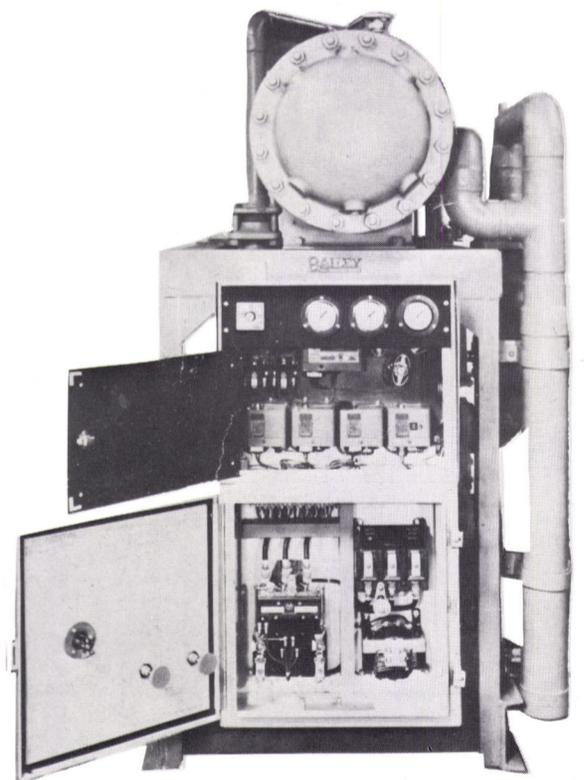
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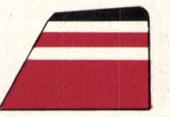
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and all through the harbor  
not a tugboat was stirring  
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### MarAd Releases Technical Report On Ship Routing

The Maritime Administration has released a technical report on the initial phase of a project to develop a computerized ship weather routing program allowing for multiple objectives. Such objectives might include ship safety, prevention of damage, economy in navigation, and crew/passenger comfort, or may be oriented toward military logistics. Prepared by the Massachusetts Institute of Technology for MarAd's National Maritime Research Center at Kings Point, N.Y., the report takes into account a computerized program developed by M.I.T. to predict ship motion responses and seakeeping characteristics at sea.

"Optimization of Ship Routing," consisting of 107 pages, is available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Va. 22161. The order number is PB-286215/AS and the price is \$5.50.

### Veritas Guide Shows Docking Facilities For 200,000-DWT Ships

Now available from Bureau Veritas at London is a third edition of its very useful English language handbook entitled "Docking Facilities for Ships over 200,000 Tonnes Deadweight." The previous edition appeared in 1975.

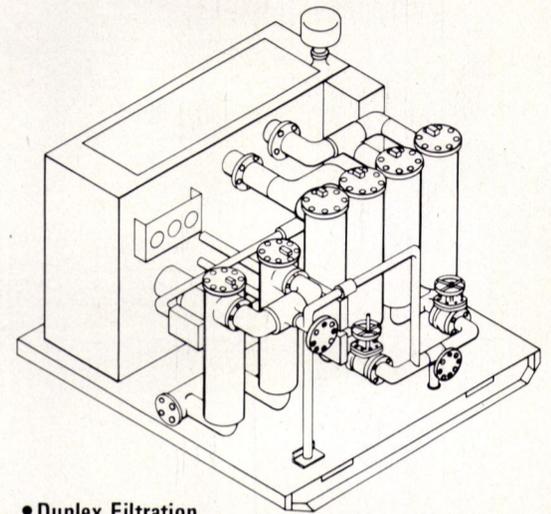
Two pages are devoted to each docking facility, and the particulars are given in tabular form for which there is a clear explanatory key at the beginning of the book. In most cases there is also a good aerial photograph showing the dockside cranes, proximity of repair shops, access roads, etc. The technical details given of each docking facility include the type of blocks and whether these are fixed or movable longitudinally or transversely; the number of rows of blocks; and their normal transverse and longitudinal spacing.

Full communication particulars are given for each establishment with addresses, telephone and telex numbers, etc.

The book is completed with details of docks under construction.

The book is available free, upon request, from Bureau Veritas, Ocean House, 24-25 Great Tower Street, London EC3R 5AQ, England.

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Handy auxiliary pump for regular or emergency pumping of liquids from ballast, bilge, cargo spaces and tanks. Just attach hose from fire main and lower eductor into space to pump large quantities of liquid quickly and easily.

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## MARITIME REPORTER AND ENGINEERING NEWS

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# How much of your hopper barge fleet is obsolete?

How much of your fleet is ten years old or older? How much is fifteen years old or older?

Why not take a few minutes and determine the average age of your fleet. The results might surprise you.

Those ten- and fifteen-year anniversaries are important dates. Here's why. Generally, maintenance records will show a heavy increase in annual costs at the ten-year mark, and an even more substantial increase at the fifteen-year mark.

What kinds of substantial costs? It could be side damage on the hull at the wind/water line. Or it could be years of service beginning to take their toll on slopesheets and coaming.

And rising maintenance costs aren't the only cost increases you face.

The cost of new barges is increasing, too. With the cost of steel and the other materials continuing to rise, the most economical decision would be to replace obsolete barges *now*.

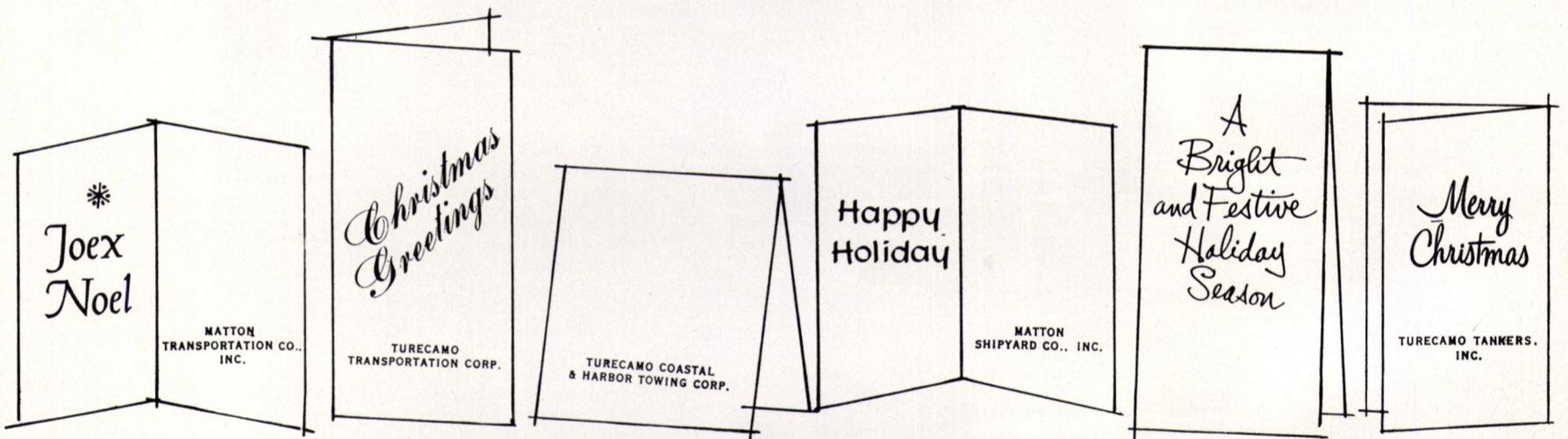
And when those replacements are Jeffboat-built barges, you're getting heavier, better constructed, truly-crafted vessels that will deliver extra years of profitable service.

Number of barges	Year built	Age	Percent of total fleet

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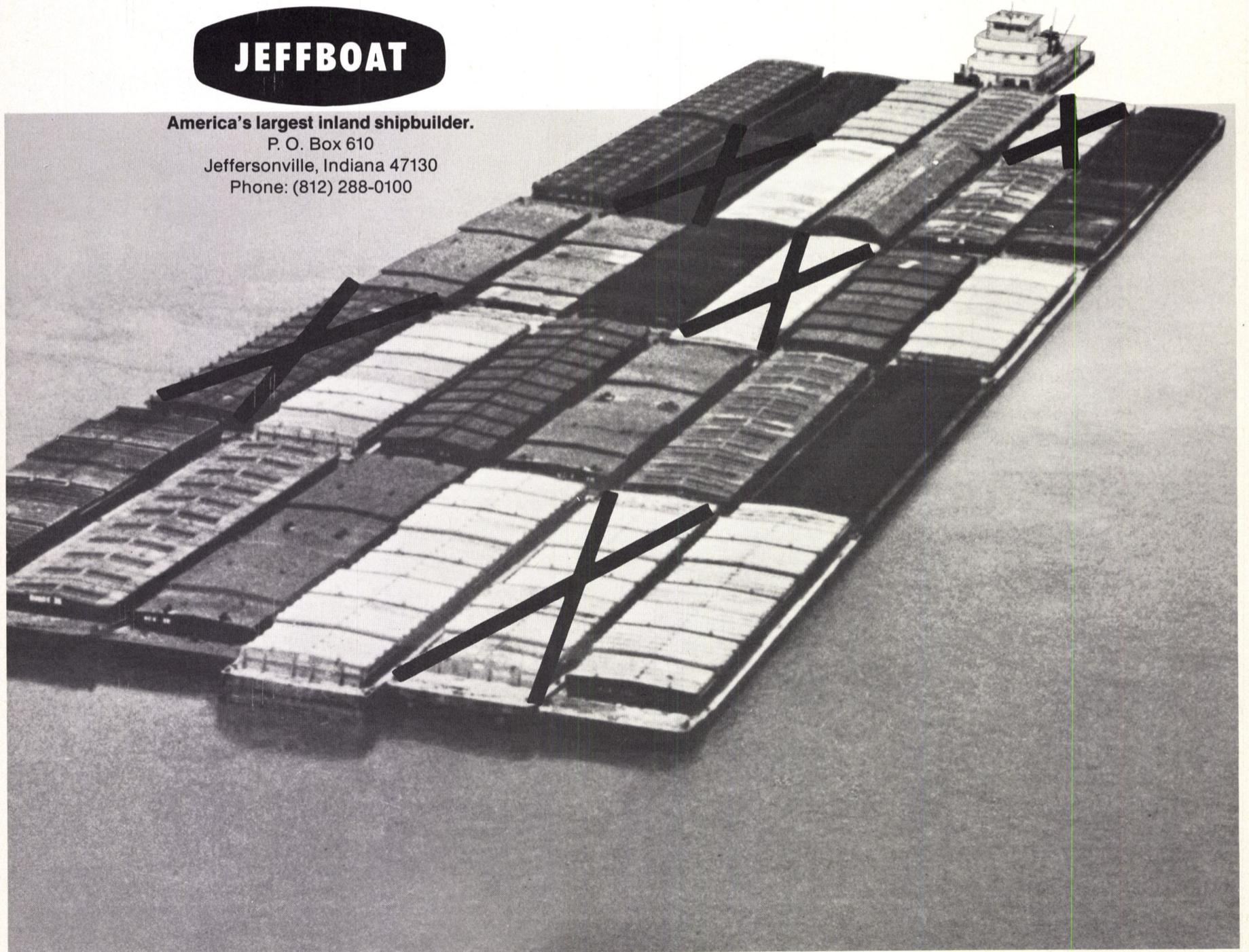
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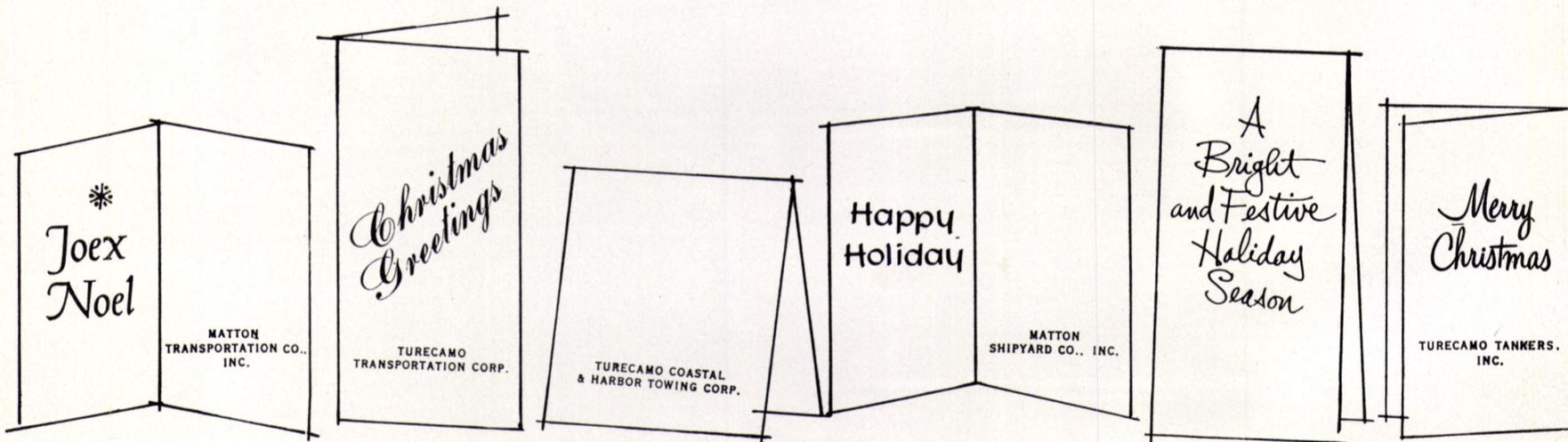
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### J.J. Henry Co., Inc. Promotes Victor Chen

The appointment of **Victor Yih-Yung Chen** to the position of head of the Scientific Department in the Portsmouth, Virginia Production Division was announced recently by **Richard R. Hopkins**, assistant vice president of J.J. Henry Co., Inc., Moorestown, N.J.



Victor Yih-Yung Chen

In his new capacity, Mr. Chen will direct engineering calculations and analysis efforts within the Portsmouth Division, which specializes in developing detailed working plans and calculations for naval and commercial shipyards.

Mr. Chen has been employed in the Scientific Department of the J.J. Henry Co.'s Moorestown Division since 1974. Since that time, he has participated in all phases of the tasks normally associated with the scientific efforts, and has gained familiarity with almost every commercial and military ship type.

He graduated from the University of Michigan in 1973 with a master's degree in naval architecture, after receiving his bachelor's degree in naval architecture and marine engineering from the Taiwan Provincial College of Marine and Oceanic Technology. Mr. Chen is a member of The Society of Naval Architects and Marine Engineers, and the American Society of Naval Engineers.

### Depth Sounders For Fishing Described In Raytheon Brochure

A new six-page brochure on the Raytheon line of Fathometer depth sounders for fishing is now available.

In addition to complete specifications on six of the most popular recording, flashing and digital sounders, the brochure also provides information on the principles of depth sounder operation and a buyer's guide to important features. It also gives an explanation of the tests that marine electronic equipment undergoes to assure reliable operation free from the hazards of temperature extremes, moisture, corrosion, shock and constant vibration.

Copies of the brochure are available by writing to **Stanley Clark**, 676 Island Pond Road, Manchester, New Hampshire 03103.

### Genstar And British Shipbuilders To Bid For CAF Patrol Frigates

Genstar Limited, Suite 4105, One Place Ville Marie, Montreal, Canada, announced that it has recently concluded an exclusive agreement with British Shipbuilders whereby the two organizations will work together in the preparation of a proposal for the

design and acquisition of six patrol frigates of the latest design for the Canadian Armed Forces.

British Shipbuilders is the public corporation which comprises all the major shipbuilders in the United Kingdom, excluding Northern Ireland. The constituent groups have designed and built many warships for other nations in recent years and, in conjunction with the British Ministry of Defence, have been responsible

for the design and construction of all warships for the Royal Navy.

Genstar Limited is a diversified operating company which manufactures cement, building materials, chemicals and fertilizers, and is engaged in housing, land development, commercial property development and management, construction, tug and barge transportation, shipbuilding and ship repairs, financial services and venture capital investment.

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With B.F. Goodrich Cutless® rubber bearings there's no oil seal to fail, no lube oil to seep out and cause pollution. The water under your keel lubricates the Moffitt-designed Cutless bearing. Fresh water or salt, clear or sand-filled—it makes no difference.

An exclusive "Water Wedge" design keeps a full flow of low-friction water moving through water grooves



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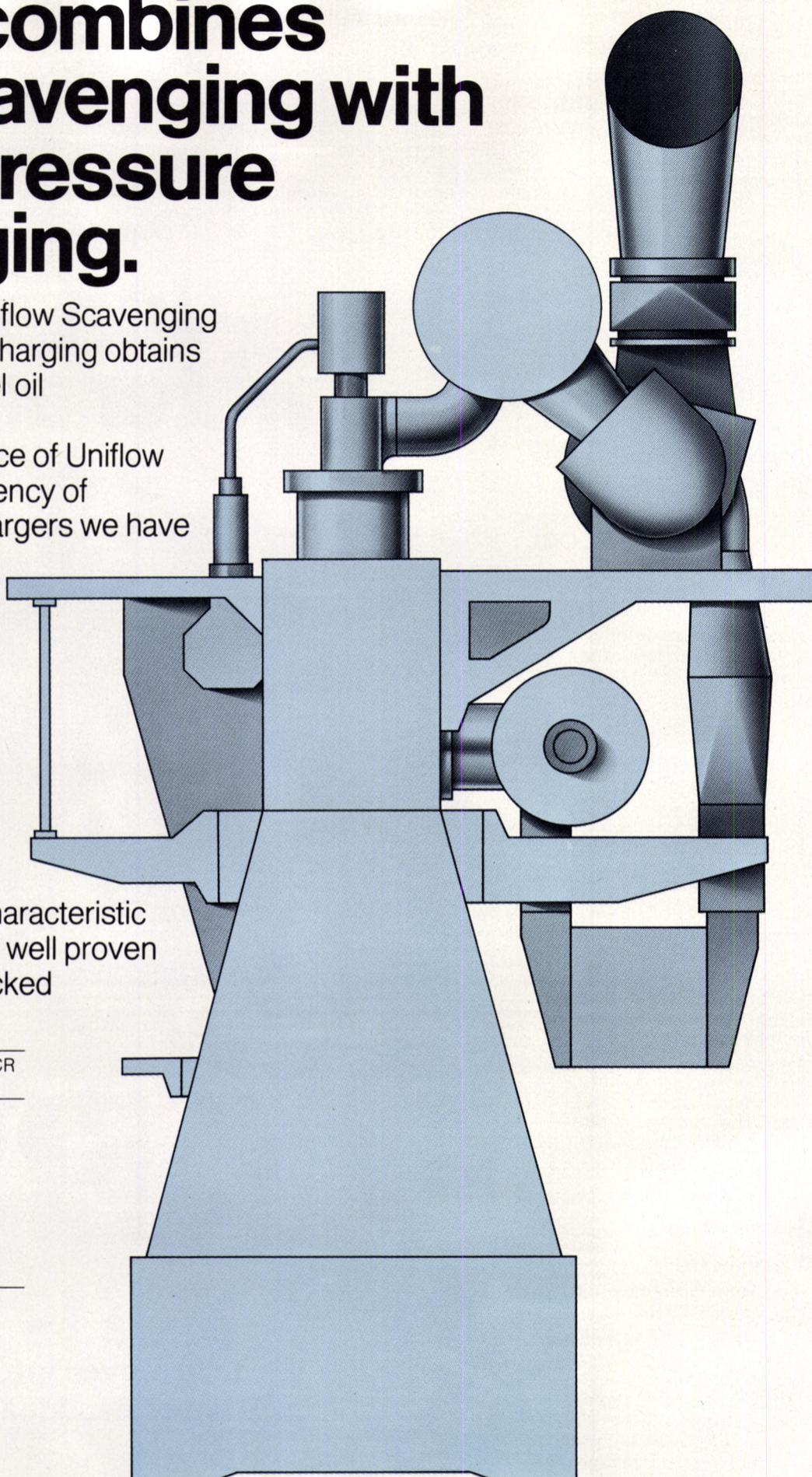
# Now B&W combines Uniflow Scavenging with Constant Pressure Turbocharging.

Our combined system of Uniflow Scavenging with Constant Pressure Turbocharging obtains a further reduction of 5% in fuel oil consumption.

By marrying the low resistance of Uniflow Scavenging with the high efficiency of the new generation of turbochargers we have once again improved fuel economy.

We have altered the timing of the exhaust valves - added an exhaust gas receiver and a small auxiliary blower to be used at loads below 50% - obtaining remarkable fuel saving in the time tested B&W K/L-GF engines.

Yet these engines keep all characteristic design features, and use all the well proven B&W K/L-GF components, backed by millions of service hours.



Engine Type	Fuel Oil Consumption at MCR	
	g/BPh	g/kWh
L90GFC	141	192
L80GFC	142	193
L67GFC	143	194
L55GFC	141	192
L45GFC	144	196
K90GFC	144	196
K80GFC	145	197
K67GFC	146	199
K45GFC	148	201

Inlet air temp. 20°C Scavenging air temp. 30°C  
 Barometric pressure 1.013 bar  
 Calorific value of fuel 10250 Kcal/kg  
 Allowance ±3%

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BATES 4657

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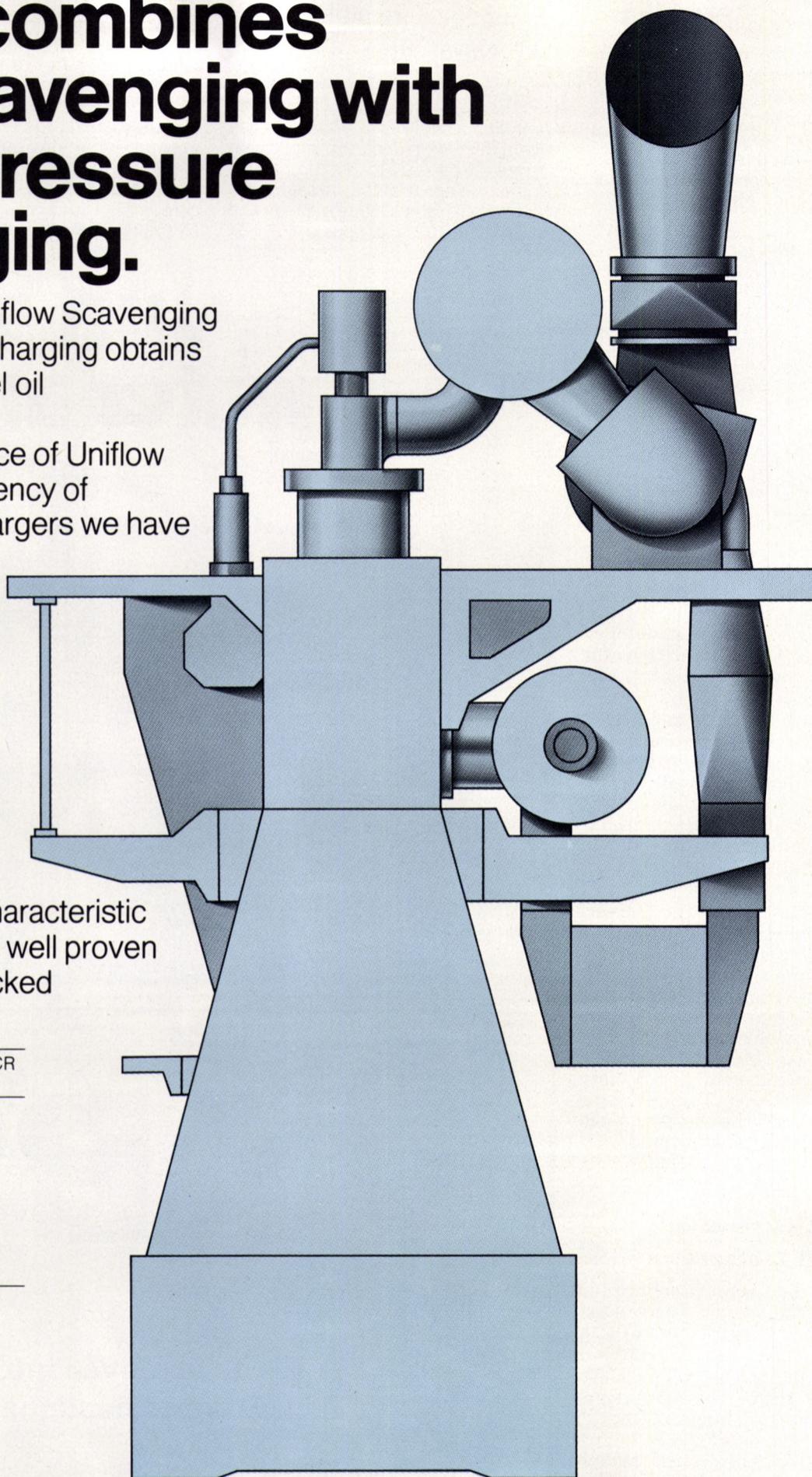
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K80GFC	145	197
K67GFC	146	199
K45GFC	148	201

Inlet air temp. 20°C Scavenging air temp. 30°C  
 Barometric pressure 1.013 bar  
 Calorific value of fuel 10250 Kcal/kg  
 Allowance ±3%



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BATES 4657

# 1978 SNAME Annual Meeting Cites Role In Maritime Industry Progress

The 86th Annual Meeting of The Society of Naval Architects and Marine Engineers, held at the New York Hilton Hotel in November, brought together the leaders in shipbuilding and ship operation, not only from the United States but worldwide. The wide ranging technical papers presented during the three-day meeting have added considerable knowledge in the fields of ship design, construction and operation.

**Robert T. Young**, who will have completed his term as president of the Society at the end of this year, presided over the business, technical and social meetings. In his annual address, Mr. Young stated that there has become a more positive sentiment on the part of the public and the government towards the marine industry and, in particular, in the area of energy-related marine activity.

Elaborating on this theme, he said, "The harnessing of energy is one of the pillars upon which this nation's industrial greatness and advanced standard of living have been built and for this, credit must go in part to the maritime industry for making fuels so accessible. Without ships to transport it, without drilling units to explore and recover it, and without all the other peripheral marine vessels, equipment and activities, this country's energy supply would be insufficient to say the very least.

"We all know the integral position the maritime industry holds in the energy life-line of the United States and if the demand for petroleum and other fuel sources continues unabated, which it will by all esti-

mations, this demand can only be fully satisfied through a vigorous maritime industry.

"This means deepwater terminals to receive VLCCs which will allow the movement of petroleum products onto our shores more efficiently and economically; it means augmented offshore drilling to reduce dependency on foreign petroleum supplies; it means accelerated development of alternate energy sources from the sea; it means increased acceptance of liquefied gas vessels and terminals, and it means the fostering of all other marine activities related to exploration, extraction and transportation of energy sources.

"Though in the past, the public and government have been rather torpid in their willingness or ability to appreciate these necessities, that mood appears to be changing. Increases of government action and public endorsement suggest an increasing recognition and confidence that the maritime industry is able to build sophisticated structures with the assurance of minimum risk to life and littoral."

Mr. Young also pointed to the recent announcements from several companies pertaining to the modernization and additions to their containership and ro/ro fleets and the ordering of eight new dry-bulk carriers in a U.S. yard as signs of renewed vigor in the shipbuilding industry.

During the business sessions of the Society, **Lester Rosenblatt** was elected president of the Society. He will commence his two-year term as president on January 1, 1979. Mr. Rosenblatt is chairman of the board and



Newly elected officers of the Society (left to right), **Robert Axelrod**, treasurer, **Lester Rosenblatt**, president for a two-year term beginning January 1, 1979, and **Robert G. Mende**, secretary and executive director.

president of M. Rosenblatt & Son, Inc., a well-known firm of naval architects and marine engineers with main offices in New York City. A Fellow of the Society, Mr. Rosenblatt's contributions to the organization have been steady and strong. He has served on the Executive Committee, and has been chairman of the Membership Committee since 1962. He also has been chairman of the Society's New York Metropolitan Section and has authored several technical papers.

**Charles W. Robinson**, vice-chairman of the board and a member of the Executive Committee of Blyth Eastman Dillon & Co., Incorporated, was the speaker at the Annual Banquet. From 1964 until 1974, Mr. Robinson was president of the Marcona Corporation. At that company he perfected the system that handles iron-ore slurry aboard special ocean carriers. Just prior to the Banquet, he returned from an official mission of U.S. business executives sponsored by the Department of State to Southeast Asia.

## Technical Sessions

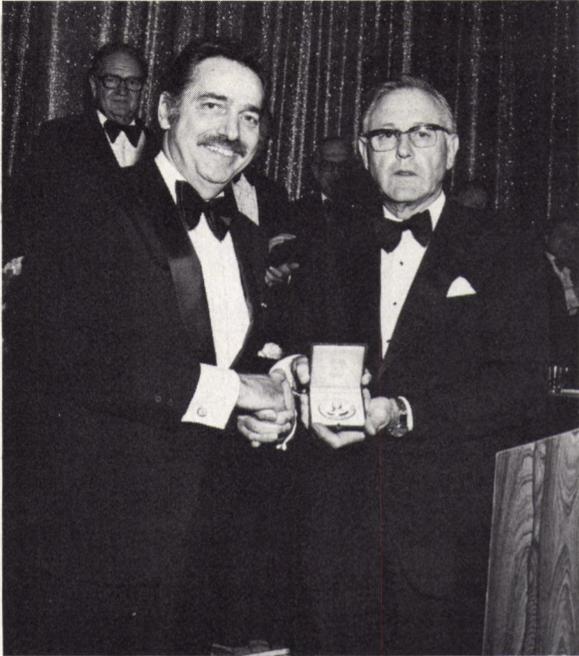
A total of 14 papers were presented during the technical sessions at the Annual Meeting. There was literally "something for everyone," from highly mathematical treatises on ship motions and propeller-blade loading which satisfied the most ardent "integral chaser" to some interesting ship descriptions of the modern so-called heavy-lift ships and two new barge carriers for the Soviet Union being built in Finland.

Structural design and fabrication were covered by a paper on aluminum welding and appurtenant distortion, as well as papers on the effect of hull-girder stiffness varia-

(continued on page 10)



DISPLAY OF PHOTOGRAPHS illustrating the technical papers in the registration area is viewed by members **Alex Stavovy**, **Samuel Morse** and **Norman Brubaker** (from left).



John J. Nachtshiem (left), Assistant Administrator for Operations at the U.S. Maritime Administration, was this year's recipient of the David W. Taylor Medal from Robert T. Young, president of the Society.



Donald A. Holden (left), past president of the Society, presents the Vice Adm. E.L. Cochrane Award to John R. Kane for his paper "The Speed of the S.S. United States." Both were instrumental in the building of that great ship.



Rear Adm. W.M. Benkert (left), USCG (ret.) and new president of AIMS, is awarded the VAdm. "Jerry" Land Medal by James J. Henry, past president of Society.



ANNUAL BANQUET, the Society's 86th, with president Robert T. Young presiding.

### SNAME Annual Meeting—

(continued from page 9)

tion on ship structural performance, and on the development and application of a computer-controlled frame bender. The structural papers also included a description of some of the most interesting developments of the past two years in using prestressed concrete in the ocean.

Marine engineers showed a great deal of interest in the paper analyzing a high-power, water-cooled electric propulsion system, and the more adventurous among the members were pleased with a report and paper on the 1977 Arctic probe of the Canadian Coast Guard icebreaker CCGS Louis S. St. Laurent.

The authors brought a wealth of experience in naval architecture and marine engineering to the meetings and represented private industry, the government and academia.

The speakers included the well-known hydrodynamicist Michael K. Ochi of the David W. Taylor Naval Ship Research and Development Center. The papers dealing with structures were partly authored by Professors Masubuchi and J. Harvey Evans of Massachusetts Institute of Technology and Ben C. Gerwick Jr., professor of civil engineering, University of California at Berkeley. Companies represented among the authors included Westinghouse Electric Corporation's D. Greene and C.J. Mole and Sun Shipbuild-

ing's Eugene Schorsch and Richard Bicicci.

The authors from overseas included A.M. Kracht from the VWS Berlin Model Basin, Berlin, Germany and four from the well-known Finnish shipyard Valmet.

The papers were presented simultaneously in morning and afternoon sessions in the hotel's Trianon and Mercury Ballrooms. Written and spontaneous discussions were presented after each paper.

The Society will publish all the papers, together with the discussions and author's closures in the next issue of the Transactions.

### Awards

An array of prizes and awards were presented to a number of prominent members of the Society at ceremonies held during the Annual Meeting.

At the Annual Banquet, held in the hotel's Grand Ballroom, medals were presented to John J. Nachtshiem, assistant administrator for operations, U.S. Maritime Administration; Rear Adm. William "Mike" Benkert, USCG (ret.), president of the American Institute of Merchant Shipping, and Dr. Louis Landweber, professor and research engineer, Institute of Hydraulic Research, University of Iowa.

The David W. Taylor Medal, which is given every year for "notable achievement in naval architecture and marine engineering," was awarded to Mr. Nachtshiem. He is a 1947 graduate of Webb Institute of Naval Architecture and spent nearly 15 years with the Navy Department. He joined the Maritime Administration in 1962 and has risen to assistant administrator for operations, reporting to the Assistant Secretary of Commerce for Maritime Affairs.

Admiral Benkert, who received the Vice Admiral "Jerry" Land Medal for "outstanding accomplishment in the marine field," has just this year completed an illustrious career with the U.S. Coast Guard, spending the past eight years as chief, Office of Merchant Marine Safety. During his tenure many significant international agreements concerning the safety of ships were made to the benefit of all.

The Davidson Medal, awarded every two years, went to Dr. Landweber, one of the country's foremost hydrodynamicists and experts on fluid flow. His first technical paper was written in 1932 and since that time he has written more than one hundred papers—some of which are of prime technical importance. The Davidson Medal is awarded for "outstanding scientific accomplishment in ship research."

(continued on page 11)



Dr. Louis Landweber (right), famed hydrodynamicist, receives the Davidson Medal from Phillip Eisenberg (left), past president of the Society.



SNAME's past presidents pose with president-elect Lester Rosenblatt, (left to right) James J. Henry, Rear Adm. L.V. Honsinger, USN (ret.), Mr. Rosenblatt, Robert T. Young, president, Phillip Eisenberg, and Daniel Strohmeier.

#### SNAME Annual Meeting—

(continued from page 10)

At the Society's President's Luncheon the following awards were presented.

The "Captain Joseph H. Linnard Prize" for 1978 was presented to **Geoffrey G. Cox** and **Adrian R. Lloyd** for their paper, "A Hydrodynamic Design Basis for Navy Ship Roll Motion Stabilization." This prize is given to the author or authors of the best paper contributed to the Transactions of the Society at its Annual Meeting the preceding year.

The "Vice Admiral E.L. Cochrane Award" for 1978 for the best paper delivered before a Section of the Society, was presented to **John R. Kane** for his paper, "The Speed of the S.S. United States," delivered at the Hampton Roads Section on November 3, 1977.

The "Graduate Paper Honor Prize" for 1978 was awarded to **M.S. Triantafyllou** for his paper, "Computer Aided Propeller Preliminary Design Using the B-Series," delivered at the New England Section on September 23, 1977.

The "Undergraduate Paper Honor Prize"

for 1978 was awarded to **James Roberts** for his paper, "Preliminary Design of a 43m Wetfish Stern Trawler," delivered at the Eastern Canadian Section on March 14, 1978.

Certificates of Appreciation were awarded to **Everett A. Catlin** for his outstanding leadership as chairman of the ad hoc Committee on Bylaws, and to **Judith Harding** for loyal and devoted service to the staff of the Society 1965-1978. She will retire at the end of this year.

At the President's Luncheon Golden Award 50-Year Membership Certificates were presented to **John A. Livingston**, **Warner Lumbard**, **George A. Mattucci**, **Lloyd E. Oneal** and **Knud Sehested**.

In closing President **Young** stated "the SNAME is a wonderful and productive organization. It has seen some lean times but with fortitude it has always seen these times overcome . . . it has been a privilege to serve SNAME as president. I greatly appreciate your support during the past year in advancing the goals of SNAME and I urge your continued participation in the years ahead."



PRESIDENT OF THE SOCIETY, Robert T. Young, addresses the President's Luncheon on Thursday, November 16.

## American Bureau Of Shipping Moves Its Headquarters To 65 Broadway In New York City

The American Bureau of Shipping (ABS) has announced that its international headquarters are now located at 65 Broadway, New York, N.Y. 10006. The telephone of ABS headquarters is (212) 440-0300.

"The new headquarters," said **Robert T. Young**, chairman of the board, "will enable ABS to consolidate its operations in one location, and thus provide even better service to the marine industry." Because of growth in post-World War II years, ABS and its subsidiaries leased space in several lower Manhattan buildings near its previous headquarters at 45 Broad Street.

ABS acquired 65 Broadway, which is near Wall Street in lower Manhattan, in 1977. The 21-story building, formerly the headquarters of the American Express Company, has been completely renovated, and incorporates energy-saving double-pane windows, and air-conditioning and heating systems.

"This new facility," Mr. **Young** stated, "reaffirms the 116-year-old commitment of ABS to New York."

The American Bureau of Shipping is an international ship classification society that establishes standards, called "Rules," for the design, construction, and periodic survey of merchant vessels and other marine structures. ABS has exclusive offices in 87 countries around the world.

## NAGESCO To Represent Hagglands/Stal-Laval, Inc.

AB Hagglund & Soner and STAL-LAVAL, Inc. announce that they have recently executed an agreement with North American Gantry & Equipment Servicing Co. (NAGESCO) for service representation on the Canadian west coast.

NAGESCO will henceforth be responsible for servicing Hagglund electrical slewing cranes and gantry cranes by Hagglund-trained service engineers. They will also be responsible for maintaining an inventory of Hagglund spare parts. An authorized Hagglund service station will be operational in Vancouver, British Columbia, and service engineers will be available on a 24-hour basis.

By appointing NAGESCO as their agents on the Canadian west coast, Hagglands and STAL-LAVAL, Inc. aim to further improve the service to their customers in that area.

AB Hagglund & Soner, Sweden, is one of the world's leading designers and manufacturers of cargo-handling systems. Represented in the United States and Canada by STAL-LAVAL, Inc., Elmsford, N.Y., it has service centers throughout the world.

## Screw Pump Brochure Available From Allweiler

A complete line of two and three rotor screw pumps is being introduced by Allweiler Pump Inc. A four-page brochure highlights applications of low-pressure, medium-pressure, and high-pressure screw pumps available in horizontal and vertical configurations. The Allweiler series can be used with a wide variety of fluids. Lubricating and non-lubricating, abrasive and aggressive fluids can be handled with viscosities up to 4,500,000 SSU, and pressures up to 3,000 PSI.

For a free copy, contact Allweiler Pump Inc., 1801G Hicks Road, Rolling Meadows, Ill. 60008.

## Ship Structure Committee Publishes Two Reports On Strength Of Materials

The Ship Structure Committee has recently published two new reports of interest to naval architects and engineers who are involved in the sciences of fracture mechanics and strength of materials.

SSC-275, "The Effect of Strain Rate on the Toughness of Ship Steels," develops data for a variety of steels at various loading rates and temperatures to assist in determining the resistance of these steels to crack initiation and propagation.

SSC-276, "Fracture Behavior Characterization of Ship Steels and Weldments," is a companion

report to SSC-275. This report provides additional experimental test data for ship steels and weldments from a series of large-scale tests typical in configuration and design to ship hull construction and a variety of service.

The Ship Structure Committee is an interagency committee composed of representatives from the Naval Sea Systems Command,

Maritime Administration, U.S. Coast Guard, Military Sealift Command, U.S. Geological Survey, and the American Bureau of Shipping. The purpose of the Committee is to conduct an aggressive research program which will, in the light of changing technology in marine transportation, improve the design, materials and construction of the hull structure of ships and other marine structures. This is accomplished by an extension of knowledge in these fields for the ultimate purpose of increasing the safe and economic operation of all marine structures.

For copies of these reports, an index of past reports or further information, contact: Secretary, Ship Structure Committee, U.S. Coast Guard (G-M/82), 400 Seventh Street, S.W., Washington, D.C. 20590.

### Kenneth M. Jones Elected President Offshore Logistics, Inc.

At its regular board meeting following the annual shareholder's meeting in November, Offshore Logistics, Inc., Lafayette, La., announced that **Kenneth M. Jones** had been elected president of the corporation. **Burt H. Keenan** will remain chairman of the board and chief executive officer.

Mr. Jones, in addition to serving as president, will have primary responsibility for the company's aviation operations. Offshore Logistics operates a fleet of over 116 helicopters and fixed wing aircraft in support of the oil and gas industry throughout the world. The company fleet will soon be expanded with the delivery of 14 Sikorsky S-76 helicopters, including the first three production aircraft, during the next year.

Mr. Keenan, in addition to his duties as chief executive officer, will assume primary responsibility for the company's Marine Division, which operates 120 vessels in domestic and foreign service to the oil industry. The Marine Division has experienced rapid growth during the past year in both size and geographical distribution. Offshore Logistics has recently added an additional \$34 million in marine equipment with the completion of a major vessel construction program and acquisition of six vessels in the United Kingdom. In addition to expanding operations in the North Sea, the company has greatly increased activity in South America, the fastest growing area of offshore exploration activity. The company has also commenced operations on the East Coast of the United States, with the beginning of exploration activity in this area.

The board of directors also declared the regular quarterly dividend of 12 cents per share payable December 15 to shareholders of record December 1.

## MEMO FROM MARSH & MCLENNAN

### The river keeps changing all the time. The same goes for marine insurance.

There's one thing you learn quickly when you're involved in barge traffic: the river is full of surprises. As soon as you start taking it for granted—watch out! Much the same can be said about marine insurance. On the surface, it may appear simple and serene—but watch out!

### Resist the temptation to coast along.

Continuing insurance programs "the same as always" might be easy—but it could be costly. There may be a better way. Start looking at your needs from a new angle and you may be surprised at what you find.

Marsh & McLennan would like to help you. We know our way around the inland waterways business because we've been in it for over 100 years. Maybe you didn't know it, but we handle more marine business than any other insurance broker.

If all this experience has taught us anything it's this: insurance premiums should not be an expense you pay and kiss good-bye. This cash is a management tool, to be applied in the way it can do the most good for the organization.

By approaching a problem with this in mind we are able to design new programs that may take advantage of self-insurance or that can return a portion of the premium where losses are less than projections. Fresh, bright, innovative ideas that *work for*



you, not just *take from* you.

### We're near when you need us, too.

And when it comes to fast service, we have a network of offices up and down the rivers, from the headwaters to the Gulf. When the unexpected happens, we're on the spot in a hurry.

We think you'll find many advantages in dealing with the world's leading insurance broker. Not only are our global resources applied to your needs, but our offices everywhere provide the contact points to put them at your disposal.

*If you'd like to learn more about how we can help you in any*

*area of marine insurance, write Jim Wilmers, Marsh & McLennan, Incorporated, 120 E. 4th St., Suite 520, Cincinnati, Ohio 45202. Phone: (513) 721-5557.*

*Marsh & McLennan river insurance specialists are located in key cities throughout the country.*



**When it comes to insurance, come to the leader.**

# Marsh & McLennan

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## El Paso Natural Gas Names Don R. Parks

Don R. Parks of Houston has been named regional gas supply manager for El Paso Natural Gas Company and assigned to the Houston, Texas, office, the company announced.



Don R. Parks

Mr. Parks was formerly with Lone Star Gas Company in Dallas, Tyler, and Houston. He is a member of the Houston Natural Gas Men, and of the North Texas Gas Society.

El Paso's recently established gas purchase office in Houston seeks to acquire both offshore and onshore gas supplies in the Gulf Coast area.

Mr. Parks will be located in the LNG Tower, 2919 Allen Parkway, Houston, Texas 77001.

El Paso Natural Gas also has regional gas purchase offices in Midland, Texas, and Denver, Colo.

## J. Ray McDermott & Co. Elects Eight Officers

C.L. Graves, chairman of the board and chief executive officer of J. Ray McDermott & Co., Inc., has announced the election of eight officers of the company to positions which reflect their primary functions, and recognize the realignment of duties resulting from the combining of the McDermott corporate staff with that of The Babcock & Wilcox Company, a wholly owned subsidiary.

Robert C. Bassett has been elected vice president, Materials & Transportation; Edwin J. Dressel has been elected senior vice president, Equipment & Materials Group, McDermott Operating Unit; John A. Dupy has been elected vice president, Public Affairs; John A. Lynott has been elected vice president, Finance; Richard E. Woolbert has been elected vice president, Employee Relations; Charles F. Kraus has been elected controller, Tax Administration; Edmund A. Robidoux has been elected controller, and Robert A. Jolliff has been elected treasurer.

Messrs. Bassett, Dupy, Lynott, and Woolbert will report to James E. Cunningham, vice chairman of the board. Mr. Dressel will report to Robert K. Richie, president, McDermott Operating Unit. Messrs. Kraus, Robidoux and Jolliff will report to Mr. Lynott.

## LNG-LPG Conference Set For Houston, Texas November 13-16, 1979

The Seventh International Conference and Exhibition on LNG and LPG — Gastech 79 — will be held in Houston, Texas, from November 13-16, 1979. In choosing Houston, the organizers will bring Gastech to the natural gas capital of America, and the home of the nation's largest petroleum industry complex.

The venue will be the modern Albert Thomas Convention and Exhibit Center located in the heart of the city's business area and close to the headquarters' hotels — the Hyatt Regency and the Sheraton Houston.

More than 1,200 delegates, who are expected to register for the Gastech 79 Conference and the associated Exhibition of LNG and LPG technology, equipment and services, will occupy the 11,000 square meters of exhibit space in the Albert Thomas Center which

has ideal facilities for the most ambitious displays.

The content of the Conference program will continue to reflect the organizers' concern with both LPG and LNG matters—a unique feature of the Gastech meetings — and a provisional program is now being prepared for publication early in 1979. Authors wishing to contribute papers should contact the Gastech Secretariat, 2 Station Road, Rickmansworth, Herts WD3 1QP, England.

## He's a good reason to get 'blasted' in Savannah.



When Leon Martin sandblasts your ship he gets dynamite results.

Leon is a Leaderman in our Drydock Department. Which means he has two great qualifications.

He's experienced (27 years at Savannah). And can be rougher than blasting grit about getting a job done right.

That's the kind of spirit you find at Savannah. It's why we're the best yard to do your major conversions, scheduled drydocking, and voyage repairs.

Sure, we're also competitively priced. And blessed with a climate that lets us run full-bore all year. But without workers like Leon, our great prices and weather wouldn't mean doodly.

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**Sun Ship Awarded  
\$137.5 Million To Build  
Two Ships For Waterman**

Robert J. Blackwell, Assistant Secretary of Commerce for Maritime Affairs, U.S. Department of Commerce, has announced the award of a \$137,446,600 subsidized shipbuilding contract to Sun Shipbuilding and Dry Dock Co., Chester, Pa., for the construction

of two roll-on/roll-off container vessels. The ships will be built for Waterman Steamship Corporation, New York, N.Y., and employed in cargoliner service between the U.S. Gulf Coast and Northern Europe.

"The true value of this contract extends well beyond the impressive dollar value," Mr. Blackwell said. "It provides an economic lift for the hard-pressed American shipbuilding industry,

and will sustain thousands of jobs in the Philadelphia area and elsewhere.

"In addition, it calls for the construction of two ships of a type that fortifies U.S.-flag leadership in intermodal shipping, and strengthens our national defense capability," Mr. Blackwell added.

This modern ro/ro design, with self-contained stern loading ramp for wheeled vehicles, is particu-

larly well-suited for military operations. The ships also will have their own 30-ton container cranes and cargo elevators.

The two ships, scheduled for delivery in April and July 1981, will be the first to be built with Federal subsidy at Sun under the Merchant Marine Act of 1970. Each will require an estimated 1,170 man-years of direct shipyard employment, and sustain an equal amount of employment in the marine supply industries. Overall, the shipbuilding contract will provide approximately 4,680 man-years of work in American industry. In addition, each ship will be manned by a U.S. crew of 33.

Each of the vessels will have an overall length of 692 feet, a beam of 105½ feet, and a fully loaded draft of 33 feet. They will each have a carrying capacity of 23,500 deadweight tons, including a container capacity of 1,524 TEUs (20-foot equivalent units). The 32,000-horsepower ships will have a service speed of 20.9 knots.

The vessels are being built with the assistance of the Government's construction-differential subsidy program, which is designed to enable U.S. shipyards to reach cost parity with foreign competitors. The Maritime Administration will pay 48.85 percent of the cost of each vessel, plus \$786,500 per ship for certain national defense features to be incorporated in the design.

The Maritime Administration also awarded Waterman a 20-year operating-differential subsidy agreement to operate the vessels on Trade Route 21 (U.S. Gulf ports to ports in the United Kingdom, Republic of Ireland, and Continental Europe north of Portugal, including Scandinavian and Baltic ports and Soviet ports on the Barents Sea).

Waterman will employ four C4 breakbulk ships in this service until the ro/ros are completed. These breakbulk ships—to be operated under a use-hire agreement—will be traded in to MarAd under the CDS agreement, and will be placed in the National Defense Reserve Fleet when Waterman's two new ships are delivered.

**Bailey Joiner Issues  
Marine Furniture Pages**

Bailey Joiner Co., Inc. has prepared 118 individual pages of their complete line of marine furniture. Each depicts a different product with specifications.

Whether you require a single chair or enough furniture to outfit a complete ship, you may obtain any of these by writing the company at 74 Sullivan Street, Brooklyn, N.Y. 11231. Mention the products you are interested in and they will furnish the appropriate sheets, plus one that contains a list of every item in their line.

# CLEAR THE DECKS!

**FOR SAFETY** The Waukesha Pres-Vac HS-M High Speed Relief Valve (shown at left) provides positive protection from fire and explosion when installed on your ship's new or existing tank venting system. These Coast Guard approved valves are designed for closed-system operation. They safely and automatically —

- vent displaced hydrocarbon vapors at high velocity during tank loading operations
- prevent vacuum build-up during tank unloading operations
- equalize pressure differentials caused by temperature or atmospheric pressure changes during transport and storage

**FOR SPACE AND COST REDUCTION**

The unique construction of the Waukesha Pres-Vac M4 water-excluding vent check (shown at right) eliminates the ball and seal design of inverted check valves and —

- permits space saving installations
- provides unrestricted air flow for venting, with automatic sealing in all foul weather situations
- does not require costly 180° return

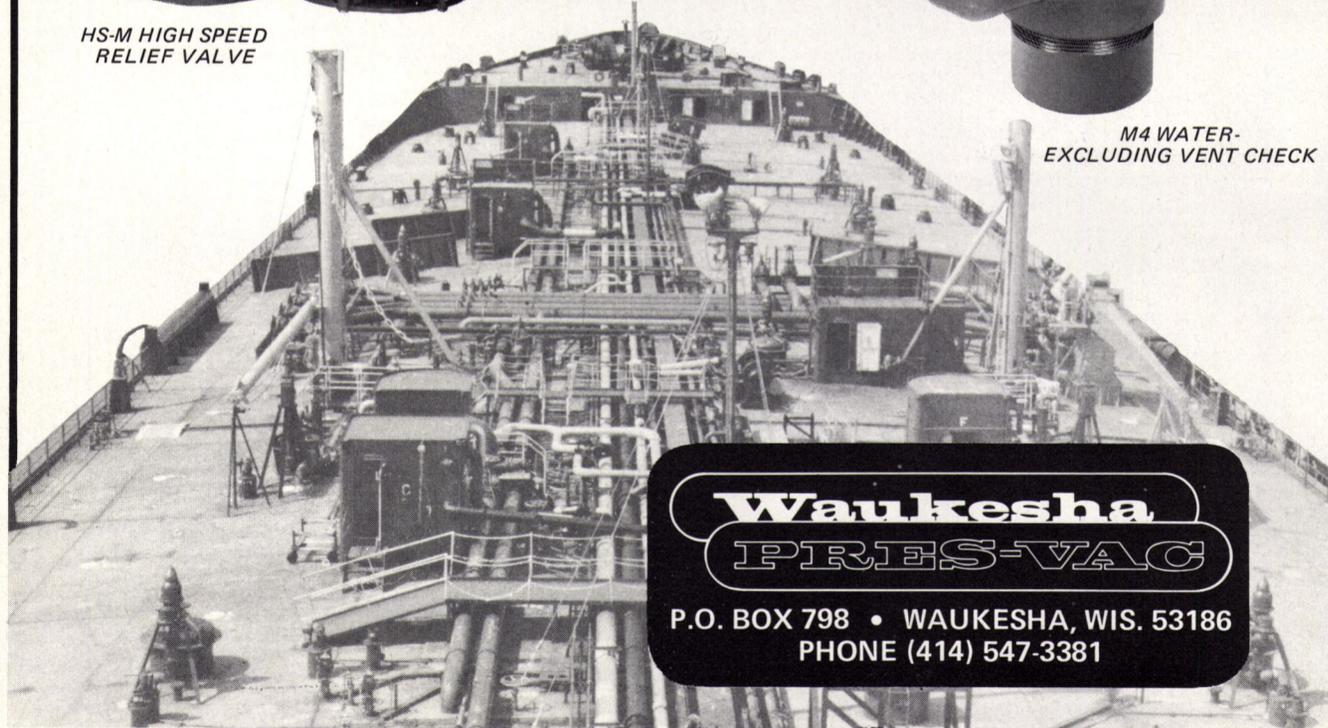


HS-M HIGH SPEED RELIEF VALVE

Both the HS-M and M4 are manufactured in a wide range of vent diameters and your choice of bronze, stainless steel or ductile iron. Also available is a complete line of vent valves, flame screens and ullage covers, all designed to help you 'Clear the Decks.' For all the details, call or write your Waukesha Pres-Vac representative today.

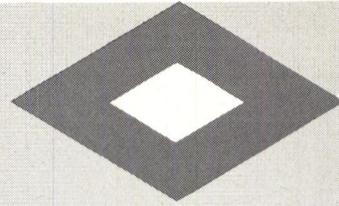


M4 WATER-EXCLUDING VENT CHECK



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- ◇ 24 hours a day operation.
- ◇ Experienced, dedicated shoreside staff.



The 265,000 dwt VLCC NEW YORK, built at Bethlehem Steel Corporation's Sparrows Point Shipyard, leaving for sea trials.

December 15, 1978

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## Halter Marine Delivers Supply Boat To Brazil

Halter Marine, Inc., New Orleans, La., has delivered the second supply boat of a three-boat contract to the nation of Brazil.

The 185-foot Ogum was built for H. Dantas Servicos Maritimos, S.A. of Rio de Janeiro for operations off the coast of Brazil, with Petrobras, the Brazilian state oil company.

The Ogum is 185 feet in length, with a 40 foot breadth and 14 foot depth. Her normal operating draft is 11.92 feet, and normal displacement is 770.63 long tons.



The new Brazilian-flag Ogum is powered by two EMD diesels developing 1,500 horsepower each at 900 rpm.

She is powered by two EMD 12-645 E6a engines developing 1,500 horsepower each at 900 rpm. Reverse/reduction gears are Reintjes WAV 1850 with a ratio of 3.455:1, and the vessel is equipped with two, four-bladed 90-inch stainless-steel propellers. Controls for her two stations are by Westinghouse.

The Ogum is equipped with four Smatco dry mud tanks with a total capacity of 4,000 cubic feet, and four liquid mud tanks with a capacity of 49,012 gallons. She has a fuel oil capacity of 104,134 gallons and can carry 3,486 gallons of lube oil. The new ship has a 120,742 gallon ballast capacity and can carry 37,060 gallons of fresh water.

Deck machinery includes a towing winch, anchor windlass, two capstans, two electro-hydraulic tuggers and a 5-foot-diameter stern roller with towing guides.

Auxiliary machinery includes two General Motors 98-kw generators and two 98-kw switchboards. The vessel is equipped with a 13-point alarm system, and cooled by Carrier air-conditioning and heated by a Lennox heating system. Also onboard are two Quincy air compressors, a Deming sanitary water system, fire protection system, and fully equipped modern galley.

Communications and navigation equipment include VHF and single sideband radios, Decca radars, a Ritchie magnetic compass, Benmar direction finder and Sperry gyro-compass and autopilot.

The Ogum is built to Inter-Governmental Maritime Consultative Organization (IMCO) requirements, and carries a tonnage certificate under 400 gross tons. She is U.S. Public Health approved and is American Bureau of Shipping classed A-1, Maltese Cross, full ocean towing, AMS circle "E", and carries Panama Canal and Suez Canal admeasurement certificates.

The new Brazilian-flag vessel was built at Halter's Moss Point, Miss., Division, one of 10 shipyards owned and operated by Halter Marine in the Southeastern United States. Halter is the world's largest builder of supply

## Port Weller Awarded \$10-Million Conversion

A \$10-million contract to convert the St. Lawrence Navigator from an oceangoing to a Great Lakes bulk carrier has been awarded to Port Weller Dry Docks by Upper Lakes Shipping Ltd. of Toronto, Canada. The work, to be known as Hull 66, will begin in August 1979, and will be completed at the start of the 1980 shipping season.

A new bow and cargo-hold section will be fitted to the existing engine room and accommodation spaces to bring the Navigator up to the maximum Seaway size for transiting the Welland Canal.

The new 630-foot bow and cargo-hold section will be typical of a Great Lakes bulk carrier. It will have six cargo holds, 16 cargo hatches, and will be fitted with conventional side tanks.

The converted dimensions will be length overall, 730 feet; length between perpendiculars, 708 feet; breadth, molded, 75 feet 8 inches; depth, molded, 40 feet 5 inches; draft, extreme, 27 feet 7 inches, and deadweight at summer draft, 28,840 tons.

A sister ship, the St. Lawrence Prospector, will undergo a similar conversion at St. John Shipbuilding and Dry Dock. Both ships were purchased by Upper Lakes for use as oceangoing bulkers in 1975, and are being withdrawn from ocean service.

## Marland Publishes New Brochure On Marine Sanitation Systems

A new comprehensive product line brochure is now available from Marland Environmental Systems, Inc. Marland is one of the leading manufacturers of physical/chemical sewage treatment systems for shipboard operation. The Marland line, as described in the brochure, provides complete answers to all marine sanitation needs. Marland Sani-Systems® include both compact and large-scale Type II MSDs. These physical/chemical systems comply with U.S. Coast Guard and proposed IMCO pollution control standards. Along with the Sani-Rator® Oxidizing Toilet (Type III), Marland's Sani-Systems meet the requirements of vessels of almost every size. The brochure also presents a selection of equipment for the dockside servicing of pleasure boats.

Free copies of the new brochure may be obtained by writing to Bob Daniels, Marland Environmental Systems, Inc., North Main Street, Walworth, Wis. 53184.

## Evergreen United Corp. Announces Four Promotions

Four promotions have been announced at Evergreen United Corp., Long Beach, Calif., general agents for Evergreen Line's West Coast/Far East container service.

The announcements were made by Capt. Oden Rozen, president of Evergreen United.

Louis Mariner has been named manager, Port Services, for the U.S. West Coast. David Chiang has been promoted to West Coast sales manager.

Robert Summers, Seattle office manager, has been named manager of the Pacific Northwest for Evergreen United. Ed Bastian, recently named office manager in Portland, Ore., has also been promoted to assistant manager of the Pacific Northwest.

Each of these people has a history of service with Evergreen. Captain Rozen noted:

Coast required that these responsible and knowledgeable people grow with the company."

Evergreen Line's West Coast service serves the ports of Los Angeles, Seattle, Portland, and Oakland, and a full range of Far East ports as well.

## IMODCO Establishes Far East Marketing Office

IMODCO has opened a Far East marketing office situated in Shaw Towers, Suite 2109 on Singapore's Beach Road. Leonard K. Watts, transferred from Los Angeles, Calif. headquarters, has been named regional manager.

In making the announcement, Alfred W. Allchorn, senior vice president-marketing, said the new facility will insure quicker time response to inquiries and for more comprehensive coverage, cooperation and contact with present and potential customers of offshore marine terminal systems.

Heretofore, the marketing area which encompasses Southeast Area, Indonesia, the Southwest Pacific, the Western Pacific islands, Australasia and the subcontinent of India, Pakistan and Bangladesh, has been serviced out of the firm's Los Angeles headquarters.

Mr. Allchorn noted the Singapore office represents another step in company expansion. A Houston, Texas, office was established last year, and early this year physical space for both the headquarters and London, England, staffs were doubled.

Mr. Watts has a wide range of offshore construction experience and has supervised the installation of numerous mooring systems. He joined IMODCO in 1977 after four years with Hydrospace International. He majored in marketing at Sierra College and California State University San Francisco, and also was graduated from Commercial Diving Center, Wilmington, Calif.

IMODCO, a unit of AMCA International Corporation, has been a pioneer in the Single Point Mooring (SPM) terminal field since 1958, having constructed and installed 72 offshore terminals around the world.



**ADDITION TO CRESCENT FLEET** — The newest addition to the tugboat fleet of New Orleans, La.-based Crescent Towing & Salvage Co., Inc., the 2,400-hp tug Sandra Smith was placed in service in November at informal commissioning ceremonies in Baton Rouge. With the addition of the Sandra, the Crescent fleet numbers 16 modern tugs, eight of which are based in New Orleans and eight

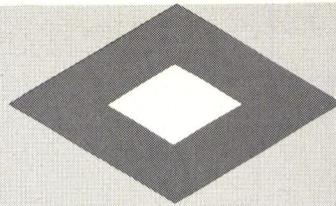
## Amerada Hess To Build Five Catug Units At

Title XI guarantee to aid in financing the construction of five integrated "Catug" tug / barge

Service speed will be 15 knots, under 18,200 horsepower. Gross tonnage will be 1,360 per tug, and

will be approximately \$49,665,000 for each vessel, or \$248,325,000 total.

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The 185-foot Ogum was built for H. Dantas Servicos Maritimos, S.A. of Rio de Janeiro for operations off the coast of Brazil, with Petrobras, the Brazilian state oil company.

The Ogum is 185 feet in length, with a 40 foot breadth and 14 foot depth. Her normal operating draft is 11.92 feet, and normal displacement is 770.63 long tons.



The new Brazilian-flag Ogum is powered by two EMD diesels developing 1,500 horsepower each at 900 rpm.

She is powered by two EMD 12-645 E6a engines developing 1,500 horsepower each at 900 rpm. Reverse/reduction gears are Reintjes WAV 1850 with a ratio of 3.455:1, and the vessel is equipped with two, four-bladed 90-inch stainless-steel propellers. Controls for her two stations are by Westinghouse.

The Ogum is equipped with four Smatco dry mud tanks with a total capacity of 4,000 cubic feet, and four liquid mud tanks with a capacity of 49,012 gallons. She has a fuel oil capacity of 104,134 gallons and can carry 3,486 gallons of lube oil. The new ship has a 120,742 gallon ballast capacity and can carry 37,060 gallons of fresh water.

Deck machinery includes a towing winch, anchor windlass, two capstans, two electrohydraulic tuggers and a 5-foot-diameter stern roller with towing guides.

Auxiliary machinery includes two General Motors 98-kw generators and two 98-kw switchboards. The vessel is equipped with a 13-point alarm system, and cooled by Carrier air-conditioning and heated by a Lennox heating system. Also onboard are two Quincy air compressors, a Deming sanitary water system, fire protection system, and fully equipped modern galley.

Communications and navigation equipment include VHF and single sideband radios, Decca radars, a Ritchie magnetic compass, Benmar direction finder and Sperry gyro-compass and autopilot.

The Ogum is built to Inter-Governmental Maritime Consultative Organization (IMCO) requirements, and carries a tonnage certificate under 400 gross tons. She is U.S. Public Health approved and is American Bureau of Shipping classed A-1, Maltese Cross, full ocean towing, AMS circle "E", and carries Panama Canal and Suez Canal admeasurement certificates.

The new Brazilian-flag vessel was built at Halter's Moss Point, Miss., Division, one of 10 shipyards owned and operated by Halter Marine in the Southeastern United States. Halter is the world's largest builder of supply vessels for the offshore oil and gas industry.

## Port Weller Awarded \$10-Million Conversion

A \$10-million contract to convert the St. Lawrence Navigator from an oceangoing to a Great Lakes bulk carrier has been awarded to Port Weller Dry Docks by Upper Lakes Shipping Ltd. of Toronto, Canada. The work, to be known as Hull 66, will begin in August 1979, and will be completed at the start of the 1980 shipping season.

A new bow and cargo-hold section will be fitted to the existing engine room and accommodation spaces to bring the Navigator up to the maximum Seaway size for transiting the Welland Canal.

The new 630-foot bow and cargo-hold section will be typical of a Great Lakes bulk carrier. It will have six cargo holds, 16 cargo hatches, and will be fitted with conventional side tanks.

The converted dimensions will be length overall, 730 feet; length between perpendiculars, 708 feet; breadth, molded, 75 feet 8 inches; depth, molded, 40 feet 5 inches; draft, extreme, 27 feet 7 inches, and deadweight at summer draft, 28,840 tons.

A sister ship, the St. Lawrence Prospector, will undergo a similar conversion at St. John Shipbuilding and Dry Dock. Both ships were purchased by Upper Lakes for use as oceangoing bulkers in 1975, and are being withdrawn from ocean service.

## Marland Publishes New Brochure On Marine Sanitation Systems

A new comprehensive product line brochure is now available from Marland Environmental Systems, Inc. Marland is one of the leading manufacturers of physical/chemical sewage treatment systems for shipboard operation. The Marland line, as described in the brochure, provides complete answers to all marine sanitation needs. Marland Sani-Systems® include both compact and large-scale Type II MSDs. These physical/chemical systems comply with U.S. Coast Guard and proposed IMCO pollution control standards. Along with the Sani-Rator® Oxidizing Toilet (Type III), Marland's Sani-Systems meet the requirements of vessels of almost every size. The brochure also presents a selection of equipment for the dockside servicing of pleasure boats.

Free copies of the new brochure may be obtained by writing to **Bob Daniels**, Marland Environmental Systems, Inc., North Main Street, Walworth, Wis. 53184.

## Evergreen United Corp. Announces Four Promotions

Four promotions have been announced at Evergreen United Corp., Long Beach, Calif., general agents for Evergreen Line's West Coast/Far East container service.

The announcements were made by Capt. **Oden Rozen**, president of Evergreen United.

**Louis Mariner** has been named manager, Port Services, for the U.S. West Coast. **David Chiang** has been promoted to West Coast sales manager.

**Robert Summers**, Seattle office manager, has been named manager of the Pacific Northwest for Evergreen United. **Ed Bastian**, recently named office manager in Portland, Ore., has also been promoted to assistant manager of the Pacific Northwest.

Each of these people has a history of service with Evergreen. Captain **Rozen** noted: "The growth of Evergreen's service to accommodate all customers utilizing the West

Coast required that these responsible and knowledgeable people grow with the company."

Evergreen Line's West Coast service serves the ports of Los Angeles, Seattle, Portland, and Oakland, and a full range of Far East ports as well.

## IMODCO Establishes Far East Marketing Office

IMODCO has opened a Far East marketing office situated in Shaw Towers, Suite 2109 on Singapore's Beach Road. **Leonard K. Watts**, transferred from Los Angeles, Calif. headquarters, has been named regional manager.

In making the announcement, **Alfred W. Allchorn**, senior vice president-marketing, said the new facility will insure quicker time response to inquiries and for more comprehensive coverage, cooperation and contact with present and potential customers of offshore marine terminal systems.

Heretofore, the marketing area which encompasses Southeast Area, Indonesia, the Southwest Pacific, the Western Pacific islands, Australasia and the subcontinent of India, Pakistan and Bangladesh, has been serviced out of the firm's Los Angeles headquarters.

**Mr. Allchorn** noted the Singapore office represents another step in company expansion. A Houston, Texas, office was established last year, and early this year physical space for both the headquarters and London, England, staffs were doubled.

**Mr. Watts** has a wide range of offshore construction experience and has supervised the installation of numerous mooring systems. He joined IMODCO in 1977 after four years with Hydrospace International. He majored in marketing at Sierra College and California State University San Francisco, and also was graduated from Commercial Diving Center, Wilmington, Calif.

IMODCO, a unit of AMCA International Corporation, has been a pioneer in the Single Point Mooring (SPM) terminal field since 1958, having constructed and installed 72 offshore terminals around the world.

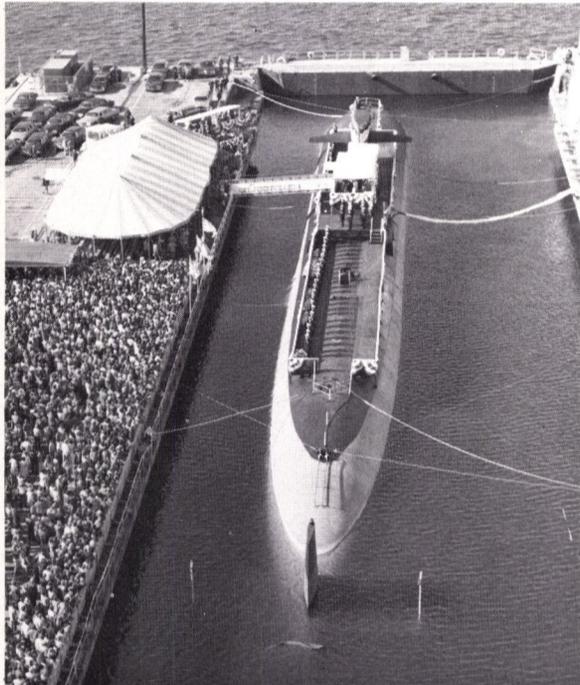


**ADDITION TO CRESCENT FLEET** — The newest addition to the tugboat fleet of New Orleans, La.-based Crescent Towing & Salvage Co., Inc., the 2,400-hp tug Sandra Smith was placed in service in November at informal commissioning ceremonies in Baton Rouge. With the addition of the Sandra, the Crescent fleet numbers 16 modern tugs, eight of which are based in New Orleans and eight at upriver locations including Reserve, St. James, and Baton Rouge, La.

## General Dynamics' Innovative Method Of Launching Submarines

General Dynamics' Electric Boat Division, Groton, Conn., unveiled an innovative method of launching submarines on November 18 with the christening of the high-speed attack submarine Jacksonville.

The 360-foot, 6,900-ton Jacksonville was the first ship to become waterborne from the graving dock of the company's new 10-acre, \$150-million Land Level Submarine Construction Facility, built especially to construct the giant Trident missile-firing subs. Tridents, larger than World War II cruisers, will be 560 feet long, and will displace 18,750 tons.



Navy's newest SSN688-Class attack submarine Jacksonville floats in graving dock following christening.

Spectators at the launching were treated to a preview of how the first Trident sub, Ohio, will be launched next year. The Ohio is under construction next to the graving dock.

The Jacksonville is the only 688-Class submarine scheduled to be launched from the facility. A number of sisterships in various stages of construction at the shipyard will slide into the Thames River from inclined building ways.

Vestiges of those time-honored sliding launches remained in the new launching method. There was a launch count down. The United States Coast Guard Band played "Anchor's Aweigh" and a bottle of champagne was smashed by the sponsor, Mrs. Dorothy Jean Bennett, wife of Congressman Charles E. Bennett (D-Fla.), the principal speaker. Congressman Bennett is Chairman of the House Seapower Subcommittee.

But hallmarks of the new era were also a part of the ceremonies. The bottle crashed against the after end of the sub's fairwater (superstructure), not on the bow. And, in the most noticeable break with the launching heritage, the ship was already afloat.

The actual launching process began when a team of 17 carpenters, riggers and electricians moved the sleek sub 75 feet sideways onto the massive 100-foot by 500-foot launch pontoon.

In the move, the ship rode 17 strongbacks propelled by 38 electric motor driven transfer cars—key elements in the most advanced complex of its type in the Free World. Then, the graving dock was readied to float the Jacksonville.

The new launching operation involves superflooding the dock above the river level to float the pontoon clear of its supports and pumping the graving dock out to lower the pontoon to the bottom. Then the dock and the pontoon are flooded simultaneously. The pontoon remains on the bottom of the dock and the ship floats free. The dock holds 37 million gallons of water when full. The flooding process takes slightly more than 12 hours.

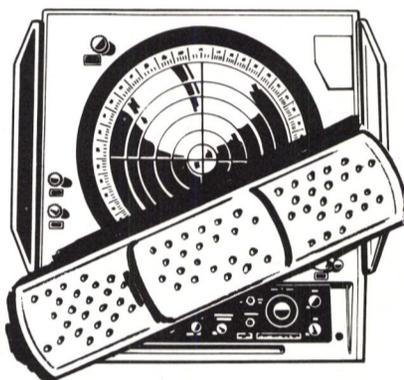
Electric Boat engineers and naval architects who designed the facility were at the Jacksonville launching, along with thousands of Electric Boat employees and their families, to watch the event that will signal the beginning of a new era for Electric Boat and a hallmark in the development of submarine construction.

P. Takis Veliotis, vice president of General Dynamics and general manager of the Electric Boat Division, told the guests: "The new facility is a major commitment by General Dynamics to the future of Electric Boat, its workers, their families, and the community at large. It is a commitment to the Navy that we will do whatever is necessary to upgrade our facilities and capabilities to serve the Navy's needs."

Mr. Veliotis told the guests that Electric Boat had delivered four submarines to the Navy this year, launched two more, and another is scheduled for sea trials within days.

Other participants in the christening included Secretary of the Navy W. Graham Claytor Jr., and Mayor Hans G. Tanzler of Jacksonville, Fla.

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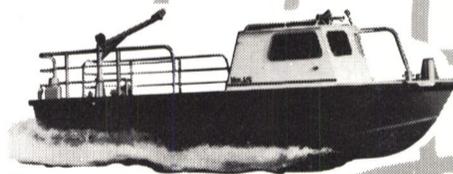
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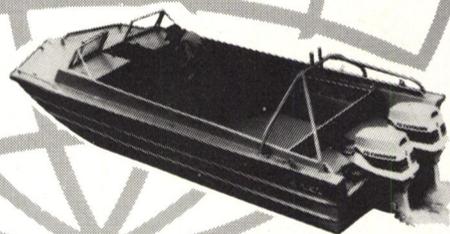


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**Seaward, Inc. Promotes  
Michael K. Kutzleb**

Seaward, Inc., has announced the promotion of **Michael K. Kutzleb** to manager, Self-contained Tanker Off-loading Pumping Systems (STOPS). STOPS is a specially designed submersible pump system for tanker offloading and salvage pumping.

Mr. Kutzleb is a graduate of the University of Virginia, majoring in economics and business law, with secondary studies in physical sciences and computer programming. He joined Seaward,

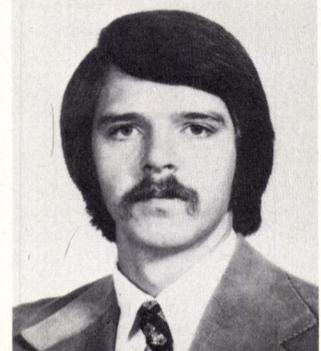
Inc. on a full-time basis in March 1975, after serving as a technician/operator on a consulting basis for three years. Since joining Seaward, he has completed the U.S. Navy's Ship Salvage Operations Course for Engineering Duty Officers, and is qualified in U.S. Navy air and scuba diving equipment.

Mr. Kutzleb has participated in a variety of offshore search and recovery tasks for both the U.S. Navy and commercial interests. His pumping experience includes cargo reclamation from the S/T Sansinena at Long Beach, Calif.,

in 1976. In addition, he has developed several computer programs for Seaward's use in the search and recovery field.

Seaward, Inc., located at 6269 Leesburg Pike in Falls Church, Va., now has four STOPS systems for deployment in the event of emergency pumping requirements. Each STOPS is an independent offloading system capable of pumping 1,600 bbl/hr. (200 tons per hour). STOPS is packaged for land, sea or air transport to the site of a disabled tanker. On scene, STOPS can be in service within two to three hours.

Seaward's experience in tanker offloading is worldwide. STOPS has directly contributed to the salvage of the Showa Maru, a 238,000-dwt VLCC in Singapore, and the Seaspeed Dora, a large ro/ro ship in Saudi Arabia. Experience on these and other major pumping operations has shown the versatility and efficiency of STOPS in rapid response emergencies. Seaward offers this pumping service around the clock on a worldwide basis.



Michael K. Kutzleb

STOPS, which are also manufactured by Seaward, Inc., are in service with the Canadian Coast Guard, Alyeska Pipeline Company, and other major salvage companies in Europe and Asia, including SELCO Salvage.

**Union Mechling Corp.  
Names Ronald Olander**

Ronald C. Olander has been named manager of boat maintenance for Union Mechling Corporation, a subsidiary of Dravo Corporation.



Roland C. Olander

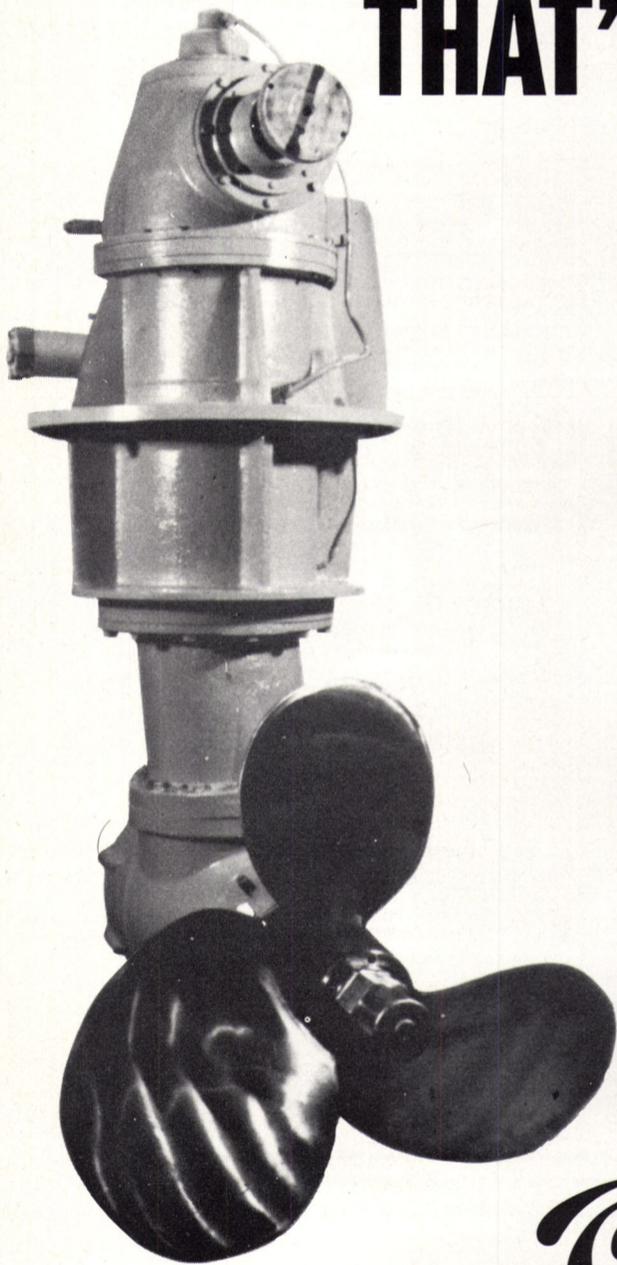
Mr. Olander, who has more than 20 years' experience with Dravo, was formerly planning engineer with Union Mechling.

A graduate of Webb Institute of Naval Architecture, he also attended Long Beach State College, Carnegie Institute of Technology, and the University of Pittsburgh, where he earned a Master of Science degree in industrial engineering.

Mr. Olander is a member of The Society of Naval Architects and Marine Engineers, Institute of Management Sciences, and The American National Standards Institute Committee for Water Transportation of Radioactive Materials.

Union Mechling is one of the nation's largest barge lines, providing common and contract towing service and intermodal transportation expertise on the river system and the Gulf Intracoastal Waterway.

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Careful and heavy duty design, features like straddle-mounted gears, and quality production have resulted in MARINER 360° units gaining a significant reputation for ruggedness, reliability and long life — invaluable assets for any vessel, not just commuter ferries.

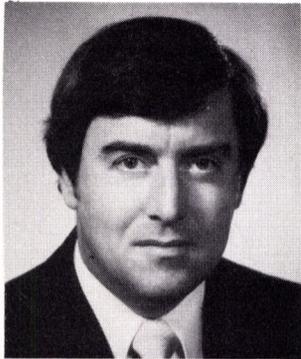
Maritime Industries produces through-hull and deckmounted units presently up to 1,200 h.p. for ferries, barges, dredges and other vessels. MARINER units have been the owner's choice around the world — for the U.S. Navy, throughout North America, in the Caribbean, Africa, the Middle East and South East Asia.



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## Interocean Names

### Michael F. McDermott



Michael F. McDermott

Michael F. McDermott has been named assistant vice president, marketing for InterOcean Management Corporation. He reports to George P. Steele, president of InterOcean, a subsidiary of the Philadelphia, Pa.-based IOT Corporation. Mr. McDermott has served as chartering manager since joining the company in 1976, and in his new capacity will be responsible for developing new business and marketing InterOcean's numerous vessel management services.

## Equitable To Build Bulk Liquid Barge For Hannah Inland

Equitable Shipyards, Inc., New Orleans, La.-based shipbuilder, has been awarded a contract to construct a 350-foot by 60-foot by 21-foot bulk liquid cargo unmanned barge for Hannah Inland Waterways Corporation, Lemont, Ill.

Construction will begin immediately at Equitable's Madisonville, La., shipyard. The barge is classed ABS, Maltese Cross A-1, Ocean Service, and is ice-strengthened for Great Lakes Service.

Equitable is a wholly owned subsidiary of Trinity Industries, Inc. of Dallas, Texas, a manufacturer of industrial, marine and structural metal products. The Equitable Shipyards are the world's largest builder of lighter-boardship (LASH) and SEABEE barges, and builds tugboats, crewboats, towboats, supply vessels, cargo vessels, and other floating marine equipment for the offshore oil industry.

## Selby, Battersby & Co.'s New Flooring Combines Unique Safety Features

Safety is the keyword in a new resin flooring, Selbaglo, developed by Selby, Battersby & Co., Philadelphia, Pa., manufacturer of building and marine products.

Perhaps the most outstanding and newsworthy feature of the Selbaglo is its ability to glow in the dark, allowing people to find their way out of buildings and other structures in the event of a power failure.

Selbaglo, which is trowel-applied

and requires no terrazzo grinding equipment, has been carefully designed as a safety-oriented decorative flooring. It has excellent non-slip qualities, is resistant to fire as well as a wide variety of chemicals, and meets the tough physical standards of Federal Specification MIL-D-3134. Now, its luminescent characteristics make Selbaglo one of the most unique flooring systems in the industry.

Selbaglo is energized by any light that provides a source of incandescent or ultraviolet rays, such as sunlight or incandescent and fluorescent lamps. When fully energized, a Selbaglo floor will provide as high as eight hours, to a minimum of two hours glow time, which is far beyond what it would take to evacuate a power-crippled building.

The product is especially suitable in areas where safety is a

prime concern, such as auditoriums, classrooms, arenas, factories, corridors, stairwells, and those places where human life might be endangered if a power failure occurs. Selbaglo is also ideal for use on virtually all types of merchant and Naval ships and offshore drilling rigs.

For additional information, write to David Kollock, Selby, Battersby & Co., 5220 Whitby Avenue, Philadelphia, Pa. 19143.

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\*Prices shown applicable to "X" band radar and subject to change without notice.

# RCA

**Amerada Hess To Build  
Five Catug Units At  
Cost Of \$283,800,000**

Assistant Secretary **Robert J. Blackwell**, U.S. Department of Commerce, Maritime Administration, has approved in principle an application from Amerada Hess Corporation, 1185 Avenue of the Americas, New York, N.Y., for a

Title XI guarantee to aid in financing the construction of five integrated "Catug" tug / barge tanker units, each to be owned by a wholly owned subsidiary of Hess. Bethlehem Steel Corporation, Sparrows Point, Md., has been named shipbuilder.

Each unit will have an overall length of 666 feet 8 inches, molded beam of 95 feet, and a full-loaded draft of 40 feet 6 inches.

Service speed will be 15 knots, under 18,200 horsepower. Gross tonnage will be 1,360 per tug, and 24,500 per barge, with the deadweight capacity of each barge being 46,238 light tons at maximum draft.

The estimated actual cost of each vessel is \$56,760,000, or a total of \$283,800,000 for the five. The Title XI guarantee, not to exceed 87½ percent of actual cost,

will be approximately \$49,665,000 for each vessel, or \$248,325,000 total.

The applicant indicated the vessels are intended to be used in the carriage of petroleum products for Hess from their Virgin Islands refinery to the mainland of the United States. They will be operated either by Hess or by Apex Marine Inc., the operating subsidiary of the Berger Group. The Hess subsidiaries which will own the vessels are First Tug/Barge Corporation, Second Tug/Barge Corporation, Third Tug/Barge Corporation, Fourth Tug/Barge Corporation, and Fifth Tug/Barge Corporation. All are located at 100 West Tenth Street, Wilmington, Del., but use the Hess address for correspondence.



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SO4 766, ENGLAND  
Telex 47509

**J.J. Henry Co., Inc. Names  
Gerald Jones Manager  
Portsmouth, Va. Office**

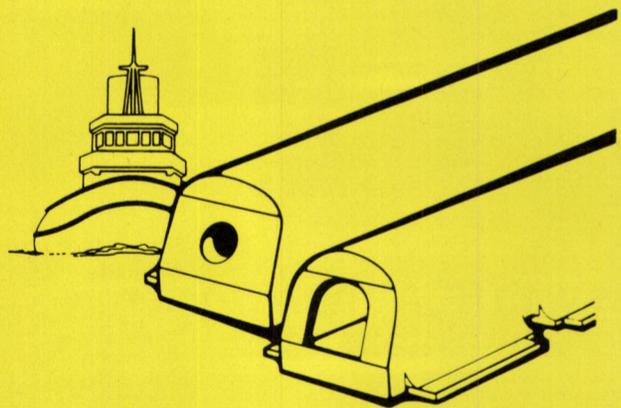
J.J. Henry Co., Inc. recently announced that **Gerald R. Jones** has joined the firm as manager of its Portsmouth, Va., facility.



Gerald R. Jones

In his new position, Mr. Jones will direct the total engineering efforts of J.J. Henry Co.'s Portsmouth office which specializes in developing detailed working plans and calculations for naval and commercial shipyards. The firm of naval architects, marine engineers and marine surveyors is one of the most respected independent marine consulting firms in the world. It is known throughout the international shipping community for its sound, yet innovative and modern ship designs.

Mr. Jones is a 1955 graduate of the Massachusetts Institute of Technology (M.I.T.) Graduate School, with a Professional Degree of Naval Architecture and Marine Engineering, a 1949 graduate of the U.S. Naval Academy, and a 1971 Advanced Management Program graduate from the Graduate School of Business, University of Virginia. He joined the firm upon his retirement from active duty in the U.S. Navy as a captain, where his last tour of duty was as Commander of the Philadelphia Naval Shipyard. He is a member of The Society of Naval Architects and Marine Engineers, member and past section chairman of the American Society of Naval Engineers, and a member of the U.S. Naval Institute.

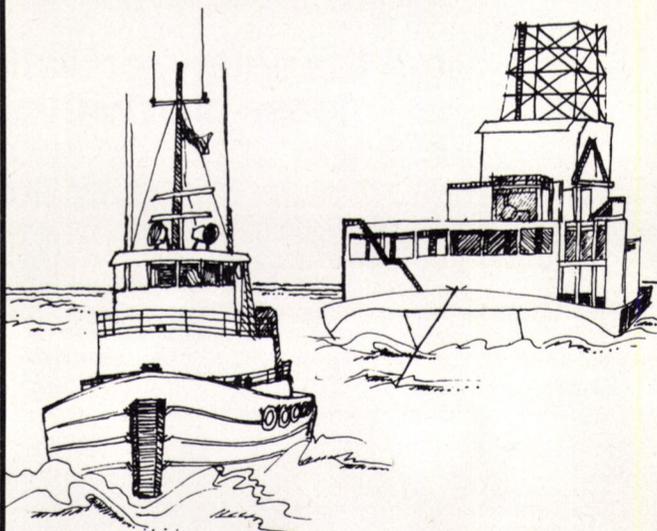


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*M/V Dennis Hendrix* is 180 ft. long, has a 52-ft. beam and a 9-ft. draft. High-alkalinity CAPRINUS R Oil 40 is helping each of her three EMD16-645 E5's dependably deliver 2,800 hp at 900 rpm.

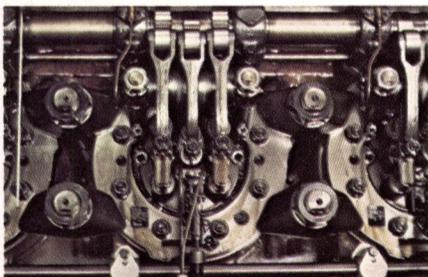
## How Shell's CAPRINUS<sup>®</sup> R Oil 40 is helping keep EMD's clean with low wear in the 8,400-hp Dennis Hendrix

High dispersancy and anti-wear properties of Shell's high-alkalinity oil contribute to excellent condition of EMD16-645 E5's after ten months' service.

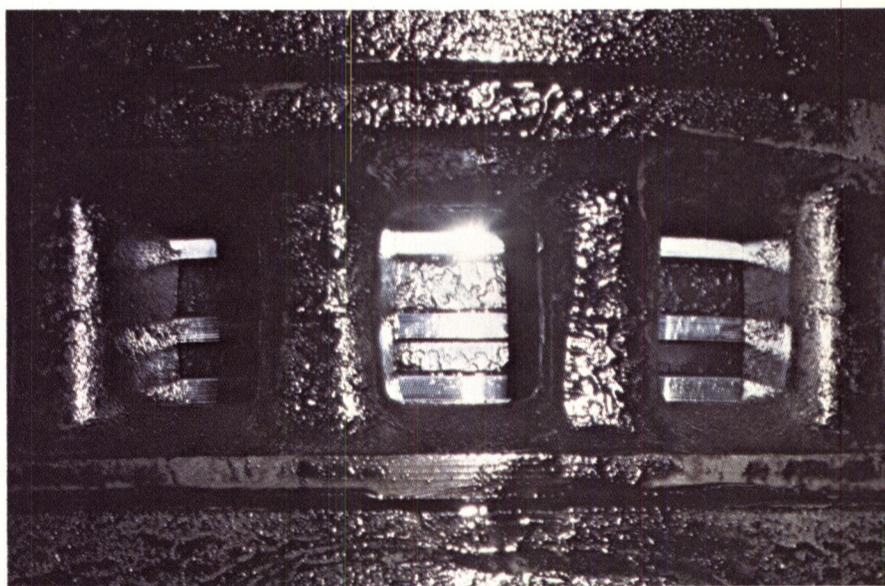
One of the most powerful towboats on the waterways, the *M/V Dennis Hendrix*, was built by Jeffboat, Inc. It has been in service since July, 1977 for the American Commercial Barge Line located in Jeffersonville, Indiana.

Under her three stacks are three EMD16-645 E5's on Shell CAPRINUS<sup>®</sup> R Oil 40, each rated at 2,800 hp to give the vessel her payload thrust of 8,400 hp.

CAPRINUS R has delivered trouble-free performance for over



After 5,564 hours on CAPRINUS R Oil 40, the top deck of the port engine is sparkling clean; cams polished; heads metal bright. This demonstrates the effectiveness of the high dispersant additive system in CAPRINUS R Oil 40.



Ports are virtually 100 percent open for this cylinder after 5,564 hours on CAPRINUS R Oil 40. Average top ring side clearance .0096 inches. No chipping or scuffing of rings. CAPRINUS R Oil 40 fights deposit buildup and wear, helps lengthen the service life of critical engine parts.

5,560 hours in the port and starboard engines, and for slightly fewer hours in the center engine.

### Exceptional cleanliness; low wear

When the vessel docked for a minor mechanical repair, there was an opportunity to inspect her engines. Appearance: excellent. Top decks were clean, free of sludge and lacquer. There were only light carbonaceous deposits in the airbox.

Garland Bradley, Chief Engineer, summed up his impression in one word: "Beautiful!"

Wear levels were equally impressive. Top ring side clearance of port and starboard engine pistons averaged a low .0096 inches. No scuffing or chipping of rings.

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Filter life is running longer than with the previously used oil — up to 2,776 hours on one of the engines. That's not surprising.

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CAPRINUS R Oil *retains* its high alkalinity in extended high-stress service. It neutralizes combustion acids, combats piston and liner wear and the formation of deposits — all at a moderate ash level. Another benefit: CAPRINUS R Oil offers superior resistance to oxidation and viscosity increase over long periods.

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*\*CAPRINUS is a trademark and is used as such in this writing.*

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## Savannah Machine And Shipyard Awarded \$2.6-Million Contract

Deputy Assistant Secretary **Samuel B. Nemirow**, U.S. Department of Commerce, Maritime Administration, has approved in principle the application by Allied Barge, Inc., P.O. Box 717, Norfolk, Va., for a Title XI guarantee

to aid in financing the reconstruction of two flat-deck barges. The two oceangoing vessels, ATC-781 (ex-Cindy F), and ATC-12000 (ex-Susan F) were purchased from Bulk Food Carriers, Inc., on September 28, 1978.

The ATC-781 will be reconstructed to carry clean petroleum products. The barge will have an overall length of 302 feet 9 inches, a molded beam of 90 feet, and a

fully loaded displacement of 16 feet. The 78,100-barrel vessel will be used to carry petroleum products from Yorktown, Va., to various Northeast ports.

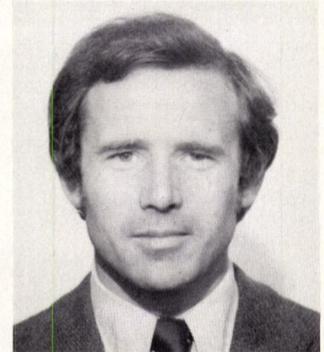
Reconstruction of the ATC-12000 will enable the barge to transport liquid and dry cargoes between the East and Gulf Coasts. It will have the same dimensions as the ATC-781, but will have a capacity of 85,000 barrels, or a

dry cargo capacity of 12,000 short tons.

Both barges will be bareboat chartered to Allied Towing Corporation, the applicant's parent company.

The reconstruction work will be performed by Savannah Machine and Shipyard Company, Savannah, Ga. The estimated actual cost of reconstructing the two vessels is approximately \$2.6 million.

## Maritime Industries Ltd. Appoints R.M. Allen



Reg M. Allen

**Reg M. Allen** was recently appointed sales manager of Maritime Industries in Vancouver, Canada. The announcement was made by **Jeremy D. Shrive**, managing director.

Maritime Industries are designers and manufacturers of specialized propulsion equipment, most particularly the MARINER 360° steerable propeller-type units. These are available in "thru-hull or deckmounted" versions for use on barges, ferries, harbor tugs, etc.

Mr. Allen will be responsible for marketing and sales for all product lines, both domestically and overseas. He brings with him over 11 years' experience in the equipment industry in both engineering and sales. He is a graduate mechanical engineer (England). He emigrated to Canada in 1967, and since then has followed the diesel engine industry very closely from a variety of positions.

## Coast Guard Awards Two Additional Icebreaking Tugs To Tacoma Boat

Tacoma Boatbuilding Co., Inc., 1840 Marine View Drive, Tacoma, Wash. 98422, has been awarded a follow-on contract by the U.S. Coast Guard for the construction of two additional WYTM's. This brings the contract to a total of six of the 140-foot icebreaking tugs to be built by Tacoma Boat.

The two follow-on vessels, which will be christened the Neah Bay and the Morro Bay, are scheduled for delivery in July and October 1980. The Katmai Bay, the first in this series of new vessels for the U.S. Coast Guard, left Tacoma Boat on November 3, and is currently underway to Buffalo for final outfitting by the Coast Guard.

The primary responsibility of the tugs, when put into service, will be the opening and maintaining of icebound shipping lanes in the Great Lakes.



# How to do a four-day engine overhaul in less than two days.

With most large Diesel engines, a cylinder overhaul takes at least four hours. You have to disassemble and reassemble bulky components.

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For more information, contact Electro-Motive Division, General Motors Corporation, LaGrange, Illinois 60525.

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## Reno Spiteri Opens Office In Malta



Reno Spiteri

Reno Spiteri has announced the opening of his own technical consulting, marine surveying and project management firm. The firm, which operates under the title of Marine Surveys & Services Bureau, offers its services to shipowners, ship operators, ship charterers, underwriters' surveyors' organizations, P & I associations, insurance companies direct, classification societies, and all other marine industries. The firm's services are available in Malta, and in all ports and countries within the Mediterranean and Western Europe.

Mr. Spiteri, who is a qualified marine and mechanical engineer, and who also holds diplomas in naval architecture and industrial management, has in the last 20 years followed a continuous career in the marine field. He has held senior appointments as a marine engineer officer with major shipping companies, as ship repair manager with Malta Drydocks, and as engineer and fleet superintendent to Sea Malta Company Ltd.

Marine Surveys & Services Bureau is located at 4 Apollo Court, Dome Str., Fgura, Malta.

## Argo Names Nietsch To Pollution Control Post

H. Erich Nietsch has been appointed marketing manager of the Pollution Systems Division of Argo Marine. Mr. Nietsch will be concerned with the worldwide marketing of marine sanitation equipment, oily water separators, oil sorbents (for oil spills), compactors and incinerators.

A marine engineer and Massachusetts Institute of Technology graduate, Mr. Nietsch comes to Argo with over 15 years' experience in the pollution field. Most recently, he was with the Penco Division of Hudson Engineering as product sales manager in pollution control. Previously, he was with Engelhard Industries, where he served as marketing manager for Chloropac (sodium hypochlorite generating), and Capac (impressed current cathodic protection) Systems. Mr. Nietsch was also previously associated with Marland/Clear Water.

"My Marland/Clear Water experience should be especially valuable," Mr. Nietsch stated, "since physical/chemical systems are the

accepted technology of today for marine sanitation equipment. We have found that the physical/chemical systems — because they are compact and simple to install and operate — are best suited for shipboard requirements."

The Argo Pollution Systems Division is capable of providing equipment, renewal parts and service anywhere in the world without delay. For information, write to Erich Nietsch, Argo Marine, 140 Franklin Street, New York, N.Y. 10013.

## Bureau Veritas Completely Rewrites Automation Rules

Bureau Veritas has completely rewritten their Rules for the classification of the automation and control systems in unmanned machinery spaces.

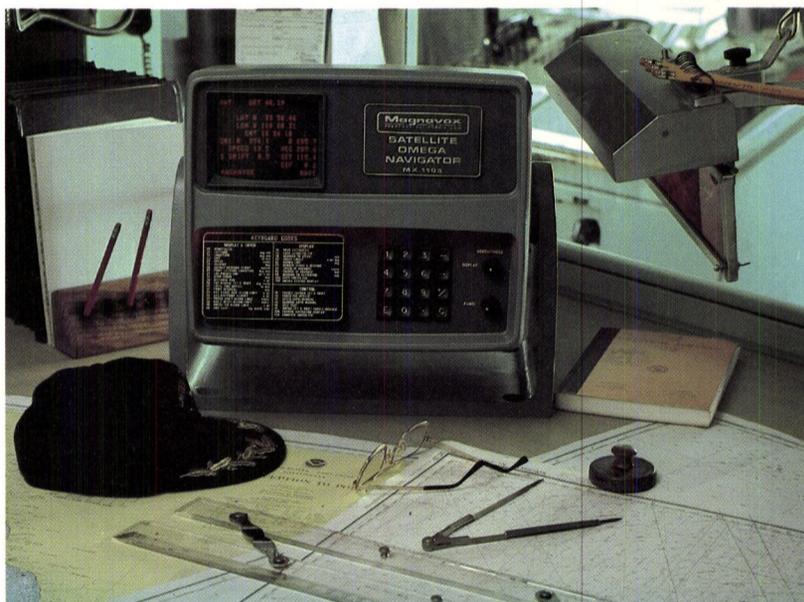
The new Rules replace those which have been in use since 1968, and which have been successfully applied to the machinery installations of over 700 ships of all types and sizes.

The new Rules incorporate the IMCO Recommendations for unattended machinery spaces, and as set out in IMCO Resolution A.325.

The Rules define the environmental criteria to be met by manufacturers of control equipment, who wish to receive Certificates of Approval for their products.

These new Rules are available free, upon request, from Bureau Veritas, Ocean House, 24-25 Great Tower Street, London EC3R 5AQ, England.

# Omega made useful. Satnav made better. The MX 1105.



It's no secret. Stand-alone Omega has some bugs. And Satnav, the most reliable all-weather system available, still requires dead reckoning between fixes.

So we've taken the best of two worlds to improve the performance of each. The result is the MX 1105 Satellite-Omega Navigator.

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The MX 1105 gives you redundant references — the accuracy and all-weather reliability of Satnav with the continuous-fix capability of Omega. Constant, up-dated position fixes from two independent references. And an alert if there is a significant discrepancy between them. In one very compact table, bulk-head or overhead mounted unit.

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The MX 1105 automatically synchronizes and tracks three frequencies from all available Omega stations. It automatically computes set and drift, makes skywave corrections, and selects stations — minimizing long-path, modal interference and other Omega errors.

## Satnav Improved.

The accurate satellite fix is used as a reference to calculate Omega skywave corrections. You get continuous, accurate

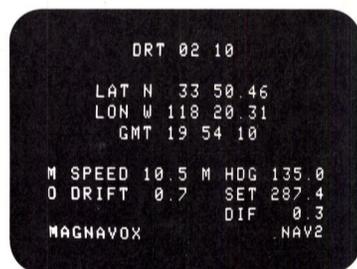
fix data even during long-term ionospheric disturbances and polar cap anomalies.

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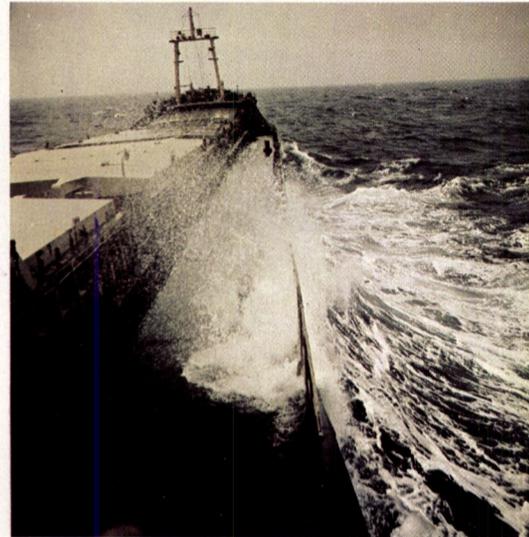
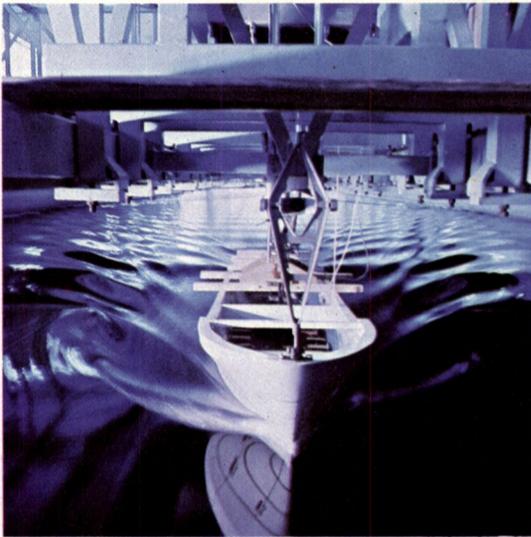
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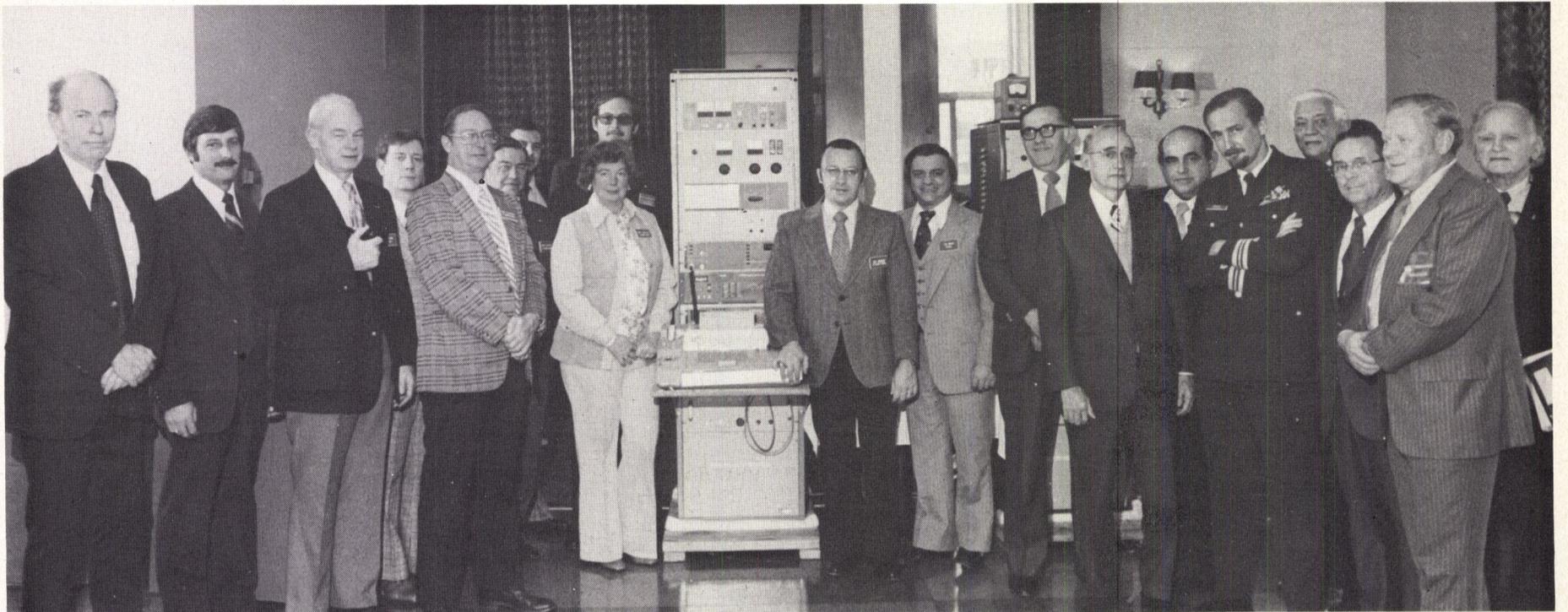
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**ITT Mackay Marine Hosts Product Display And Discussion On Key Marine Communication And Navigation Issues**



Participants shown above surrounding the ITT Mackay Marine Telex Equipment are, left to right: **H.R. Smith**, host, ITT Mackay Marine; **D. Wise**, guest, Gulf Trading & Transportation; **Jim Luse**, exhibitor, NCS; **P.B. Withstandley**, guest, Swann Oil; **R. Zalonis**, host, ITT Mackay Marine; **H.F. Hayes**, host, ITT Mackay Marine; **J.J. Miller**, host, ITT Mackay Marine; **S. Brigham**, host, ITT Mackay Marine; **M.R. Giroux**, host, ITT Mackay Marine; **E.J. Bizub**, host, ITT Mackay Marine; **S. Berte**, exhibitor,

North American Philips; **E.A. Engebretson**, host, ITT Mackay Marine; **J. Tedaldi**, guest, Moran Towing & Transportation; **M. Bennet**, host, ITT Mackay Marine; Commander **Sutherland**, guest speaker, U.S. Coast Guard; **R. Bedham**, guest, Farrell Lines; **A. Panisello**, guest, Exxon Corp.; **I. Opgaard**, exhibitor, North American Philips, and **F. Shunaman**, guest, The Radio Club of America.

ITT Mackay Marine, a division of International Telephone and Telegraph Corporation, located in Elizabeth, N.J., recently hosted a Communication/Navigation Product Display at the Downtown Athletic Club in New York City.

One of the products demonstrated was the ITT Mackay Marine Telex Equipment, MRU-35AT and MRU-50BT. That equipment incorporates the North American Philips STB-750 SITOR unit for

unattended operation, automatic error detection and correction, and Selective calling on Marine Telex. ITT Mackay Marine was successful in "working" coastal station PCH in Scheveningen, Holland; WCC in Chatham, Mass.; and their own experimental station in Raleigh, N.C., using this error correction marine telex system.

Other live demonstrations were shown with the Selenia Radar,

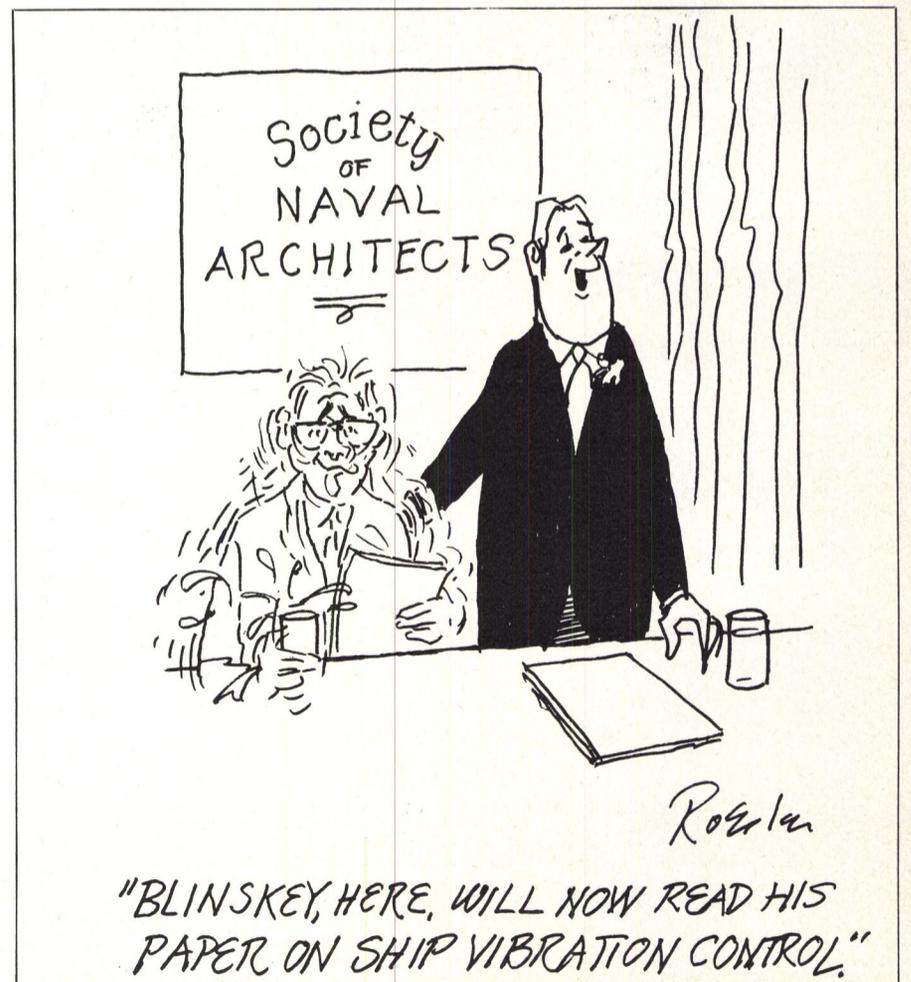
both 16-inch and 12-inch displays; the NCS Satellite Navigation Receiver; Alden Marine Facsimile, and Modar/Triton VHF. Equipment on display also included the new channelized programmable RF Communications RF-230 SSB Transceiver, Micrologic ML-1000 Loran C, Dynell Omega 400, and Standard Communications Hand Held VHF/UHF units, as well as ITT Mackay Marine's standard line of products, including 3020A

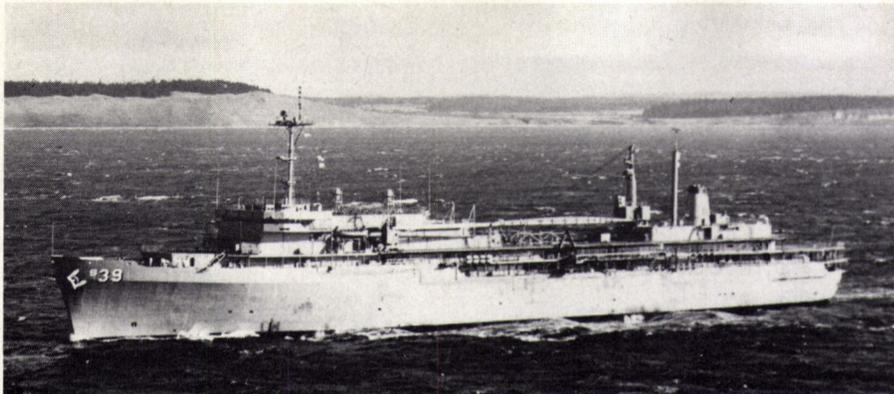
and 3021A Receivers, 5003C Auto Alarm, 222 VHF, and EPIRB.

Presentations were given by Commander **Sutherland** of the U.S. Coast Guard on the proposed New York Vessel Traffic System; **H.R. Smith** of ITT Mackay Marine on current and proposed U.S. and foreign legislation; **J. Luse** of NCS on Maritime Satellites, and **S. Berte** of North American Philips on SITOR.



**NEW YORK PORT ENGINEERS MEET**—The Society of Marine Port Engineers, New York, N.Y., Inc., met at the Downtown Athletic Club in New York City on November 15. **B.F. Nixon**, Texaco Inc., served as meeting coordinator, and the subjects discussed were "Updating of Machinery Research at MarAd," by **F.X. Critelli**, U.S. Maritime Administration, and "A New Solution to Tube Inlet Erosion/Corrosion Problems-Condensers, Etc.," by **K. McParland**, Condenser Technology, Inc. Shown above, seated left to right: **Russell Magna**, Northeast Marine Terminal Co., Society chaplain; **F.X. Critelli**, speaker; **Louis V. Minett**, American Bureau of Shipping, president of The Society of Marine Port Engineers, and **Kevin McParland**, speaker. Standing, left to right: **John C. Fox Jr.**, Exxon International Co., Inc.; **Thomas Young**, United States Lines, Inc., 2nd vice president of the Society; **Thomas Jones**, Farrell Lines Inc., chairman of the board of the Society; **John Antonetz**, Texaco Inc., Papers & Technical Committee chairman, and **Edward English**, Atlantic Repair Co., Inc., secretary-treasurer of the Society.





**FIRST TIME AT SEA**—The long gray ship shown operating in Puget Sound and the straits is the 644-foot, 23,000-ton submarine tender AS-39, on builder's trials by Lockheed Shipbuilding and Construction Company, Seattle, Wash. First of three Land-Class tenders, the AS-39 Emory S. Land and her 1,351 officers and men will supply and service SSN-688 Los Angeles-Class submarines for the U.S. Navy. Builder's underway trials ensure that all machinery and systems operate satisfactorily. Prospective Commanding Officer Capt. D.Y. Sloan joined U.S. Navy observers on the two days of trials, which included successful full-power operations in the straits. In January 1979, a team of U.S. Navy experts will witness acceptance trials to determine that the ship meets specification and contractual requirements. Early in 1979, the AS-39 will be delivered to the U.S. Navy for fleet duty. The Land's sistership, AS-40 Frank Cable, will be delivered in the fall of 1979, and the AS-41 McKee will deliver in the fall of 1981.

## Pacific Northwest Section, SNAME, Holds Annual Meeting In Union, Washington



Pictured during the Pacific Northwest Section Annual Meeting are, left to right: **Bob Van Slyke**, Papers chairman; **Les Coward**, paper-presenter; **Bob Grant**, paper-presenter, and **Ed Stewart**, secretary-treasurer of the Section.

The Annual Meeting of the Pacific Northwest Section of The Society of Naval Architects and Marine Engineers was held at the Alderbrook Inn, Union, Wash., during the weekend of October 13-15, 1978. The meeting was attended by more than 100 members and guests.

Friday evening's informal buffet provided an opportunity to renew old acquaintances.

Saturday's session began with a short business meeting conducted by president **Paul Zankich**.

Following the business meeting, two technical papers were presented. The authors were introduced by **Bob Van Slyke**, chairman of the Papers Committee.

The first paper, "Shaft Alignment Methods with Strain Gages and Load Cells," was prepared and presented by **Robert B. Grant** of Diehl and Lundgaard, Incorporated.

Everyone involved in shipbuilding is very much aware of the need for accurate shaft alignment and the traditional methods of insuring alignment. These procedures can be very difficult and time-consuming on larger vessels. The paper presents improved methods for assuring shaft alignment.

The author specifically examines the use of load cells incorporated into a jacking mechanism, either under the bearings or in place of the bearing shells. An alternative moment method of shaft alignment is also explained. This method offers several advantages over the jack-checking procedure where conditions aboard the vessel dictate its use.

In the end, the method used to align the shaft will be determined by the direct cost associated with each procedure and the availability of measuring instruments.

The second paper, "Vibrations—Some Other Aspects," was written by **L. Coward** and **Dr. R.J. Savage** of Savage and Heierli-Canada, a division of CCS Marine Associates Ltd. The paper was presented by Mr. Coward.

This paper describes several



University of Michigan Prof. **Francis Ogilvie** (left), featured speaker at banquet, receives certificate of appreciation from **Paul Zankich**, president of the Section.

ways in which resonant vibration analysis under controlled circumstances can become a useful tool for information acquisition and system analysis. Of particular interest are the applications of this technique in structural monitoring and problem diagnosis.

The vibration analysis technique is based on the fact that every structure has its own characteristic "vibration signature." Using a number of accelerometers placed on the structure and vibration generators, this "vibration signature" can be determined for the structure. If these measurements are repeated at a later time, any deterioration of the structure will be recorded in the vibration signature measured at that time.

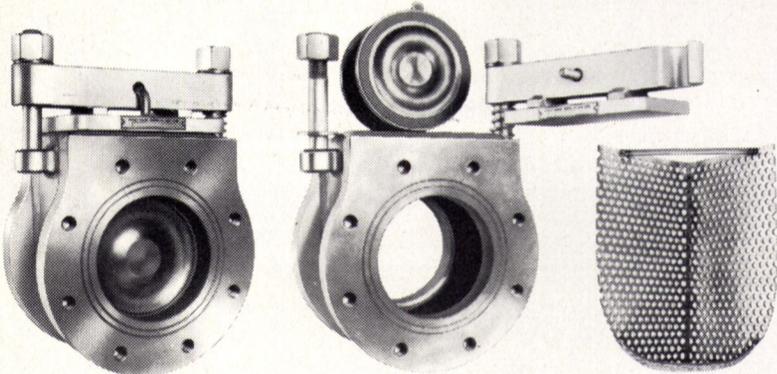
Using this analysis technique, fine resolution in detecting initial failures, such as hairline cracks, is possible. Left uncorrected, these initial failures may develop into a more serious structural failure.

A question and answer period followed presentation of the papers.

In the evening, a banquet was held at the Alderbrook Inn. Prof. **Francis Ogilvie**, chairman of the Naval Architecture Department at the University of Michigan, was the featured speaker. He discussed the current state of the Naval Architecture Department at Michigan.

Copies of the technical papers can be obtained from the Section Librarian, **C.S. Bracken**, P.O. Box 24382, Seattle, Wash. 98124, for a nominal fee.

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**SeaTec International  
Appoints Samuel Rugh**

Samuel T. Rugh has been appointed Bell Saturation manager for SeaTec International, Ltd., Gloucester, Mass., William T. Jebb, president, announced.



Samuel T. Rugh

Mr. Rugh is a former member of the U.S. Navy Underwater Demolition Team and more recently, diving superintendent of Bell Systems for Oceaneering International. His experience includes supervision of deepwater work in the North Sea, Africa, and South America, as well as the installation of 11 saturation diving systems. His extensive experience in saturation diving and hyperbaric emergency medicine has contributed to an accident-free diving record.

SeaTec International, Ltd., specialists in deepwater bell saturation diving, is able to provide offshore diving and underwater construction services throughout the world. SeaTec has recently completed the anchoring of offshore pipelines in Africa for Gulf Oil, and the inspection of cables in the Caribbean for American Telephone and Telegraph.

**London To Host  
Two-Day Conference  
On Ship Propulsion**

At an international two-day conference on Operational Aspects of Propulsion Shafting Systems in London on May 21 and 22, 1979, sponsored by the Committee on International Co-operation on Marine Engineering Systems (ICMES) and the Institute of Marine Engineers (IMarE), speakers from Austria, Finland, France, the Netherlands, Norway, Sweden, United Kingdom, the United States, and Federal Germany, will present papers on the theory and practice of propulsion shaft alignment and its interaction on the ship.

Registration fees are £81.04 for members of the sponsoring bodies, £88.60 for nonmembers, and include one set of preprinted papers, refreshments and lunch. However, to encourage young engineers to attend and participate in the discussions, the sponsors are allocating a limited number of free places, details of which, together with all other information, are available from: The Conference Officer, The Institute of Marine Engineers, 76 Mark

Lane, London EC3R 7JN, England.

The conference will be opened by A. Flising, chairman of ICMES, with A. Laredo, Chantiers de l'Atlantique, T.W. Bunyan, P and O Pilgrim Engineering Developments, R. Wareldsma, Technische Hogeschool, Delft, and E.M.O. Roren, Aker Engineering A/S Norway, as session chairmen.

The conference proceedings, inclusive of papers, discussions and authors' replies, will be published as a volume at a later date.

**Caterpillar Brochure  
Details Systems For  
Workboat Applications**

A new eight-page brochure is available from Caterpillar, featuring marine systems in worldwide workboat applications. The brochure, "If You Make Your Living on the Water," discusses benefits of power requirements—diesel engines, matching transmissions and generator sets—from a single qualified source.

Cat offers 14 marine diesels for propulsion from 85 hp to 1,125 hp (63 kw to 839 kw); 7 models of marine transmissions with 47 reduction ratios; and 10 generator sets for auxiliary power from 50 kw to 800 kw (60 Hz), 50 kw to 330 kw (50 Hz).

The brochure is available from Caterpillar Dealers by requesting Form No. LEDM1415, or by writing Caterpillar Sales Development, Engine Division, NS-682, Peoria, Ill. 61629.

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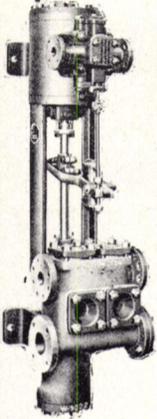
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# PUMPS

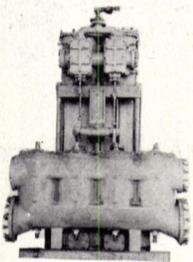
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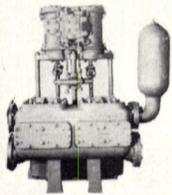
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## WORTHINGTON 16" X 14" X 18" VERTICAL DUPLEX STRIPPING PUMP



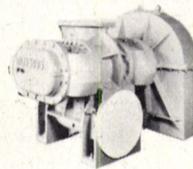
1400 GPM @ 110 PSI — suction lift 11.5 ft. — steam back pressure 15 lbs. 14" Suction — 10" discharge — 2½" steam — 4" exhaust. Overall width 6'8" — overall height 9'1½" — depth 3'9½". Wt. approx. 10,000 lbs.

## STEAM DRIVEN VERTICAL DUPLEX FIRE & GENERAL SERVICE PUMPS



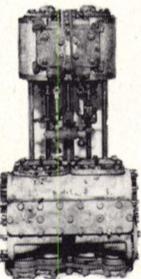
10 X 11 X 12 — Worthington — 560 GPM @ 125# G. 8" Suction — 6" discharge pumps bronze fitted.

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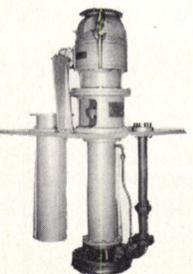
## 8" X 8" X 10" VERTICAL DUPLEX PUMP



Hendy design Suction 8" — discharge 6" — 160 GPM @ 100 PSI.

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## 4 NEW UNUSED SUMP OR LOW PRESSURE DRAIN PUMPS



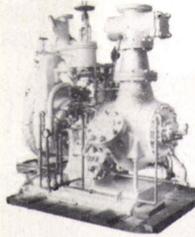
Bronze—40 GPM @ 40 PSI. 2" discharge—single impeller—CW rotation—32" from deck plate to base. Complete with flotation equipment. Totally enclosed 5HP 440/3/60 1725 RPM motor. Repair parts for motor & pump included.

**\$2750 EACH**

## COFFIN FEED PUMPS

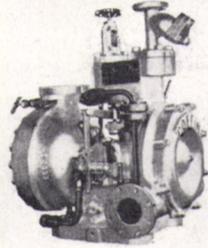
— ALL SIZES —

### TYPE DE



**3 TYPE DE-2  
540 GPM 1870' NET HEAD**

8450 RPM—585 PSIG—0°-200° superheat—exhaust pressure 15 lbs—NSPH 30—typical serial 4683DE

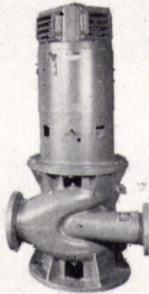


### TYPE CG

**2 TYPE CG 350 GPM 1880' NET HEAD**

7220 RPM—311 HP. Steam pressure 580 PSIG—0°-100° superheat. Exhaust 15 lbs—typical serial #5437-CG-8-8-33

## • BALLAST PUMPS



Gardner-Denver — bronze — vertical — total suction lift 15' — 8" suction — 6" discharge — 1500 GPM @ 25 lbs — 1750 RPM. MOTOR: 30 HP — 230 VDC — 112 amps — made by Century.

## • ANCHOR WINDLASS MOTORS

Vertical — 20 HP — 230 volts D.C.

## • RAMP WINCH MOTOR

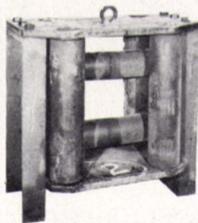
20 H.P. gearhead deck ramp winch motor.

## • MISCELLANEOUS

• Bronze Triplex Strainers • Pneumatic Control Stands  
• Combination Lube Oil & Fresh Water Pump for Reduction Gear • 35000 CFM Fans

## 6 ROLLER TYPE MOORING FAIRLEADS

WITH 12" CLEAR OPENING



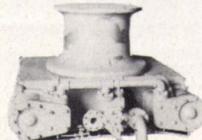
4 Vertical rollers—5½" diameter — 2 horizontal rollers—5½" diameter, split to enable you to work from either end of fairlead. Steel sideframe ¾" — top & bottom 1". Handles 1½" wire easily—up to maximum lead 80°.

## 500 GPM BRONZE BUFFALO PUMP



500 GPM @ 100 lb head. Mfg by Buffalo Pump. 5" Suction—4" discharge. MOTOR: 30 HP—240 volts DC—105 amps—1750 RPM. Equal-to-new condition.

## LIDGERWOOD STEAM CAPSTAN

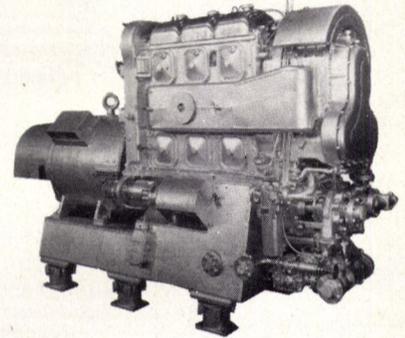


8 X 8—125 lb. working pressure. Reversible.

## PLEASE NOTE:

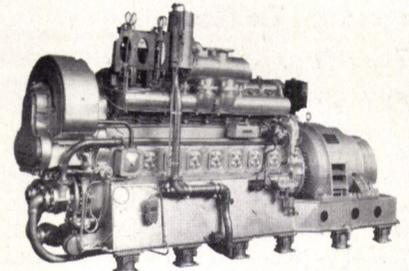
Our Marine Dept. & Warehouse is n  
250 Scott St. at McHenry — Baltimore

# G. M. 3-268A 100 KW A.C. DIESEL GENERATOR SETS



ENGINE: GM 3-268A—6½ x 7—1200 RPM—80% power factor—electric starting. GENERATOR: 100 KW—440/3/60/1200 RPM—161 amps. Dripproof—open—self-ventilated. (Class "A" insulation stator—Class "B" insulation on field). EXCITATION: 2 KW DC unit—9' 1¼" long—37" wide.

# G. M. 8-268A 200 KW A.C. DIESEL GENERATOR SETS



ENGINE: 8-268A—6½" bore—7" stroke—1200 RPM—driving Westinghouse generator—200 KW—440 volts—3-phase—60 cycle—321 amps—80% power factor at 1200 RPM. Switchgear available.

## NEW MARINE HATCHES



Steel galvanized — 30" X 48" — test pressure 5 PSI — 8" coaming — closure is bolt & lug type.

**\$695 EACH**



# THE BOSTON

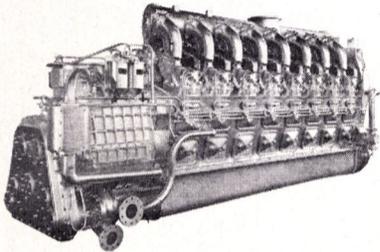
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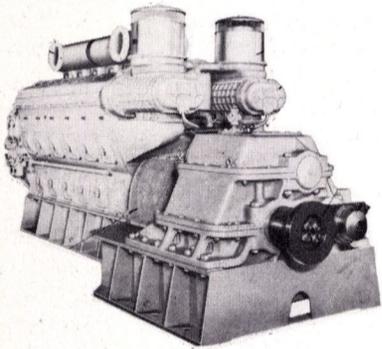
## G.M. 16-278A 1700 H.P. DIESEL ENGINES



Limited supply remaining

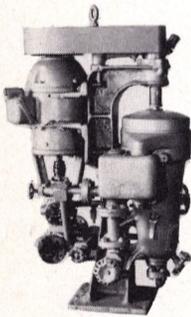
Complete, clean and in very good condition. As removed from U.S. Naval vessels. 1700 HP @ 750 R.P.M. Your inspection invited.

## MATCHED PAIR 900 H.P. G.M. 12-567A DIESEL ENGINES with Falk reverse and reduction gears



ENGINE: 12-567A — 8½x10 — VEE type — 2-cycle — 747 RPM — electric starting — serial Nos. 1041 & 1060. GEAR: Falk Air Flex — reverse and reduction — 2.48:1 forward — 2.52:1 reverse.

## SHARPLES OIL PURIFIER



Ex U.S.N. — reconditioned — ready to go. Complete with motor starter & pump. For lube or fuel oil. 225 GPH — viscosity 45, SSU @ 100°F fuel oil. 225 GPH — viscosity 180-200 SSU — 130° lube oil. For lube oil models M-85-34-5-23BM-44 — for fuel oil M-85-35-5-8CA-13. Bowl speed 17,000 RPM — 1" oil inlet & outlet. Vertical 2 HP 440/4/3400 RPM motor. Many units with stainless steel bowls.

\$1495 EACH

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## T-2 EQUIPMENT

Selected Items Listed

### UNUSED G.E. MAIN PROPULSION STATOR

Type ATB-2 — serial No. 6978272. 2300/2370 volts — 60/62 cycles — 3 phase — 3600/3720 RPM — amps armature 1237/1315 — 4925/5400 KW — 1.0 P.F.

### T-2 UNUSED G.E. MAIN PROPULSION STEAM TURBINE WITH ROTOR

10 Stage — 435# — 720° T.T.  
Turbine complete with rotor — serial No. 109166 — 4925/5400 KW — 3600/3720 RPM — 10-stage — 435# — 720° TT — 28.5" VAC.

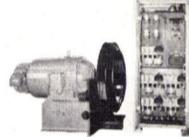
### WESTINGHOUSE MAIN PROPULSION STEAM TURBINES

1 unit shrouded  
WILL SELL ROTOR SEPARATELY

### WESTINGHOUSE MAIN PROPULSION GENERATOR STATOR

From Ex-Pecos — in like-new condition. With A.B.S.

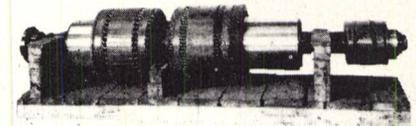
### 5-SPEED FORCED DRAFT FAN MOTOR WITH IMPELLER



For T-2 Tanker. MOTOR: Totally enclosed — frame 505-S-440/3/60 — 1770 RPM — typical serial #673-1807. CONTROLLER: 50 HP — CR-5333-820 — Cat. 932-1485. Max. amps 60.

### WESTINGHOUSE 538KW TURBINE ROTORS

### WESTINGHOUSE 538 KW AUX. GENERATOR EXCITER ARMATURE



We have both types:

110KW — 32KW — 5.5KW  
110KW — 28KW — 5.5KW

## SPECIAL OFFER T-2 AUXILIARY GENERATOR ROTORS

G.E. AUX. TURBINE ROTORS  
DORV-325M — 5645 RPM  
For G.E. 525 KW TURBO GENERATOR SETS



Very little use. In like-new condition. Balanced, and with A.B.S. Certificate.

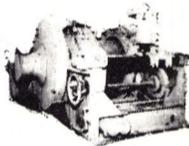
STATIONARY BLADING AVAILABLE

### COMPLETE WESTINGHOUSE 538 KW TURBO GENERATORS

Complete steam end, reduction gear, electrical end. Some units recently overhauled for U.S. Government.

### NEW STYLE AMPLIDYNES

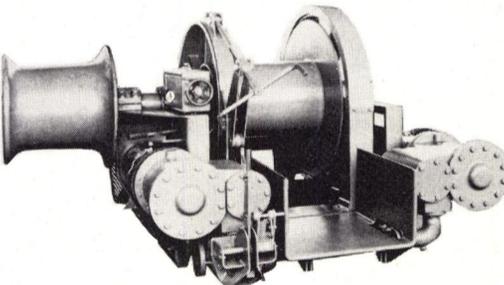
## 100,000 lb. Almon Johnson Constant Tension Mooring Winches



1 Available. In very good condition. Series 232 mooring & anchoring winches — automatic self-tensioning. Wide range from 100,000 lb line pull at 10 FPM to 26,000 lbs at 400 FPM. Gypsy line pull 12,000 lbs at 125 FPM. Drum declutchable through spiral jaw clutch. for free spooling.

Driven by 50 HP — 230 VDC motors — Westinghouse CK — 575 RPM — ½ hour — 75°C rise — stab. shunt — 181 amps — max. RPM 1900. Cutler-Hammer brake — 18" — type NM.

## STEAM MOORING WINCHES 12" x 14" — AUTOMATIC TENSIONING with foot brake & declutchable gypsy head



CAPACITY: 20,000 lbs at 100 F.P.M. — first layer; 16,000 lbs at 150 F.P.M. Drum will show 1500 feet of 1½" wire in 9 layers. Steam inlet 3½" — 4" exhaust. BASE DIMENSIONS: 6' x 6' 3½" — overall 8' 4½" wide x 9' long. Mfg. by Friedrich Kocks — Bremen, Germany. Recently removed from ARCO "Challenger"

### ALSO IN STOCK

12" x 14" Double Gypsy Unit

ALL UNITS CAN BE DEMONSTRATED RUNNING

### 2-POLE MOORING BITTS

Large fabricated size 20" poles — 57" centers. Base 80" long X 24" high X 25½" high. ALSO 14" — 12" — 10" bits.

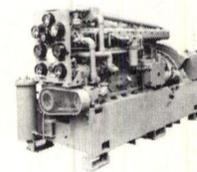
### BULKWORK CHOCKS

2 Roller and 3 roller closed chocks

### VERTICAL DEEP WELL PUMP

750 GPM. All bronze. 333' Total dynamic head radial flow — 6-stage — single suction — CCW rotation. Mfg. by Peerless — model 12LA — 84.4 HP. Without motor, but with control panel.

### 100 KW GBD-8 DIESEL GENS.



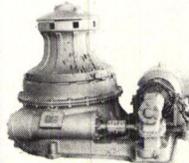
From LST vessels. 120/240 VDC — 417 amps — stab shunt — 1200 RPM — Delco gen. — self-excited. ENGINE: Superior GBD-8 — 8 cyl — 5½x7 — 150 HP — 30 volt electric starting. Reconditioned to ABS. Dry wt 10,000 lbs — DAL 124" — 65-11/16" high — 42" wide. Ht necessary to pull piston 68". Fuel consumption 0.620 lbs/hr

### IMMEDIATE DELIVERY

## 2 3/4" STUD LINK CHAIN

10 Shots — with connecting links. ABS certificate. Practically New

### 20,000 LB 2-SPEED ELECTRIC CAPSTAN



20 H.P. 440/3/60 motor — magnetic brake and controller. 20,000 lbs at 40 F.P.M. Diameter center of barrel 20" — OAH 54" — OAL 70" OAW 70".

## ASNE Long Beach-Greater Los Angeles Section Discusses Corrosion Protection And Control



Left to right, aboard the S/S Princess Louise, Capt. J.E. Kaune, USN; Capt. Robert Sulit, USNR, and Julian Porter, president of Flame-Spray, Inc.

The October meeting of the Long Beach-Greater Los Angeles Section of The American Society of Naval Engineers was held in the Princess Room of the S/S Princess Louise Restaurant in San Pedro, Calif.

The members and guests enjoyed the fellowship of meeting and greeting old friends and new acquaintances during the social hour preceding the excellent dinner. The fine food and the congenial atmosphere have become the hallmark of this regular meeting place. The business meeting was opened by Capt. J.E. Kaune, USN, Section chairman, who welcomed the attendance, and after the introductions and announcements, proceeded to give a thumbnail sketch of the highlights of the SURFLANT Symposium held in Norfolk, Va., on October 12 and 13.

Captain Kaune then turned the meeting over to John E. Marriner, Program chairman, who introduced the technical portion of the meeting as being a two-part presentation on the subject of corrosion protection and control, the first part being presented by Julian Porter, president of Flame-Spray, Inc. of San Diego, Calif., with the topic "Flame Spray Corrosion Protection."

Mr. Porter described and explained the several methods employed in the thermal spray processes and numerous illustrations of the application in specific areas where corrosion had contributed to extremely high costs, and where other methods of corrosion protection had required extensive time and effort without complete effectiveness.

He continually stressed the tremendous costs attributable to the effects of corrosion in both the marine and industrial fields, and cited the flame spray method as being the most cost-effective method of dealing with a wide variety of materials and compo-

nents requiring protection from the hostile environment of the sea. He further cited several applications on valves and rotating machinery that have been effectively accomplished in local shipyards, and showed applications using both manually and mechanically operated spray guns.

Immediately following Mr. Porter's very interesting presentation, Capt. Robert Sulit, USNR, Scientific Advisor to Vice Admiral St. George, presented a slide-illustrated talk on "Flame Spray Corrosion Control." His talk and the pictures described many practical applications aboard Naval vessels, and stated that a major problem is the corrosion of steam valves. The high temperature in the salty atmosphere accentuates the corrosion on the exposed surfaces of the valve body, trim and the handwheels.

Captain Sulit pointed out that for the flame spray process to be successful, it must be performed under the strictest of quality assurance procedures. Since it is considered a critical process, extreme care must be exercised in the preparation of the surface to be coated, and the work be done in accordance with approved procedures by qualified personnel.

The metal spray is generally applied to about 3 to 4 mils thickness for corrosion protection, while the ceramic spray, which is known commercially by the trade name SermeTel, is generally applied about 1 mil thick to nonporous surfaces. The use of this process to create corrosion-resistant surfaces on shipboard components is a relatively recent innovation and offers potentially large economies in this area.

Following the usual question-and-answer period at the conclusion of the two talks, each speaker was presented with a certificate of appreciation in recognition of the time and effort he had spent.

## El Paso Savannah Christened At Avondale Shipyards In New Orleans Joins A Fleet Of Nine LNG Tankers



Principals at the christening of the El Paso Savannah included, from left to right: Howard Boyd, chairman of the board, The El Paso Company; Albert L. Bossier Jr., president of Avondale Shipyards, Inc.; Miss Rhonda Rousakis, sponsor, and the Honorable John P. Rousakis, Mayor of the City of Savannah, Ga.

The El Paso Savannah, the last ship in the current series Avondale Shipyards is building for The El Paso Company's new fleet of LNG tankers, was christened on November 11, in New Orleans.

Miss Rhonda Rousakis, daughter of the Honorable John P. Rousakis, Mayor of Savannah, Ga., and Mrs. Rousakis, served as sponsor of the vessel. Miss Rousakis, a native of Savannah, is a senior at the University of Georgia, studying for a BSW degree (Bachelor of Social Work).

The principals of the ceremony included Albert L. Bossier Jr., president of Avondale Shipyards, Inc., who welcomed the guests; Howard Boyd, chairman of The El Paso Company, who delivered the address; Mayor Rousakis, and Father George Konstantopoulos, pastor of the Greek Orthodox Cathedral of the Holy Trinity, who delivered the invocation.

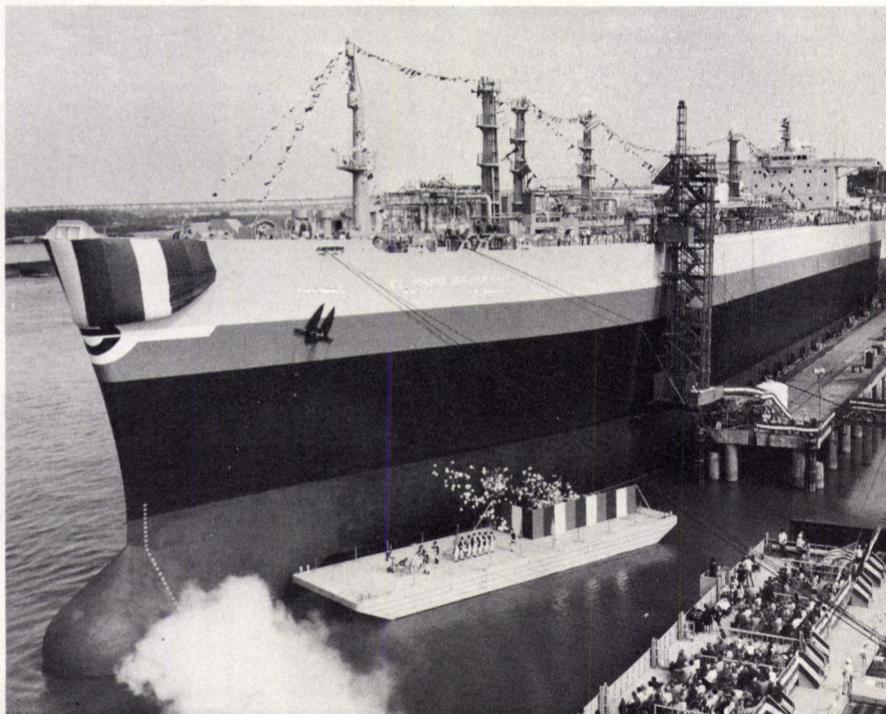
Miss Kim Johnson, daughter of Mr. and Mrs. Joseph Johnson, presented the sponsor a bouquet of

red American Beauty roses. Traditionally, the flower girl is the daughter of an Avondale employee. Miss Johnson's dad is a pipefitter. Avondale executives joining the ceremony included: Richard Brunner, senior vice president and operating officer; Joseph Oberfell, executive vice president of Finances; Rene Meric, group vice president of Contract Administration; William Harmeyer, vice president of Production; Durel Talbot and Hanson Koch, both members of the board of directors of Ogden Corporation.

The El Paso Savannah will join a fleet of nine LNG tankers to be utilized in the transportation of liquefied natural gas (LNG) between Algeria and the United States East Coast to meet the critical energy needs of this nation.

The vessel was named in honor of the city near which the Elba Island LNG Terminal is located, and in recognition of the support which El Paso and its valued cus-

(continued on page 31)



The El Paso Savannah will be utilized in the transportation of liquefied natural gas (LNG) between Algeria and the United States East Coast.

## El Paso Savannah—

(continued from page 30)

tomers, Southern Energy Company, have received from Savannah, its officials, and its citizens in implementing this important project.

The vessel is being constructed by cooperative efforts. Avondale is building the hulls and installing the Conch System of balsa and plywood tank support system designed by Cryogenic Structures Corporation (CSC), and Kaiser Aluminum & Chemical Corporation in Mobile, Ala., is subcontracted to coat the inside of the hulls with a special cryogenic insulating foam, and fabricating the 15 huge, Conch-design tanks of aluminum plate up to 1½ inch thick.

Like her sister ships, the basic specifications of the El Paso Savannah are: length overall (extreme), 931 feet 6 inches; length between perpendiculars, 887 feet; breadth molded (beam), 140 feet 6 inches; design draft, 36 feet, with a cargo capacity at design draft (approximately) of 125,000 cubic meters. Her propulsion is 41,000 horsepower.

Avondale Shipyards, Incorporated is a subsidiary of Ogden Corporation which operates in the major market areas of metals, transportation and food. Although principally shipbuilders, Avondale is a diversified industry with divisions that include quick repair yards, a foundry, a special products division, steel sales, and a facility near the Gulf at Bayou Black which builds offshore drilling structures.

## Sixth International LNG Conference Invites Proposals For Papers

The Programme Committee for the Sixth International Conference on Liquefied Natural Gas to be held in Kyoto, Japan, April 6-11, 1980, invites proposals for papers. The main themes of the five-day conference, which also includes parallel Workshop Sessions and an Exhibition, will be: "LNG and World Energy Supplies"; "Developments in LNG Technology"; "LNG Tankers and Pipelines"; and "Financial, Legal and Policy Aspects of LNG Trade."

Offers of papers related to these subjects, accompanied by a 150-word summary in French and English, are requested not later than March 31, 1979. They should be sent to the Secretary of the Programme Committee, Dr. David Roe, at British Gas Corporation, 59 Bryanston Street, London W1A 2AZ, England.

Responsibility for the selection of papers to be presented rests with the Programme Committee. Authors will be informed of the acceptance or otherwise of papers by June 1979, and completed papers must be ready by December 1, 1979.

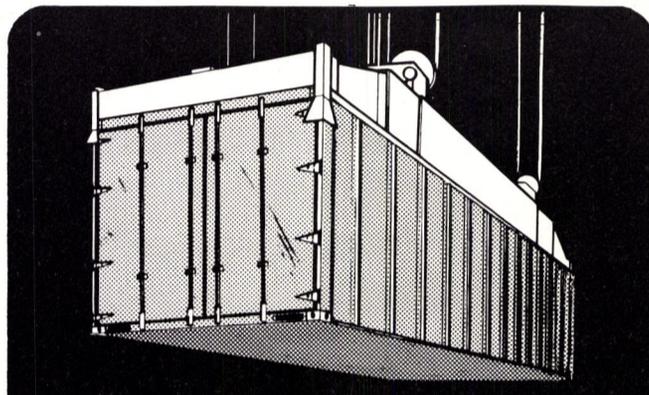
## Crowley Environmental Services Appoints Operations Supervisor

Gerald A. Plank has been appointed supervisor of operations and diving for Crowley Environmental Services Corporation, Seattle, Wash., according to an announcement by Barry Paulsen, CES Northwest Division general manager.

Mr. Plank has nearly 10 years' experience in underwater construction, salvage and repair. He most recently served as a diving supervisor with Manloves Underwater Repair, Seattle, and served in the same capacity with CES parent company Crowley Maritime Corporation from 1975-77. Mr. Plank's background also includes two years as an instructor

with the Amphibious Training Detachment, U.S. Army Special Forces, teaching underwater demolition, reef removal, and harbor clearance.

CES provides complete environmental protection services, including oil and hazardous materials spill cleanup, dock/vessel booming, design/installation of protective facilities, contingency planning, and consulting.



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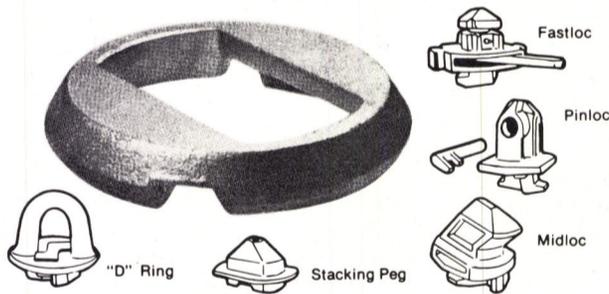
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**MEETING EXECUTIVES**, left to right: **Robert G. Mende**, secretary and executive director of the Society; **William F. Gordon**, chairman, San Diego Section; **Charles E. Heil**, secretary-treasurer, Los Angeles Metropolitan Section, host section; **David C. Pritchard**, chairman, Northern California Section, and **Robert T. Young**, president of the Society.



**MEETINGS COMMITTEE**, left to right: **Charles E. Heil**, Atlantic Richfield Company; **J. Robert Malone**, General Electric Co., assistant chairman; **C.R. Schaeffner**, Global Marine Development, Inc.; **Robert A. Rourke**, J.J. Henry Co., Inc., committee chairman; **Robert C. Lambie**, Todd Pacific Shipyards, and **E.V. Stewart**, Atlantic Richfield Company.

## SNAME California Sections Hold Annual Joint Meeting

The 21st annual joint meeting of the California Sections of The Society of Naval Architects and Marine Engineers was held in Santa Barbara this year. Los Angeles acted as the host to members from both San Francisco and San Diego. The meeting was organized by **Robert A. Rourke** of the J.J. Henry Co., Inc., and he was ably assisted by **J. Robert Malone** of the Marine Division of the General Electric Company.

The central theme of the conference was "Energy — Transportation — Estimation — Regulation." The first of a series of papers was presented by **Joseph W. Koch Jr.** of Pacific Marine Associates, in which he discussed the "Regulatory Process For New Marine Related Energy Projects." He described the seemingly endless, and still continuing struggle, of the Southern California Gas Company to secure approval for the importation of LNG from Indonesia. The prospect is good, but the date for completion of this project is still being slipped.

A past chairman of the Los Angeles Metropolitan Section, **Harold D. Ramsden**, Global Marine Development, Inc., delivered a stir-

ring paper on "Estimating For Offshore Energy Development." His emphasis was centered on the need for considering all aspects, both hidden and apparent, of any deep ocean project. The very worst must be anticipated if at all possible. He illustrated his points from his own wealth of experience. These were corroborated with similar statements of concurrence from members of the audience.

The final paper was a joint presentation of **Stanley Factor** and **Sandra J. Grove**, both of the Atlantic Richfield Company. It was supported with a series of slides and a short movie illustrating the striking beauty and impressive scenery surrounding this tremendous construction project in the barren wastes of Alaska. The seagoing aspects of this paper concentrated on the approach to the Port of Valdez. Their subject was titled "Alaskan Transportation — An Overview of Some Aspects of Transporting Alaska Crude Oil." Their point of emphasis was to show how the previous planning had successfully been implemented into a highly efficient, effective and safe method of shipping crude oil from the North Slope to the lower forties.

There were several special guests present at this annual affair, including **Robert T. Young**, chairman of the American Bureau of Shipping and president of the Society; **Robert G. Mende**, secretary and executive director of SNAME; **Lester Rosenblatt** of M. Rosenblatt & Son, Inc., honorary vice president; and **Everett A. Catlin**, The Babcock & Wilcox Co., a vice president of the Society. The conference was well attended by members of all three of the California Sections, and they were provided a well-rounded social program which included their wives and guests. Mr. Young addressed the group at the main luncheon on Saturday, and delivered a statement in review of the energy problems of this country and the contributions that can and have been made by the professionals of the marine and ocean-related industries.

As host Section, Los Angeles was represented by **Charles E. Heil** of The Atlantic Richfield Company. **William A. Hood**, West Coast Shipping Company, is the current chairman, but he was suddenly called out of the country on more urgent business. His vice chairman, Capt. **J.E. Kaune**, USN, Commander of the Long Beach Naval Shipyard, was also called away unexpectedly and was unable to participate. Nevertheless, Mr. Heil was supported by the presence of Section officers, including **David C. Pritchard**, Chevron Shipping Company, Northern California Section chairman, SNAME, and **William F. Gordon**, M. Rosenblatt & Son, Inc., San Diego Section chairman.

Such a professional meeting, no matter how ambitious the planning and personal contributions of effort and concern of individuals, cannot be a success without the support of industry itself. In this instance, it was notable indeed. The list of both national and local firms sponsoring this activity turned out to be a long one. That this was appreciated can only be measured by the enthusiasm and attentiveness of those there. Few could have come away not having been impressed by it.

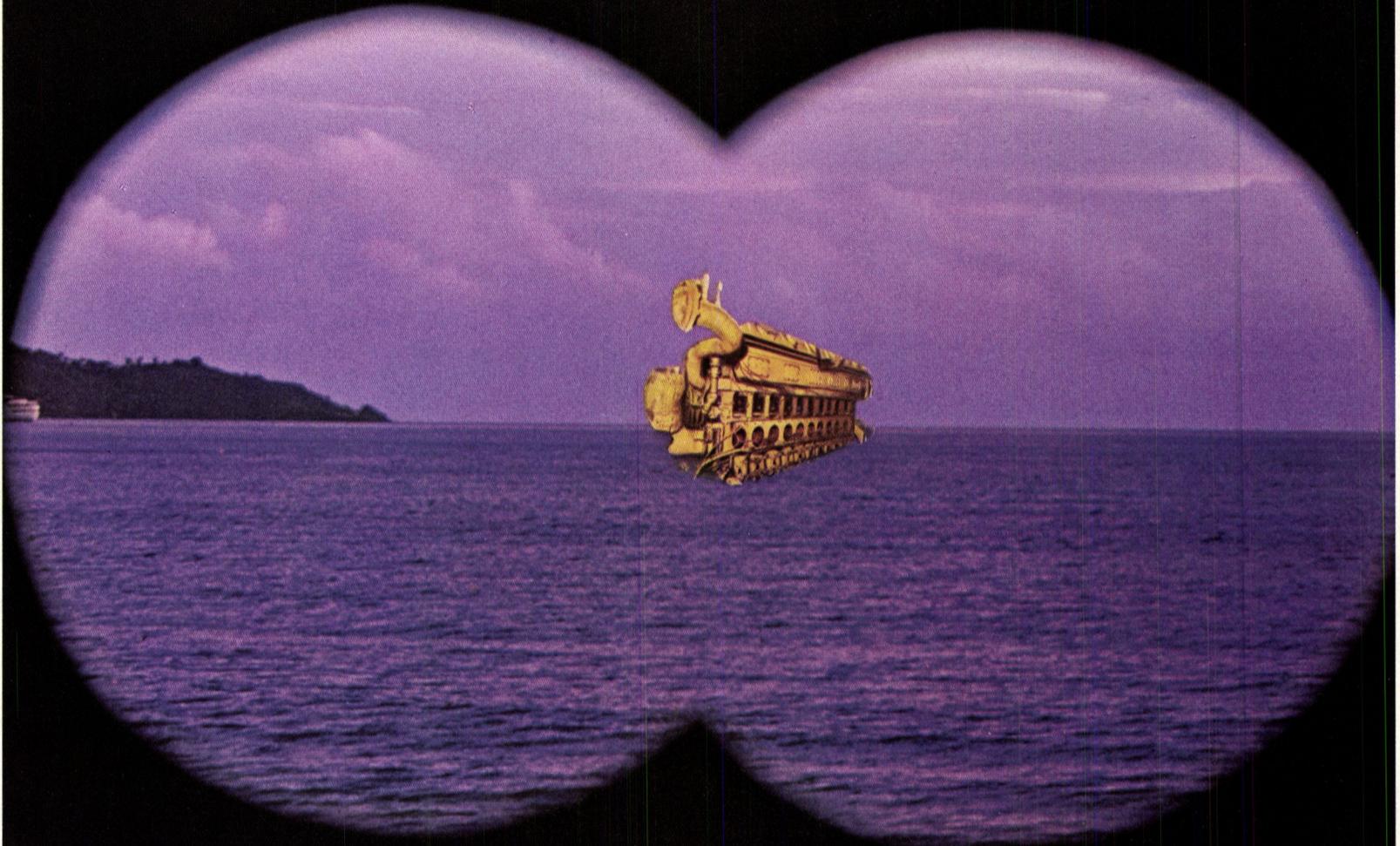


**SPEAKERS**, left to right: **Joseph W. Koch Jr.**, Pacific Marine Associates; **Stanley Factor** and **Sandra J. Grove**, Atlantic Richfield Company, and **Harold D. Ramsden**, Global Marine Development, Inc.



**SAN DIEGO SECTION OFFICERS**, left to right: **Wesley W. Hickman**, National Steel & Shipbuilding, secretary-treasurer; **Angus D. Murdoch**, NASSCO, vice chairman, and **William F. Gordon**, M. Rosenblatt & Son, chairman.

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## Fourth Chesapeake Sailing Yacht Symposium Set For January 20

The Fourth Chesapeake Sailing Yacht Symposium will be held on January 20, 1979 in the Key Auditorium of St. John's College, Annapolis, Md.

The Chesapeake Section of The Society of Naval Architects and Marine Engineers (SNAME) joins The Chesapeake Bay Yacht Racing Association (CBYRA) and The Naval Academy Sailing Squadron (NASS) to bring together the designers, builders, and sailmakers of sailing yachts, and the many yachtsmen who enjoy the leisure of cruising, and the challenge of racing, in a symposium on sailing yachts.

A series of papers by a group of distinguished authors will cover subjects of interest to cruising and racing sailors, as well as to professional naval architects and marine engineers. Interesting discussions of the papers will follow their presentation.

The program is as follows:  
Session I — Moderator: Olin J. Stephens II, SNAME.

1. "Offshore Rating Update," David R. Pedrick.

2. "A Summary of the H. IRVING PRATT Ocean Racing Handicapping Project," Justin E. Kerwin and J.N. Newman.

3. "The Measurement Handicapping System of USYRU," Daniel D. Strohmeier.

Session II—Moderator: Robert D. McWethy, NASS.

4. "Selecting a Keel Appendage for a Cruising Yacht From a Standard Keel Series," Deborah W. Berman.

5. "Philosophy and Reasoning for Light Scantling Design," Halsey C. Herreshoff.

Session III — Moderator: William W. Staley, CBYRA.

6. "Theoretical Estimation of the Influence of Some Main Design Factors on the Performance of International Twelve Meter Class Yachts," Peter van Oossanen.

7. "Photographic Essay: Ship

Training on the Tall Ship GAZELA PRIMEIRO," George J. Roewe Jr.

8. "A Microcomputer Beats to Windward," Milton U. Clauser.

Session IV — Moderator: Richards T. Miller, SNAME.

9. "A Computer-Based Method for Analyzing Flow Over Sails," D.F. Thrasher, D.T. Mook, and A.H. Nayfeh.

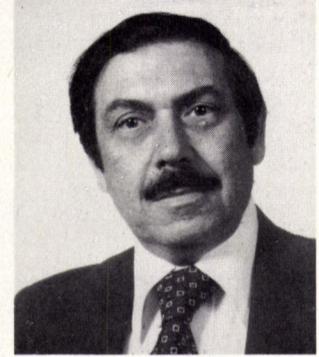
10. "The Evolving Role of the Towing Tank," Karl L. Kirkman.

**Tour of Towing Tank** — A tour will be conducted of the new Towing Tank at the Naval Academy where a sailing yacht model will be tested in waves.

The advanced registration fee of \$20 per member of one of the sponsoring organizations and \$25 for nonmembers, provides a name badge, program, admittance to the Technical Sessions, and one complete set of papers. A \$5 registration fee will be charged for spouses of registrants and student members of the sponsoring organizations. The fee for late registration received after January 10, 1979 is \$25 per member and \$30 per nonmember. The \$5 registration fee for spouses and students does not include papers. Extra copies of papers will be sold at the meeting for \$20 per set.

Further information and registration details may be obtained by writing to R.L. Ward, 110 Avondale Circle, Severna Park, Md. 21146.

## Unaflex Appoints Robert A. Salter National Sales Manager



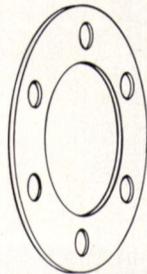
Robert A. Salter

Unaflex Rubber Corporation, manufacturers of rubber and metal expansion joints and connectors as well as a wide variety of hoses and rubber products for industrial and marine applications, announces the appointment of Robert A. Salter as their national sales manager.

Mr. Salter was formerly sales manager of the Analog Division of Coffeemat, prior to which he worked in a sales capacity at Uniroyal.

A graduate of New York University and the U.S. Merchant Marine Academy, he brings to Unaflex extensive experience in technical sales and marketing.

Unaflex Rubber Corporation is located at 2056 North Dixie Highway, Fort Lauderdale, Fla. 33305.

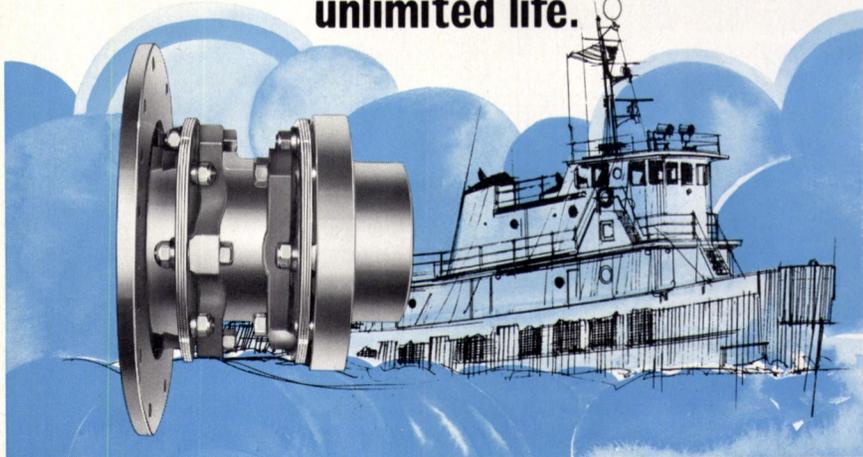


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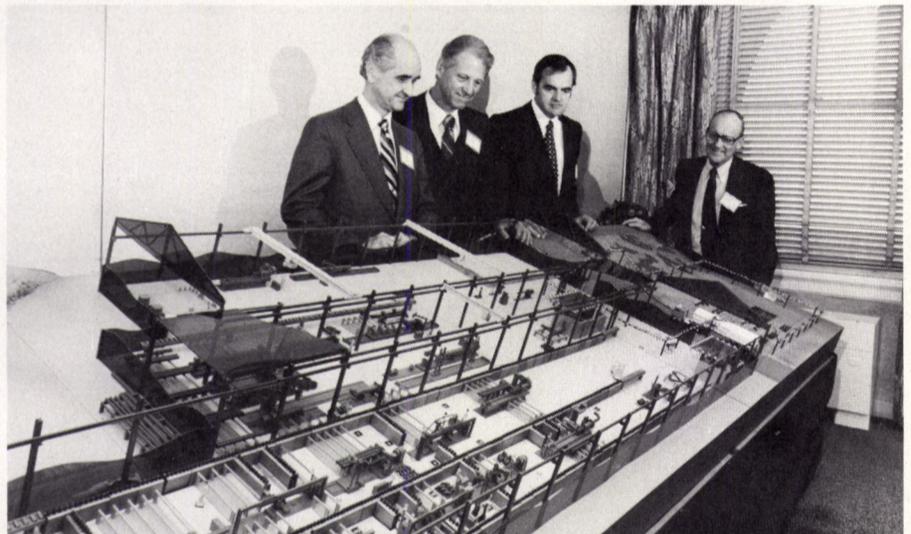


and gives our lubrication-free Dura Flex Coupling the capability to handle normal shaft misalignment with unlimited life.



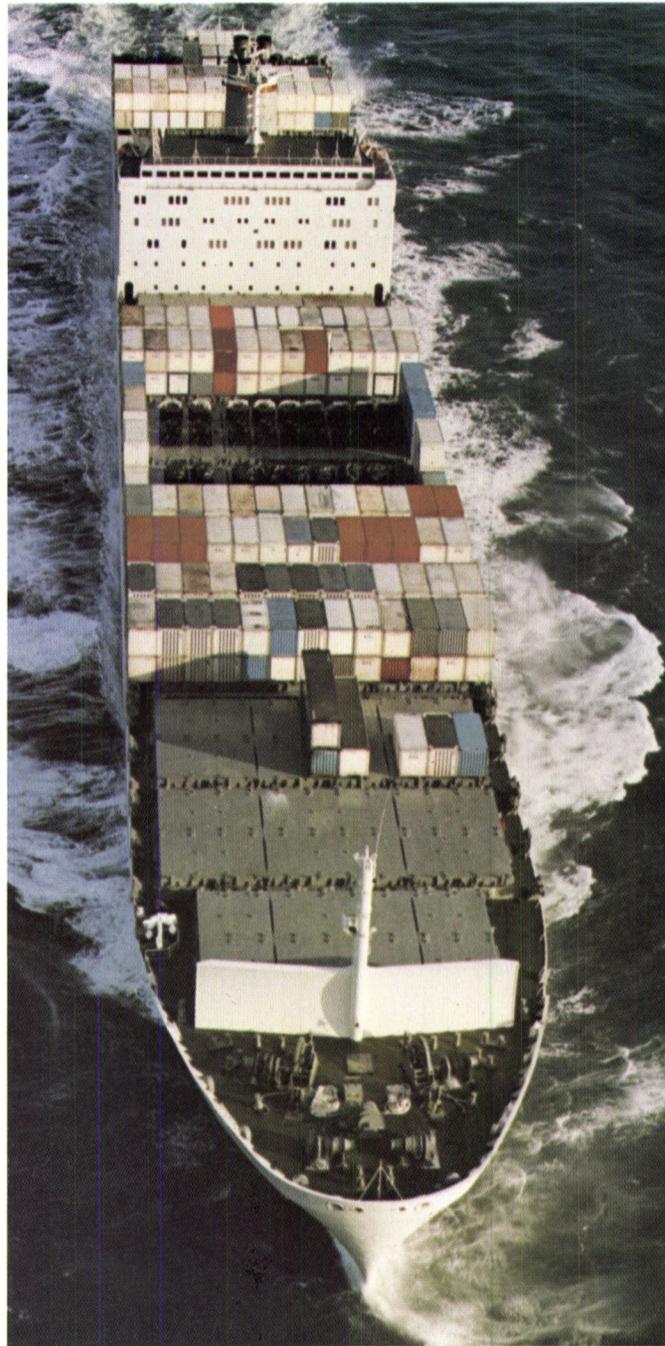
OUR COMPONENTS MAKE IT MOVE. OUR TECHNOLOGY MAKES IT WORK.

## Avondale Shipyards' New Pipe Fabricating Facility



Demonstrating an electronic model of Avondale Shipyards' innovative new pipe fabricating facility are, left to right, Lee Rice president of Ogden Transportation, Inc., Richard Brunner, executive vice president of Avondale, and Albert Bossier, president of Avondale. Looking on is Stanley Frankel, vice president of parent company, Ogden Corporation, which hosted a luncheon meeting at the Whitehall Club, New York City, November 8, for approximately 100 New York financial analysts. The pipe construction model was unveiled for the first time, and shows a facility—the most advanced of its kind in the world—designed to handle pipe sizes

ranging from 1 1/2 inches to 24 inches, applicable not only to shipbuilding but also to chemical, petrochemical, offshore gas and oil, and power generation industries. Pipe processing is the second costliest operation in the building of a ship, the first being the fabrication of the hull itself, said Mr. Bossier. With the use of the new plant, the pipe shaping work will be reduced in cost by about 39 percent. The actual facility will be first-stage completed next year at Avondale Shipyards' main yard in New Orleans, La., where Avondale is in its third successive year of record income with a current backlog of almost \$1 billion.



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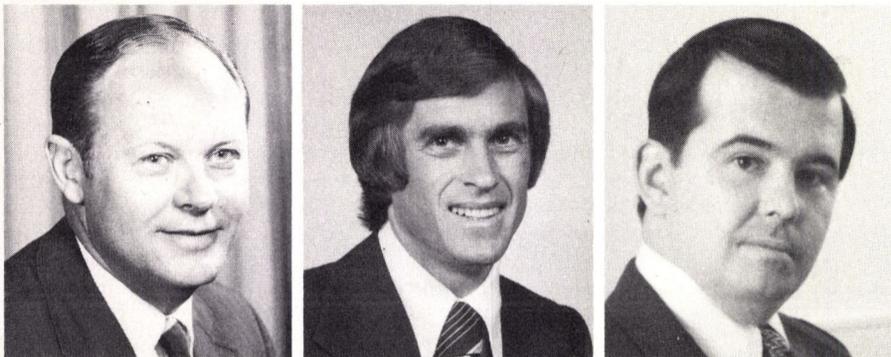
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## American Steamship Company Elects Three Executives To Vice Presidential Posts



Louis E. Ervin

D. Ward Fuller

Dennis M. O'Connor

C.T. Shen, chairman of the board and chief executive officer, and Thomas W. Burke, president and chief operating officer of American Steamship Company, a subsidiary of GATX Corporation, have announced the election of three executives, Louis E. Ervin, D. Ward Fuller, and Dennis M. O'Connor to new posts.

Mr. Ervin, who had been manager-Marine Personnel, has been named vice president-Marine Personnel and Labor Relations.

Mr. Ervin joined American Steamship Company four years ago after working 14 years in Washington, D.C. for the Maritime Administration in several management positions. Prior to that, he worked for several steamship companies in various positions, both ashore and aboard ocean liners. He graduated from the U.S. Merchant Marine Academy, and Georgetown University.

Mr. Fuller, who had been special assistant to the chairman in New York City, has been named vice president-Finance.

Mr. Fuller is a graduate of the University of Southern California School of Business, and the Boalt Hall School of Law at the University of California at Berkeley.

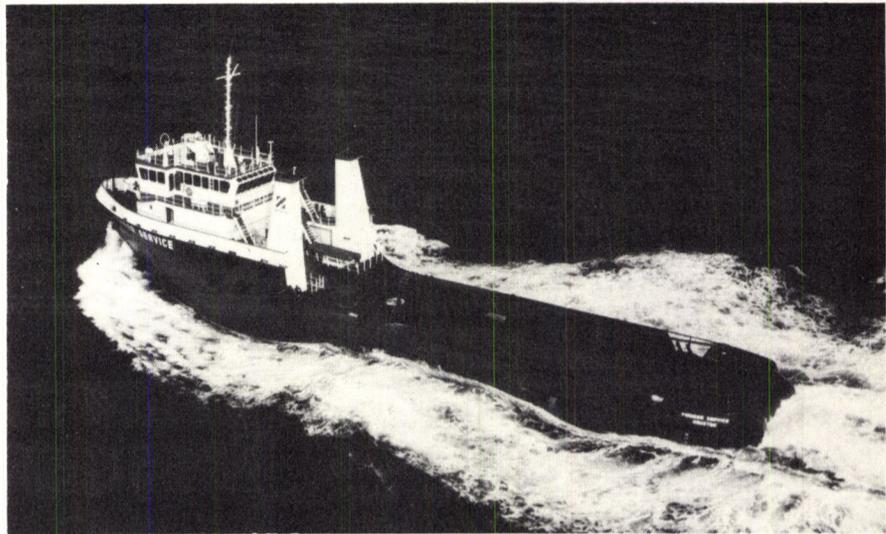
Prior to joining ASC in 1977, Mr. Fuller was previously engaged in private law practice, corporate banking, and corporate finance, the latter position with ASC's sister subsidiary in San Francisco, Calif., GATX Leasing Corp.

Mr. O'Connor has been elected vice president-Operations in which position he will be responsible for the direction of the engineering, vessel personnel, insurance, and purchasing functions of the company.

Mr. O'Connor has been employed by American Steamship Company since 1969, and served as vice president-Finance and treasurer of the company and its subsidiaries. Mr. O'Connor received both his bachelor's and master's degrees from Canisius College, and is a certified public accountant.

GATX provides capital equipment and services for extracting, processing, and distributing dry and liquid bulk materials in North America and overseas. It owns and operates railcars, oceangoing and Great Lakes vessels, and bulk liquid terminals; manufactures industrial and transportation equipment, and provides financing for capital equipment.

## Zapata Commissions Latest Of Workboats Supporting Atlantic Coast Exploration



The 5,750-horsepower Pioneer Service is U.S. Coast Guard certified, and meets all current and anticipated pollution control standards for East Coast operation. It is one of five Zapata Marine Service vessels currently based in Davisville, R.I.

The Pioneer Service, latest of six sophisticated tug/supply vessels built for operation by Zapata Marine Service, Inc. on America's ocean frontiers, was commissioned on November 18 at Davisville, R.I. in special ceremonies. This 5,750-horsepower vessel is one of five sister ships now based in Rhode Island.

A crowd of spectators, representing Rhode Island's leading citizens and the oil industry, watched as the vessel's sponsor Mrs. Paul L. Kelly smashed the traditional champagne bottle on the bow of the Pioneer Service to officially christen the new 207-foot tug/supply vessel. Other elements in the colorful ceremonies were the replica sloop-of-war Providence, and a Coast Guard fire boat, which saluted the vessel, and the Kentish Guards of North Kingstown, garbed in Revolutionary War uniforms, who provided martial music and acted as color guards.

Rhode Island's U.S. Senator John H. Chafee was principal speaker at the ceremonies. Other remarks were given by Ronald C. Lassiter, president of Houston, Texas-based Zapata Corporation, and Scott Eubanks, director of Rhode Island's Department of Economic Development, who appeared on behalf of Governor J. Joseph Garrahy. Kenneth W. Waldorf, president of Zapata Marine Service, was master of ceremonies. The vessel's sponsor, Mrs. Kelly, read a poem she had written to honor the Pioneer Service, and Miss Jenny Ventura Byrd of East Greenwich, R.I., served as maid of honor.

Built by Campbell Industries, San Diego, Calif., the Pioneer Service, and her sister vessels have been completed over the past two years, and represent an investment of about \$5.5 million each. They were specifically designed for work in frontier waters of the U.S. Outer Continental Shelf, providing the ultimate in operating efficiency under the most demanding conditions.

The Pioneer Service joins its

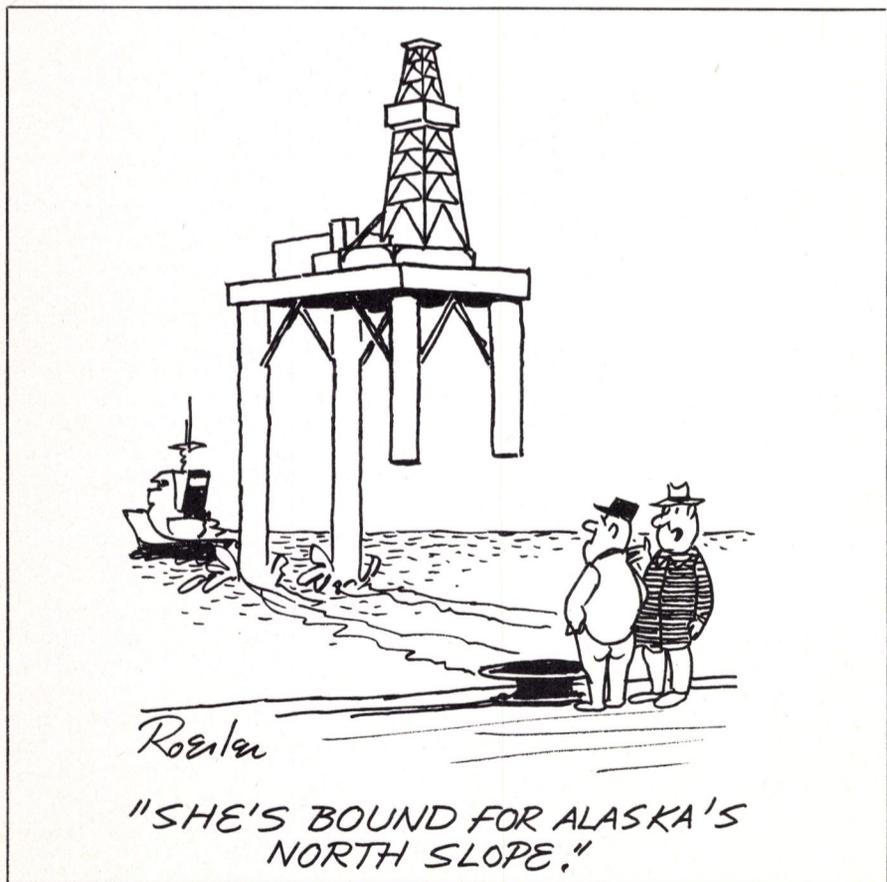
sister vessel Liberty Service in awaiting commencement of further operations in the Baltimore Canyon. Three other vessels in the class are now supporting drilling operations there. The Constitution Service and Independence Service, part of the initial contingent of marine service vessels to arrive in Davisville in March 1978, are now contracted to Gulf Oil Corporation, in support of the semisubmersible New Era. The Freedom Service, which began operations in June, is under contract to Mobil Oil Corporation in support of the semisubmersible Pacesetter III. Zapata Marine Service currently employs about 100 people in its Baltimore Canyon operations, of whom 40 percent are from New England.

This month, the Zapata Marine Service vessels will be joined by the giant semisubmersible rig Zapata Uglund, which is being mobilized from the North Sea to the Baltimore Canyon area, where it will work for Tenneco Oil Company. Built in 1974, the semisubmersible will be the largest offshore drilling rig working on the U.S. Atlantic Coast. It is operated by Zapata Off-Shore Company.

The addition of the Pioneer Service brings to 48 the number of vessels in the worldwide fleet of Zapata Marine Service, Inc. Forty-one of these are tug/supply vessels ranging from 2,000 to more than 7,000 horsepower. Zapata's fleet transports supplies, equipment and crews; tows rigs, handles anchors, hauls pipe and supports construction. In addition to the U.S., present operations include waters of 10 countries in the North Sea, offshore West Africa, the Middle East, South America, and Southeast Asia. The company has worked in waters of more than 50 countries since it began in the mid-1950s.

Features of the Pioneer Service include outstanding bollard pull, top speed in excess of 15 knots and cruising speed over 13 knots, and equipment for handling 20-ton anchors and related chain

(continued on page 38)



## Zapata Commissions—

(continued from page 37)

under inclement deepwater conditions. Also, the vessel has maximum maneuverability through the use of its controllable-pitch propellers and 400-hp bow thrusters, and maximum stability in rough seas and while handling anchors. Its sewage treatment and oily water separator systems assure

compliance with existing and anticipated pollution control requirements. Powered by two EMD 16-645E70 diesels, the new vessel's principal dimensions are: overall length, 207 feet 4 inches; beam (width), 40 feet; and draft (maximum load) 16 feet 8 inches. Its ample cargo capacity, with rapid pumping units, permits versatile operation on long supply runs. The vessel has a crew of 10,

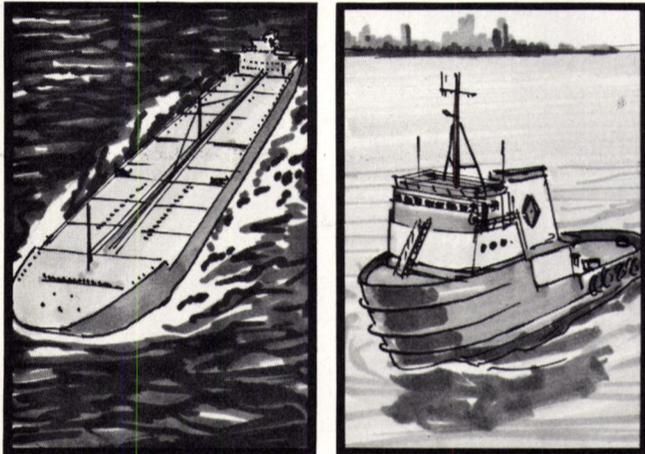
and can accommodate 14 additional passengers.

Zapata Marine Service, Inc. is a wholly owned subsidiary of Zapata Corporation, a Houston, Texas-based diversified natural resources company. In addition to marine services and offshore drilling, Zapata's businesses include petroleum exploration, bulk shipping; menhaden, anchovy and tuna fishing; coal and copper min-

ing, and construction and dredging. Zapata is unique among companies in the offshore oil industry in that it also has a full range of fishing operations, which date back to a menhaden fishing business established in the Chesapeake Bay area over 100 years ago.

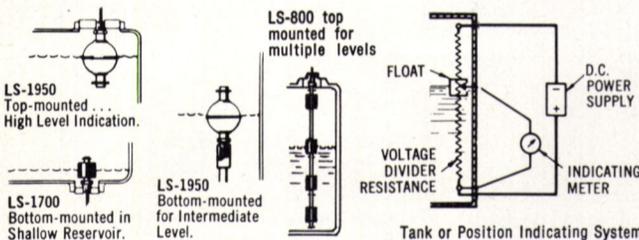
Among honored guests at the commissioning ceremonies were: the Honorable **John H. Chafee**, U.S. Senator (D-R.I.); **Scott Eubanks**, director of the Rhode Island Department of Economic Development, and **Mrs. Eubanks**; **Gordon Byrd**, director of the Business and Industry Division of the Department of Economic Development, **Mrs. Byrd**, and daughter **Jenny Ventura Byrd**, the maid of honor; and a number of officials from the Providence and North Kingstown areas.

Key Zapata representatives included: **Ronald C. Lassiter**, president and chief operating officer, Zapata Corporation, and **Mrs. Lassiter**; **Robert B. Wall**, executive vice president and chief financial officer, Zapata Corporation; **Paul L. Kelly**, senior vice president-corporate affairs, Zapata Corporation, and **Mrs. Kelly**, the vessel's sponsor; **Kenneth W. Waldorf**, president of Zapata Marine Service, Inc., and **Mrs. Waldorf**. Other Zapata representatives included **C.D. Summitt**, vice president-marketing of Zapata Marine Service, Inc.; and **Tony Pontillo**, shorebase manager of Zapata Marine's Davisville operations, and **Mrs. Pontillo**.



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## New 500-Ton Crandall Railway Drydock For Fairhaven, Massachusetts

The first Crandall-designed railway drydock to be built in Massachusetts in 50 years has just been completed by Norlantic Diesel, Inc. at their repair yard in Fairhaven. This upgrading of Norlantic's facilities illustrates the belief that the New Bedford fishing fleet is alive and is well on the road to recovery after many years of marginal operation.

The drydock is a standard Crandall railway with a certified lifting capacity of 500 tons. The cradle is of composite construction, having a timber undercarriage supporting steel beams and uprights. This combination of materials has proven over the years to be very effective from the operational standpoint and to make construction easy—Norlantic's own forces fabricated and erected the structure.

The entire facility is supported on treated timber piling. The track upon which the cradle runs is of structural steel, which was fabricated in easy-to-handle sections and installed by divers. Other features of the railway are the standard Crandall rollers, the open-link railway chain, and an electrically driven open-gear type Crandall hauling machine, which was made locally and installed by Norlantic.

## Perry Oceanographics Opens Vehicle Services Office In Houston

Following the highly successful operations of the new RECON® III in various North Sea applications, Perry Oceanographics, Inc. of Riviera Beach, Fla., has opened a vehicle services office in Houston, Texas, as base for operations of RECON III, RECON® V and manned submersible operations. The office will also assist in serving Perry's many Houston clients for its manufactured products and engineering services.



Tom Conner

Tom Conner has joined Perry to head up the new office. Mr. Conner brings 12 years of underwater marine experience to the position. A qualified Navy saturation diver, he has held supervisory and managerial positions with Global Divers and Hyco Subsea, Inc.

The Perry office is located at 4801 Woodway Drive, Houston, Texas 77056.

## SNAME Scholarships For Graduate And Undergraduate Levels

Scholarships in both the graduate and undergraduate levels are again being provided by The Society of Naval Architects and Marine Engineers to encourage men and women to pursue studies in the naval architectural and marine engineering or closely related fields. Only United States or Canadian citizens are eligible.

For the Graduate Study Program, application forms have been forwarded to ship operating and shipbuilding companies, affiliated trades and to universities located in all sections of the country. Applications for graduate scholarships for the fall of 1979 should be filed with the secretary and executive director of the Society at One World Trade Center, Suite 1369, New York, N.Y. 10048, before the closing date of February 1, 1979.

The maximum value of the graduate scholarships usually covers the cost of tuition at the school selected. The Scholarships Committee will determine in each case the exact value of the graduate scholarship award. Each successful candidate may select the institution for advanced studies, subject to the approval of the Scholarship Committee.

Factors considered in making

the selection include scholastic ability, the candidate's capacity to pursue advanced study, ambition, personality and other qualities indicative of prospective leadership status in the marine industry. For at least one scholarship, emphasis will be placed on recent employment of at least five years in the marine field as a factor for selection.

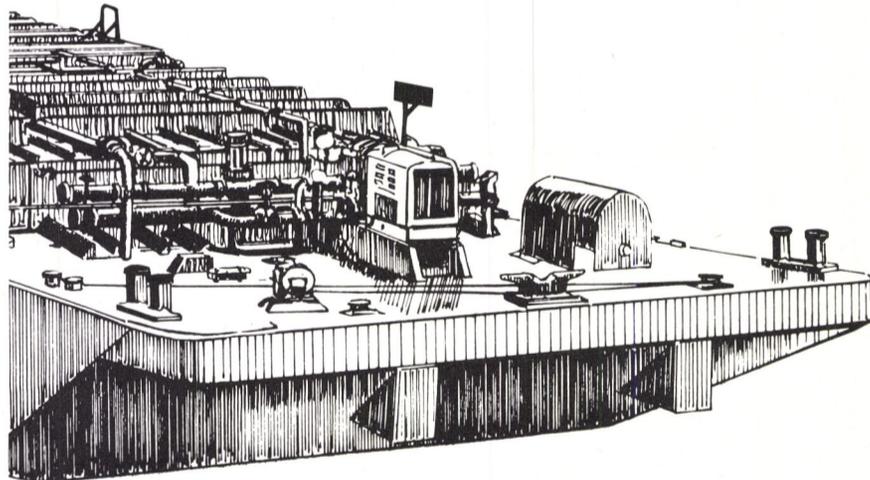
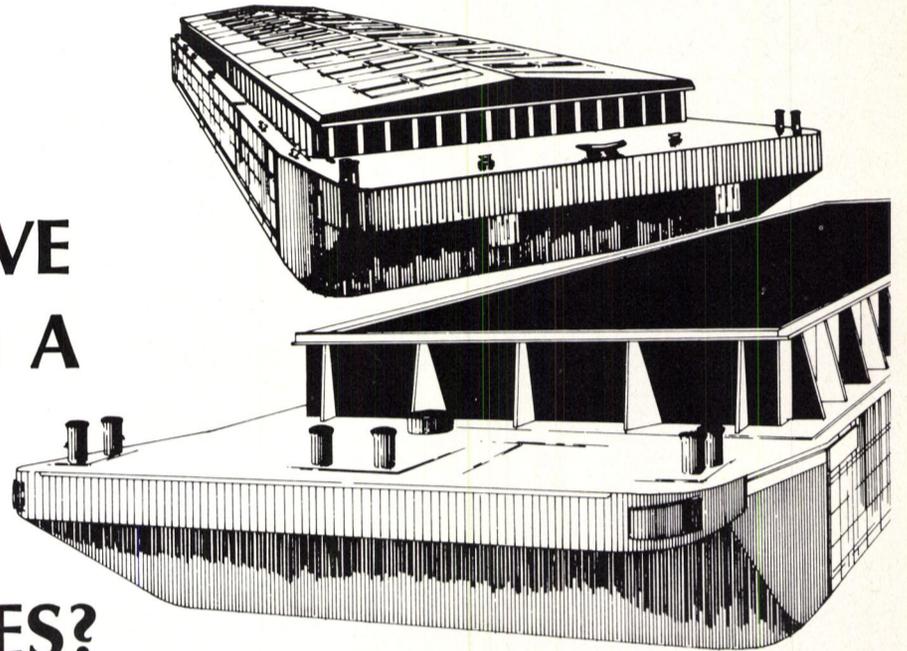
In addition to the Graduate Program, several undergraduate

scholarships of \$1,000 each are made available by the Society at Massachusetts Institute of Technology, University of Michigan, and State University of New York Maritime College. Grants-in-Aid are also made available at the University of California at Berkeley. Also, Webb Institute of Naval Architecture provides a tuition-free education to all undergraduate students. Recognizing this fact, the Society supports the

Webb program with annual contributions, bringing Webb indirectly into the scholarship program.

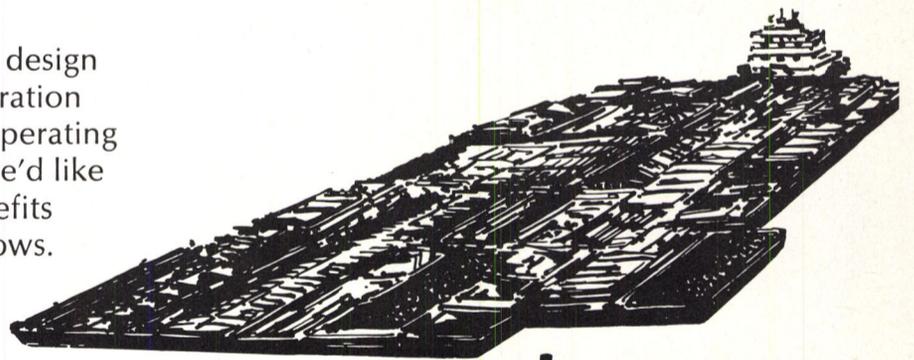
Those interested should contact the above institutions directly and not the Society, since nominations for Society Undergraduate Funds have been assigned to them. All recipients of undergraduate scholarships will be subject to the approval of the Scholarships Committee.

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## Atlantic Sandblasting Opens Houston Office

Atlantic Sandblasting & Coatings, Inc. vice president of sales and marketing **Matthew E. Clark Jr.** has announced the opening of a branch Sales Office in Houston, Texas. Atlantic Sandblasting & Coatings Inc. has been in business for over 20 years in the field of marine tank and hull sandblasting and coating.

The office in Houston is located at 4433 Bissonet, Suite 201, Bellaire, Texas. Atlantic Sandblasting & Coatings, Inc. also has branch offices in San Francisco, Calif., and New York, N.Y.

**G. Robert Sturges**, manager of the Houston area, has had 15 years' experience in the marine and offshore industry.

## Iotron Corporation Merges With Varo, Inc.

Varo, Inc., Garland, Texas, has announced that it has signed an agreement in principle with Iotron Corporation of Boston, Mass., providing for the merger of Iotron with Varo.

Iotron, located in Bedford, Mass., a Boston suburb, is a privately held, high technology company which was founded in 1969, and has developed and is manufacturing an integrated line of electronic navigation systems for oil tankers and other types of vessels. Iotron's primary product is DIGIPILOT, a computerized collision avoidance radar system. The system automatically acquires and continually plots the courses and relative positions of ships and other obstructions in a given area, and displays this information

on the ship's bridge so that a course can be steered to avoid collisions. The recently enacted Port Safety and Tank Vessel Safety Act empowers the Secretary of Transportation to issue regulations requiring collision avoidance radar systems to be installed on all tankers and large vessels utilizing U.S. waters. Two hundred sixty-seven DIGIPILOTS have been sold, which is approximately 40 percent of all such systems sold to date.

Other Iotron products include DIGINAV, a computerized integrated navigation system which automates all navigation functions, including fixing the DIGIPILOT, an automatic steering system which minimizes fuel consumption. DIGIDATA, an optional recorder, can be attached to the system to continuously record all navigation data for later analysis.

Iotron sales for its fiscal year ended April 30, 1978 were approximately \$5.4 million.

Headquartered in Garland, Texas, a Dallas suburb, Varo manufactures military night vision viewing systems, high voltage rectifiers and multipliers used in consumer and industrial electronic products, frequency control devices for the U.S. Navy, and marine searchlights. Varo sales for its fiscal year ended April 30, 1978 were approximately \$79 million. Varo common shares are traded on both the New York and American Stock Exchanges.

## MarAd Releases Update Of Vessel Inventory Report

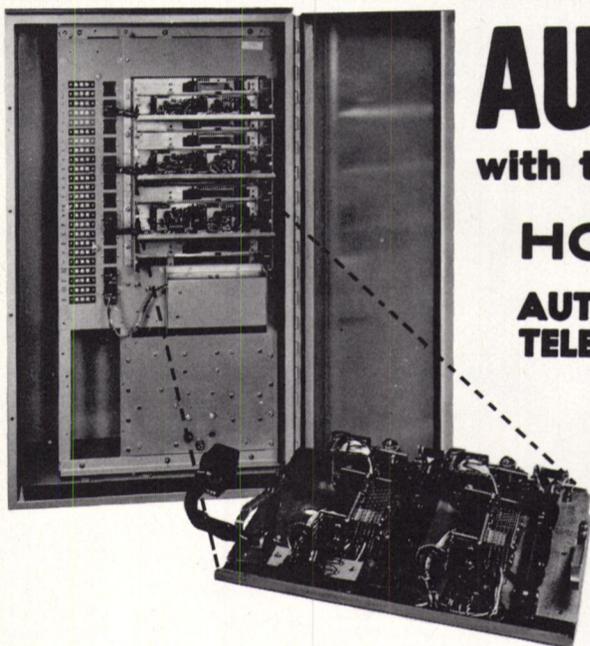
The Maritime Administration has released the latest update of the Vessel Inventory Report, a semiannual listing of U.S.-flag oceangoing merchant ships of 1,000 or more gross tons. The 56-page report contains an alphabetical roster of all such ships, whether privately or MarAd-owned, and lists each vessel's type, owner or operator, design type, and deadweight tonnage.

A second section provides a cross reference by listing alphabetically the owners and operators, together with their respective vessels. Listings of merchant and military vessels currently in the National Defense Reserve Fleet are also provided.

The Vessel Inventory Report is available from the MarAd Office of Public Affairs, Room 3895, Department of Commerce, Washington, D.C. 20230.



**ALCOA SUPPORTS ACADEMY PROGRAMS** — The Kings Point Fund of the U.S. Merchant Marine Academy Alumni Association has received a \$1,000 Assistance Grant from the Alcoa Foundation. Fund officials said the grant would be used to support midshipman programs at the Academy such as the sailing team, the regimental band, a student loan program, and athletics. These activities receive no appropriated Federal funds. Shown presenting the grant to Rear Adm. **Arthur B. Engel**, USCG (ret.), Superintendent of the Academy, is **C.G. Kiskaddon Jr.**, president of Alcoa Steamship Co.



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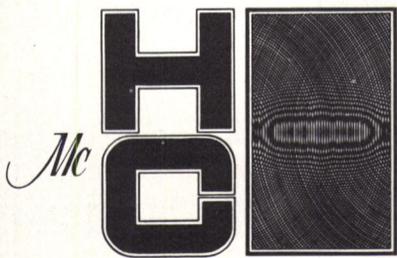
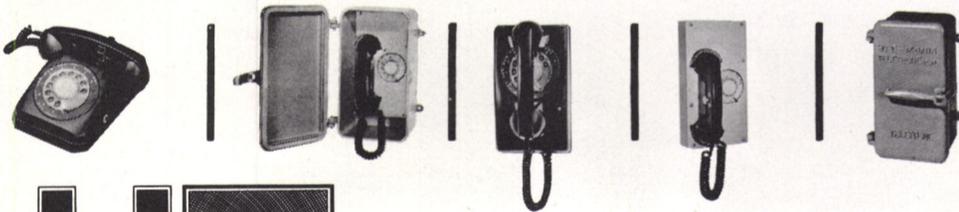
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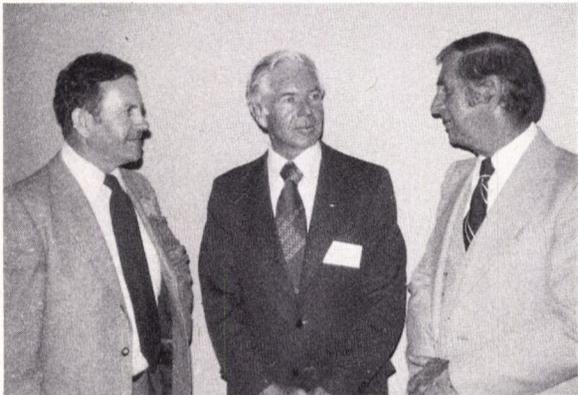
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## New England Sections Of ASNE And MTS Discuss Submersibles

At a recent joint dinner meeting of the New England Section of the Marine Technology Society (MTS), and the Northern New England Section of the American Society of Naval Engineers (ASNE), Prof. Eugene Allmendinger spoke on "Submersibles, Past, Present and Future," at the New England Center at the University of New Hampshire. A professor of naval architecture and a director of the Marine Program at the University of New Hampshire, Mr. Allmendinger has been involved in submersibles for many years.



Prof. Eugene Allmendinger (center), a director of the Marine Program at the University of New Hampshire, speaker, is shown at the joint meeting with Robert Collier (left), chairman of the New England Section of MTS, and Robert Hockenhull (right), chairman of the Northern New England Section of ASNE.

For centuries, men have attempted to find some way of descending beneath the surface of the sea for scientific observation, for salvage, or for attacking enemy ships in time of war. Professor Allmendinger traced the history of some of these submersibles. One

of the first was the Diving Bell of Alexander the Great in 322 B.C. The first submarine used as an offensive weapon in naval warfare was the Turtle. This was a one-man self-propelled vehicle of the Revolutionary War that traveled just beneath the surface. The forerunner of the modern submarine was Robert Fulton's Nautilus. This vessel of 1800 used a sail for surface propulsion and a hand-driven screw propeller for submerged travel. After highlighting many others, Professor Allmendinger concluded the historical portion with mention of the record-holding deep-diving bathyscaph Trieste.

The professor concluded his talk with the belief that future submersibles would be primarily unmanned and remotely operated. The present demand for submersibles, he predicts, will probably be in support of offshore oil rig construction, both in the areas of maintenance and inspection.

## Peterson To Build Ferry For Washington Island Ferry Line

Capt. Arni Richter, president of the Washington Island Ferry Line, Inc., and Joe Gagnon, vice president and general manager of Peterson Builders, Inc., shipbuilders of Sturgeon Bay, Wis., recently signed a contract for construction of a new 90-foot by 36-foot ferry for service across Death's Door between Gills Rock or Northport and Washington Island. The boat, similar to the ferry line's M/V Eyrarbakki, was designed by R.A. Stearn, Inc., naval architects and marine engineers of Sturgeon Bay. The new boat, however, is somewhat longer than the Eyrarbakki. It will be U.S. Coast Guard certified for transporting 175 passengers and 16 automobiles or the equivalent combination of automobiles, campers, trucks and semi-trailers. Captain Richter noted that the boat will be used to serve the ever-increasing traffic of recreational vehicles, campers and trucks to the Island, and will permit the ferry line to increase their frequency of service during the busy summer months.

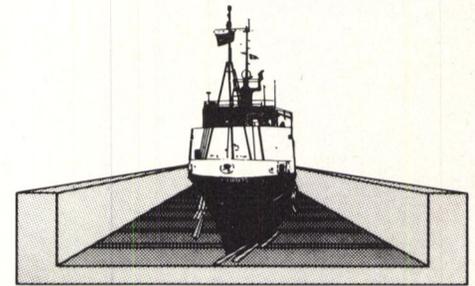


Capt. Arni Richter (center), president of Washington Island Ferry Line, Inc., inspects progress on his new 90-foot by 36-foot passenger and vehicle ferry being built at Peterson Builders, Inc., Sturgeon Bay, Wis. Looking on with Captain Richter are (left) Earl Kraterfield, leadman in charge of construction of the hull, and (right) Joe Schauske, welder leadman.

Propulsive power will be from two Cummins Model NT-1150M engines with Capitol reverse/reduction gears, all furnished by Cummins-Wisconsin, Inc. The four-blade propellers and Armco "Aquamet-18" propeller shafts are being furnished by Kahlenberg Brothers Inc. of Two Rivers, Wis. Electric power will be furnished by a 10-kw diesel generator set built by the Kohler Company of Kohler, Wis.

Construction has begun, and the boat will be delivered in May 1979, in time for the busy summer season.

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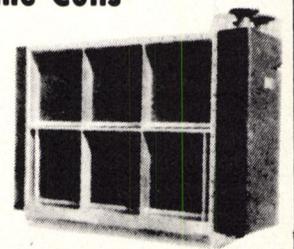
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## ASNE Southern New England Section Discusses Southeastern Connecticut's Stake In The Development Of Offshore Resources



Officers and guests at the ASNE Southern New England Section meeting, left to right: Capt. **Don Kern**, USN (ret.), vice chairman; **Christopher Roosevelt**, panelist; **Joseph A. Cope**, panelist; **Harry T. Loeser**, chairman; **John Ritter**, panelist, and **R. Wicklund**, panelist.

The Southern New England Section of the American Society of Naval Engineers, Groton, Conn., held its fall meeting at the Coast Guard Academy. The technical session of the meeting was a distinguished panel convened to discuss the topic "Southeastern Connecticut's Stake in the Development of Offshore Resources." The speakers included: **Joseph A. Cope**, manager of Policy Development and Economics of the Continental Oil Company; **John Ritter**, president of Hydrospace Systems Inc., based in New London, Conn.; **Christopher Roosevelt** of the Oceanic Society, Stamford Marine Center, and **R. Wicklund**, Legislative Assistant for Ocean Affairs to Senator **Lowell P. Weicker Jr.**

Mr. Cope opened the discussion by explaining the impact of offshore resources reserves on New England's energy needs. He began by noting the heavy dependence of New England on oil, which provides approximately 80 percent of the area's energy needs compared to 50 percent nationally. With 80 percent of Connecticut's oil imported, the state is vulnerable to interruptions and/or shortages; therefore, the region has a definite interest in the development of offshore oil resources. George's Bank may contain up to one billion barrels of oil, and could supply perhaps 5 to 10 percent of the area's energy needs. He indicated that Connecticut was not in the most advantageous position for servicing Baltimore Canyon rigs, but it is in an excellent position to experience secondary benefits associated with the construction of supply ships and/or platforms.

Mr. Ritter followed by discussing how one of the technological skills of the area, submarine building, could be applied to offshore resources. Southeastern Connecticut has exceptional technical and operational skills and resources which can be readily

adapted from their present military application to this commercial area. The development of offshore resources will result in heavy demands for the maintenance and repair of subsea installations. A significant cost associated with these operations is the lost time associated with weather. Below a depth of 100 feet, the ocean is relatively calm, and activities can continue long after operations must cease on the surface. His company, Hydrospace Systems, Inc., is presently developing a 115-foot commercial submersible to fill this operational area.

Mr. Roosevelt, speaking as an environmentalist concerned about the development of the oceans, began with the premise that if there are environmental resources that are economically developable, they will be developed. He emphasized that the goal of the environmentalist is not to stop development, but to temper the undesirable effects. He expressed a concern that the risks associated with offshore development may not have been adequately considered.

Mr. Wicklund noted that our offshore resources have much more to offer than just oil. Primary economic activities represented by all U.S.-controlled ocean resources was estimated at \$7.5 billion in 1973. By 2000 it is estimated that this will increase to 40 billion 1973 dollars. These resources include minerals, living resources, and non-extractable resources such as energy. He noted that the marine environment is extremely fragile, and the Federal Government's role is to assure that development and utilization of ocean resources will contribute to living standards while still protecting the environment. He noted that during the next few years, Congress and the Administration will have to address several issues of direct importance to southeastern Connect-

icut and offshore resource development.

The technical session was an enlightening and interesting conclusion to an enjoyable meeting, which began with cocktails and a delicious prime rib dinner at the Academy Officer's Club.

### Joseph L. Waldvogel Joins Soros Associates

Joseph L. Waldvogel has joined Soros Associates, New York, N.Y., consulting engineers, as a vice president.



Joseph L. Waldvogel

Mr. Waldvogel has over 30 years of experience in the engineering and management of complex marine and industrial projects, from conceptual design through construction.

Most recently, he has been assistant vice president of Parsons Brinkerhoff, consulting engineers. As manager and technical director of the Marine Facilities Division, he was responsible for all port and harbor development projects. Prior to this, Mr. Waldvogel was with Bechtel Associates in New York, a branch of Bechtel, San Francisco. He started as a project engineer, became chief civil engineer, and finally engineering manager.

Soros Associates is an international engineering firm specializing in the planning, design and construction management of port developments, offshore terminals and bulk-handling systems.

### De Laval Issues Comprehensive Brochure On Centrifugal Separators

The De Laval Separator Company has issued a new brochure containing comprehensive information on centrifugal separators. Entitled "Centrifugal Separation: a Science and an Art," the brochure's release is part of a year-long program commemorating the hundredth anniversary of the centrifugal separator.

The brochure is extremely informative for both technical and nontechnical readers. Background information is provided by means of a number of charts, mathematical side-bars, and cutaway drawings.

The brochure begins with the history of centrifugal separation, starting with the 1878 patent issued to Gustaf De Laval. A following section discusses the many applications for centrifuges.

Another segment of the bro-

chure discusses the theory of separation and several ways to achieve it, with technical side-bar.

The final section of the brochure describes the main types of centrifuges available for industrial applications today — solids-retaining, solids-ejecting, solids-discharging ("nozzle"), decanter, pusher, basket, peeler, and laboratory centrifuges. Each is illustrated with one or more cut-away diagrams. This section also includes a description of the Centennial Series™ separator, a new, high-gravity design recently introduced to the U.S. market by De Laval.

At the end of the brochure, actual installations on a ship are illustrated.

Copies of the brochure, SA 1754, are available from **David Closs**, The De Laval Separator Company, Marketing Services Department, Poughkeepsie, N.Y. 12602.

### Foreign Nations Urged To Crack Down On Soviet Rate-Slashing

The National Maritime Council, Washington, D.C., has urged major foreign shipping line executives and foreign maritime labor union leaders in eight countries to press their own governments to crack down on Soviet rate-slashing practices in oceangoing trade.

**James R. Barker**, chairman of the NMC board of governors, has written to maritime labor and management leaders in England, Germany, Japan, Hong Kong, France, Sweden, Norway and Holland informing them that President Carter has signed into law the Controlled Carriers Act of 1978.

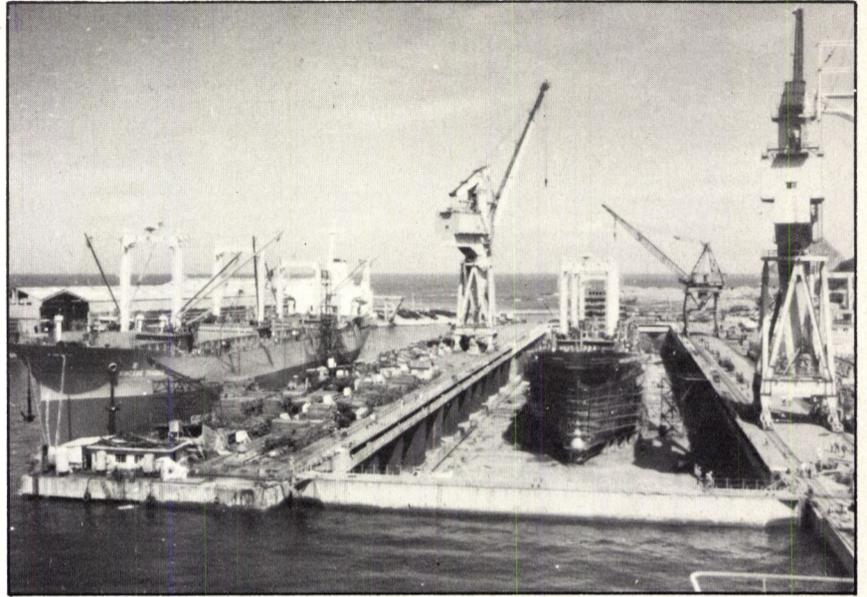
The act, he explained, empowers the Federal Maritime Commission to ascertain that state-controlled ships trading in the United States must charge rates that are compensatory.

Mr. Barker said the new law is "aimed principally at the Soviet Union, which for the past few years has operated its vessels in our trades at rates so low as to make it impossible for free-nation lines to compete."

He said this practice has been "common to the Soviet (merchant) fleet and Eastern European fleets throughout the world."

Mr. Barker, whose organization represents major shipbuilders, operators shoreside, and seafaring unions in the U.S.-flag shipping industry, said "these unfair trading practices . . . constitute a serious threat to the economies and security of the nations outside the Soviet sphere."

He asked his foreign counterparts "to urge the appropriate officials of your government(s) to act forcefully in taking steps to assure that the rates of the Soviet and Eastern European vessels in your . . . trades are fair and compensatory."



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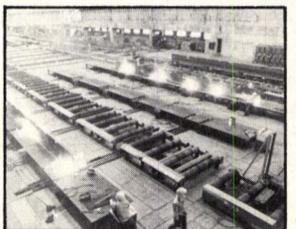
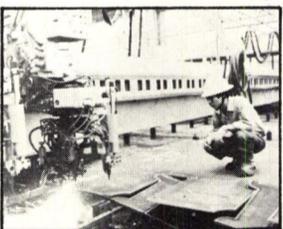
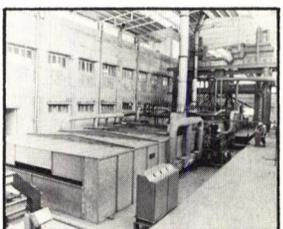
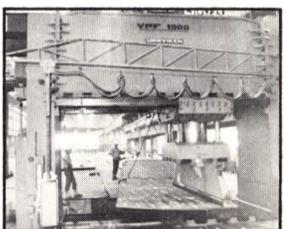
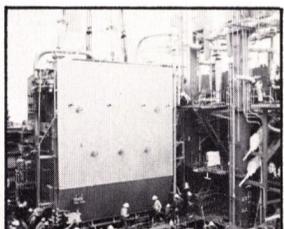
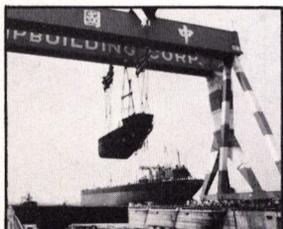
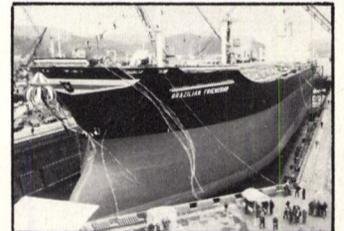
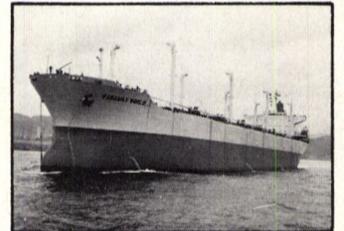
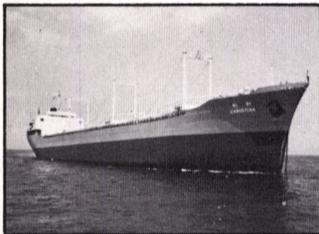
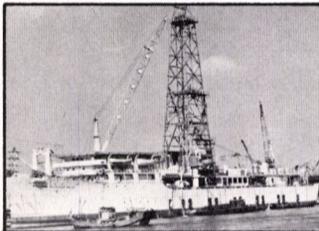
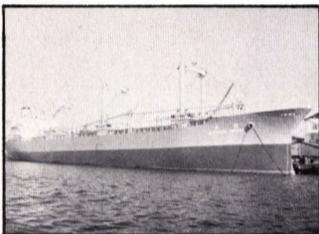
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Civil, mechanical, or chemical engineers with a background in Oil and Gas production or offshore structures are needed by this industry leader. Strong communications skills and a business-oriented personality are important in this position where you will not only be dealing with clients and competitors, but also keeping the company abreast of new technology and developments in the offshore field.

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Rig Manager	\$45,000
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COMMENTS: Vessel is operative and ready to sail within 4 hours; her current fair market price would be \$90,000.00; replacement \$600,000.00; your price now \$35,000.00, subject to prior sale.

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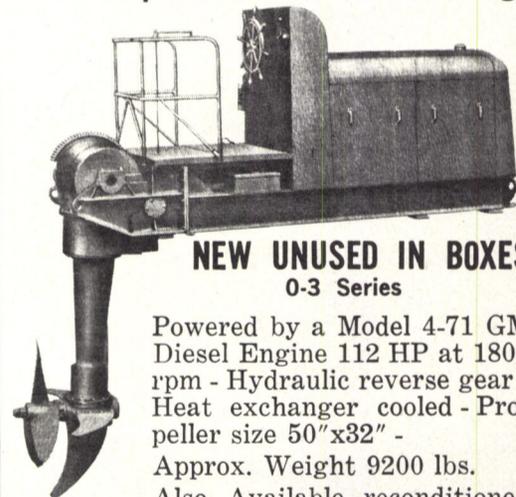
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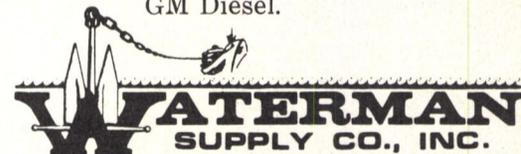


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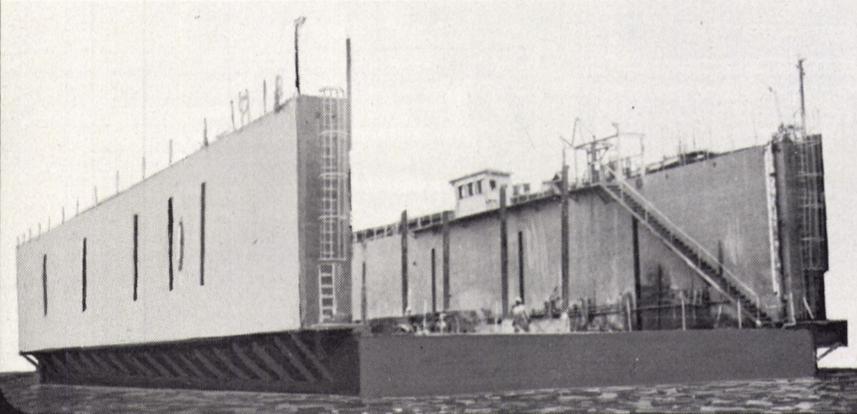
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Three longitudinal bulkheads; four transverse bulkheads; ten watertight ballast tanks. Ten 8" centrifugal pumps (20 HP motors). Ten electric flood valves; ten manual flood valves. Ten cross-over valves. Total weight — 375 tons. Two ventilation blowers for voids. 4' void full length of each wing wall. Four positioning bilge blocks, electrically operated from control house. Heavy tow pads. Two positioning winches at forward end of port and starboard wing walls. Currently in operation and in use. 4' keel blocks full length included.

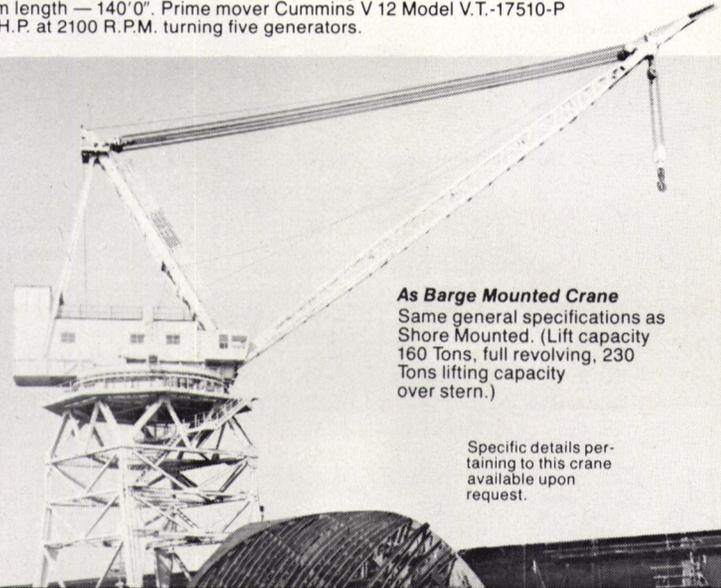


## NEW MODEL, 32 CLYDE Whirley Crane

As Shore Mounted Gantry

Main block lift 175 Tons, auxiliary 50 Ton lift and jib 15 Ton lift, height of crane from track to top of "A" frame 138' 8". Track gauge 32' 0". Broken down at present time for shipment.

Four propulsion trucks, six 20" diameter wheels per truck with four 30 H.P. travel motors at a travel speed of 120 F.P.M. Main hoist motors two 250 H.P. motors, Boom hoist motors two 125 H.P. motors, Swing motors two 75 H.P. motors, Boom length — 140' 0". Prime mover Cummins V 12 Model V.T.-17510-P 635 H.P. at 2100 R.P.M. turning five generators.



As Barge Mounted Crane

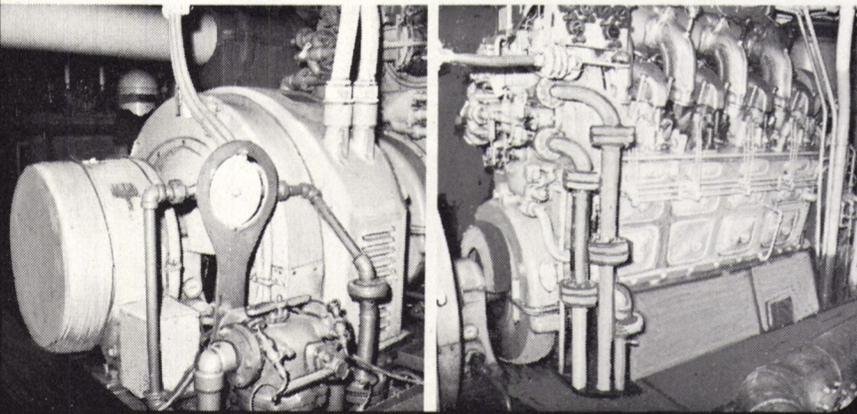
Same general specifications as Shore Mounted. (Lift capacity 160 Tons, full revolving, 230 Tons lifting capacity over stern.)

Specific details pertaining to this crane available upon request.

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5-350 KW units in parallel with a 1750 KW capacity.  
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General Motors Model 8-278A, typical serial 45004, air start — 600 RPM, driving a G.E. alternating current Generator Type AT1, Model 12G732, 350 KW continuous, or 438 KW for 2 hrs., 440V-3-60, complete with all attached auxiliaries. Other available components include generator control panels, oil coolers, air compressors, air tanks. 5 units available.



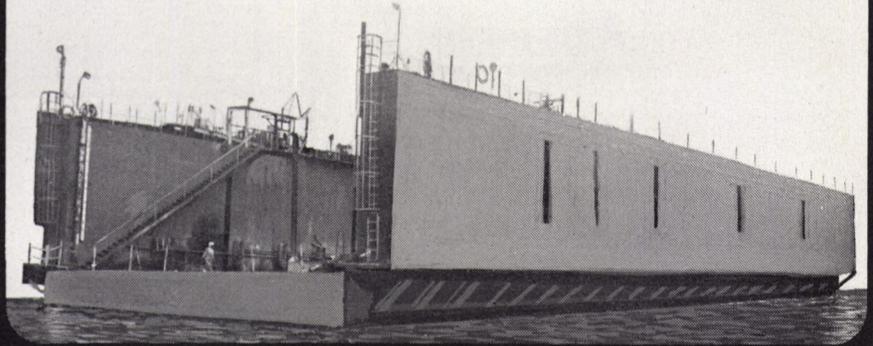
## Floating Drydock

Under Construction

Length over-all — 200'  
Breadth — 84'  
Total depth — 30'6"  
Breadth between wing walls — 74'  
Capacity — 2,400 tons

Three longitudinal bulkheads; four transverse bulkheads; fifteen watertight ballast tanks. Six 8" centrifugal pumps (40 HP motors). Fifteen air operated flood valves. Total weight — 900 tons. Two ventilation blowers — one for starboard pump room and one for port pump room. 4' keel blocks full length included.

Artist's Conception



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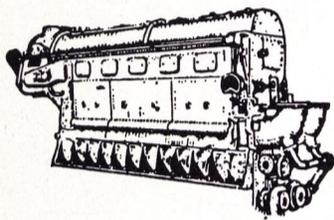
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## MARINE DIESEL ENGINES



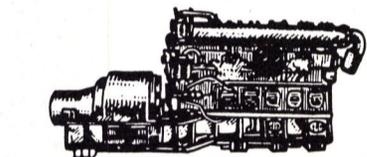
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2—SUPERIOR Diesel Engines . . . Model GBD8 Marine, 150 HP, 1200 RPM, 8 cylinder, with Delco Generators, 100 KW, 120/240 DC.

4—GENERAL MOTORS, Model 3-268A, marine, 150 BHP, 1200 RPM, 3 cylinders, with 100 KW Generators, 450/3/60.



3—GENERAL MOTORS, Model 3-268A, Marine, 150 HP, 1200 RPM, 3 cylinders, with Allis-Chalmers Generators, 100 KW, 120/240 DC.

Many other units in stock

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### A. C.

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7 — 750 KW, GENERAL ELECTRIC Turbines: Type FN3-FN24, 525 PSI, 10,033 RPM. Generators: 750 KW, 450/3/60, 1200 RPM, Type ATI.

2 — 500 KW, GENERAL ELECTRIC Turbines: Type FN3-FN20, steam 375/425 PSI, 6 Stage, 9987 RPM. Generators: 500 KW, 450/3/60, 1200 RPM, Type ATI.

### D. C.

1 — 400 KW, WORTHINGTON Turbine, 200 PSI with Crocker-Wheeler Generator, 400 KW, 120/240 Volts DC, Type CDC, 1200 RPM.

7 — 300 KW, ALLIS-CHALMERS Turbines, 440 PSI, 5645 RPM, with Westinghouse Generators, 300 KW, 120/240 Volts DC, 1200 RPM.

2 — 300 KW, WESTINGHOUSE Turbines, 440 PSI, 5920 RPM, with Westinghouse Generators, 300 KW, 120/240 Volts DC, 1200 RPM.

2 — 300 KW, TERRY Turbines, 440 PSI, Type TM-5, 5965 RPM, with Crocker-Wheeler Generators, 300 KW, 120/240 Volts DC, 1200 RPM.

1 — 300 KW, ALLIS-CHALMERS Turbine, 440 PSI, 470 HP, 8000 RPM, with Allis-Chalmers Generator, 300 KW, 240/240 Volts DC, Type HO, 1200 RPM.

1 — 250 KW, DE LAVAL Turbine, 440 PSI, 360 HP, 10,000 RPM, with Crocker-Wheeler Generator, 250 KW, 240/120 Volts DC, Type CCD, 1200 RPM.

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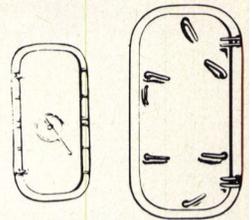
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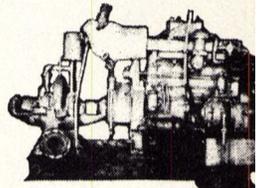
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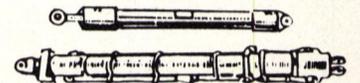
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Bore	Overall Stroke	Rod Diameter	Retracted Length	Action
10"	12"	3.75"	45 1/2"	double
10"	26"	3.75"	58 1/2"	double
2"	8"	1 1/2"	20"	double
2.5"	15"	1.12"	25 1/2"	double
3"	8"	1.37"	15 1/2"	double
6"	8"	4"	144"	double



## AIR COMPRESSORS

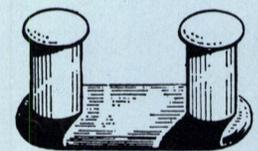
1—GARDNER-DENVER, 150 CFM, 125 PSI, Class WB, Size 7x5 1/4 x5, with Diehl Motors, 45 HP, 230 Volts DC, 870 RPM, 167 Amperes.

3—INGERSOLL - RAND, Size 5x5x4x4, 50 CFM, 150 PSI, with G.E. Motor, 20 HP, 440/3/60.

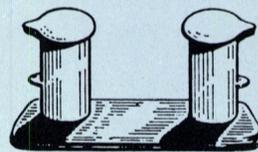
1—INGERSOLL - RAND, Model 40B, 155 CFM, 110 PSI, 870 RPM, with 40 HP Motor, 230 DC.

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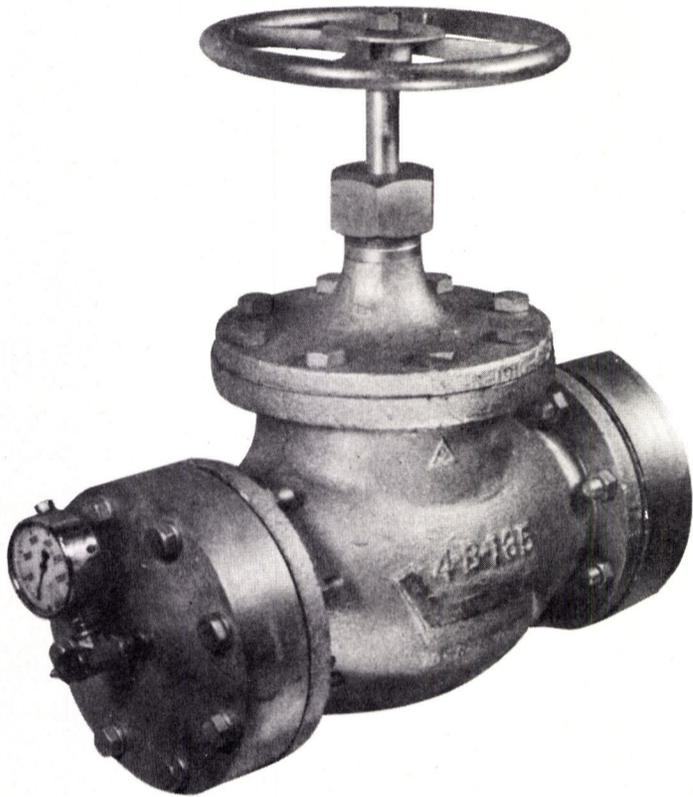
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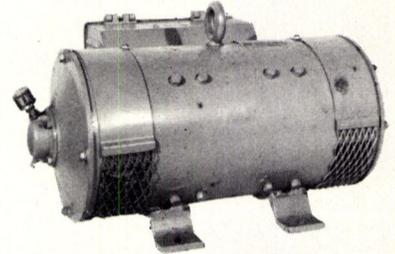
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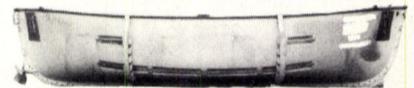
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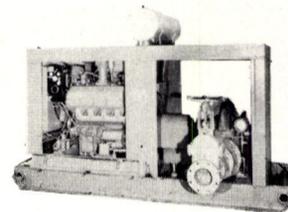
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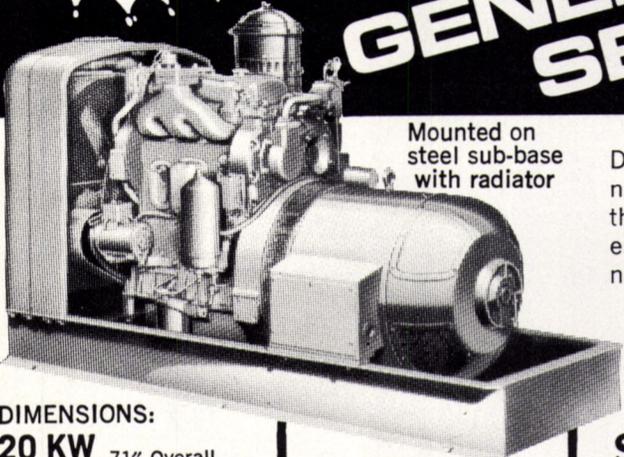
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20 KW GM 2-71 & 30 KW GM 3-71

**RADIATOR COOLED DIESEL GENERATOR SETS**



Mounted on steel sub-base with radiator

Don't miss this opportunity for BIG SAVINGS on these world-famous generator sets. Priced in running condition.

**DIMENSIONS:**  
**20 KW** 71" Overall length; 50" Overall height; 33" Overall width. Weight about 2200 lbs.  
**30 KW** 83" Overall length; 46" Overall height; 33" Overall width. Weight about 3500 lbs.

**2-71**  
220 / 440 / 3 / 60-cycle — 1200 RPM—0.8 PF. Generators are Delco or Electric Machine Co.

**3-71**  
220 / 440 / 3 / 60-cycle — 1200 RPM—0.8 PF. Generators are Delco.

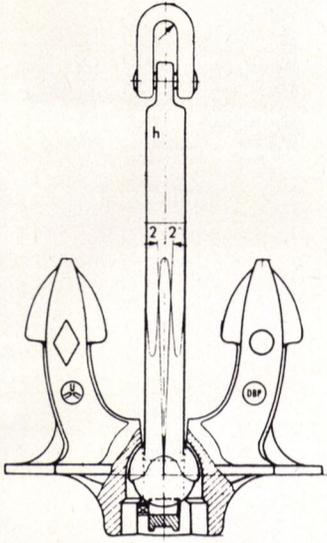
**GM 2-71 \$3450**  
**GM 3-71 \$4250**

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**FOR SHIPBOARD, CONSTRUCTION AND MOORING USE.**

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29,908 LBS	32,531 LBS
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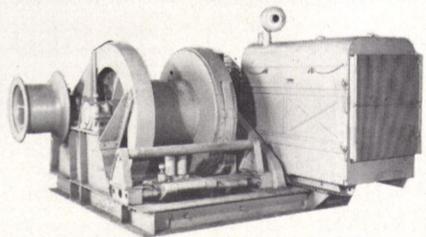
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**ON COFFIN TYPE D.E. TURBINE WHEELS**

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**BAYARD TOWING WINCH WIREROPE WINDLASS**



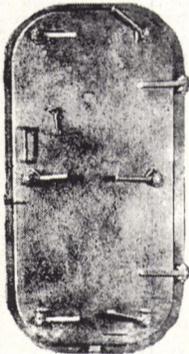
12,000 lbs at 38.5 feet per minute. 2176 lbs at 170 feet per minute. Drum diameter 22"—drum width 18½"—flange 39". With declutchable drum, level wind device and compression brake. Powered by Chrysler 6-cylinder gasoline engine. Weight of unit 10,470 lbs.

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**FOR SALE**  
**NEW WATERTIGHT DOORS**

With Stainless Steel Dogs

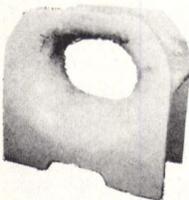


6-Dog right and left hand hinged doors with frames. Constructed of 1/4" steel plate and meet Coast Guard regulations for above deck as well as below deck use. All dogs are bronze bushed.

**SIZE**  
26"x48" 26"x66"  
26"x60" 30"x60"

EACH DOOR  
**IMMEDIATE DELIVERY**

**NEW 7" RADIUS PANAMA CHOCKS**  
(MEET PANAMA REGULATIONS)  
14" X 10" CLEAR OPENING



With extended legs for welding to deck. 14" Wide on base—length 28"—height 27¼". IMMEDIATE DELIVERY FROM STOCK.

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Single stage double suction centrifugal pump. Size 5 X 4—500 GPM @ 20 PSI. Salt water compensating. Pump mfg by Weil. For handling aviation gas, etc. Continental 10 HP motor 440/3/60/1730—explosion-proof. Pump and motor only with base and coupling.

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About 58" diam. With tieplates top & bottom. Est. wt 680 lbs each. Price **\$165ea.**  
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# BUYERS DIRECTORY

## AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION

Adrick Cooling Corp., 30 B. Remington Blvd., Ronkonkoma, N.Y. 11779  
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231  
Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 19523  
Way-Wolff Associates Inc., 45-10 Vernon Blvd., Long Island City, N.Y. 11101

## BATTERIES

Saft Corp of America, Industrial Battery Div., 402 Myrtle Ave., Boonton, N.J. 07005

## BEARINGS—Rubber, Metallic, Non-Metallic

Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062  
Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, Ohio 44309  
Morse Chain Company, Div. Borg Warner, So. Aurora St., Ithaca, N.Y. 14850  
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186

## BLASTING—Cleaning—Equipment

Clemco Industries, 2177 Jerrald Ave., San Francisco, Ca. 94124  
GMMC/Porta-Shotblast, 1112 Davidson Road, Nashville, Tenn. 37205  
Nelco Mfg. Corp., P.O. Box 763, Oklahoma City, Okla. 73104  
Pepper Industries, Inc., P.O. Box 11367, San Diego, CA 92111

## BOILERS—Tube Cleaning

Combustion Engineering, Inc., Windsor, Connecticut 06095  
Goodway Tools Corporation, P.O. Box 3444, Stamford, CT 06905  
Indeck Power Equipment Co., 1075 Noel Ave., Wheeling, Ill. 60090  
Way-Wolff Associates Inc., 45-10 Vernon Blvd., Long Island City, N.Y. 11101

## BOW THRUSTERS

Bird Johnson Company, 110 Norfolk St., Walpole, Mass. 02081  
Omnihruster Inc., 10880 Wilshire Blvd., Suite 614, Los Angeles, CA 90024  
Schottel of America, Inc., 8375 N.W. 56 Street, Miami, Fla. 33166

## BROKERS

Capt. Astad Company, Inc., P.O. Box 53434, New Orleans, La. 70153  
Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004  
Midland Marine Corporation, One Penn Plaza, New York, N.Y. 10001  
Mowbray's Tug and Barge Sales Corp., 21 West St., N.Y., N.Y. 10006

## BUNKERING SERVICE

Gulf Oil Trading Co., 1290 Ave. of the Americas, N.Y., N.Y. 10019

## CABLE—Electrical

Seacoast Electrical Supply Corp., 225 Passaic St., Passaic, N.J. 07055

## CARGO TRANSFER & ACCESS EQUIPMENT

MacGregor-Comarain, Inc., 135 Dermody St., Cranford, N.J. 07016

## CHOCKING SYSTEMS

Philadelphia Resins Corp., 20 Commerce Drive, Montgomeryville, Pa. 18936

## CLOCKS

Anschutz of America, 485 5th Ave., New York, N.Y. 10017  
Wempe Chronometerwerke Germany, Stubbenhulk 25 2000 Hamburg 11, Germany

## COILS—Cooling, Heating, Ventilating

Colmac Coil, Inc., Colville, Wash. 99114

## CONTAINERS—Cargo Container Handling

Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501

## CONTAINER LASHINGS & COMPONENTS

Line Fast Corp., 805 Grundy Ave., Holbrook, N.Y. 11741

## CONTROL SYSTEMS

The Bendix Corporation, 1400 Taylor Avenue, Baltimore, MD 21204  
Delaval Turbine Inc., (Gems Sensors Div.) Spring Lane, Farmington, Conn. 06032  
Foxboro Marine Operations, P.O. Box 435, Burlington, Mass. 01803  
Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913  
National Marine Service, Inc., 1750 Brentwood Blvd., St. Louis, Mo. 63144  
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

## CORROSION CONTROL

Carboline Co., Marine Div., 350 Hanley Industrial Court, St. Louis, Mo. 63144

## CRANES—HOISTS—DERRICKS—WHIRLEYS

Clyde Iron, a unit of AMCA International Corp., Suite 200/Stockton Bldg., University Office Plaza, Newark, Del. 19702  
AB Hagglund & Soner, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523  
M. P. Howlett, Inc., 410 32nd St., Union City, N.J. 07087  
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501

## DECK COATINGS—Non-skid

American Abrasive Metals Co., 460 Coit St., Irvington, N.J. 07111

## DECK COVERS—Chain Pipe

MacGregor-Comarain, Inc., 135 Dermody St., Cranford, N.J. 07016  
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696  
Mechanical Marine Co., 900 Fairmount Ave., Elizabeth, N.J. 07027

## DECK MACHINERY—Cargo Handling Equipment

AB Hagglund & Soner, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523  
Markey Machinery Co., Inc., 79 S. Horton St., Seattle, Wash. 98134

## DIESEL ACCESSORIES

B & W Marine Service, One State Street Plaza, New York, N.Y. 10004  
General Thermodynamics Corporation, 150 Ballardvale St., Wilmington, Mass. 01887

## DIESEL ENGINES

Alco Power Inc., 100 Orchard St., Auburn, N.Y. 13021  
Burmeister & Wain, One State Street Plaza, New York, N.Y. 10004  
Caterpillar Tractor Co., Industrial Division, Peoria, Ill. 61629  
Colt Industries' Fairbanks Morse Engine Division, Beloit, Wisc. 53511  
Electro-Motive Division, General Motors Corp., LaGrange, Ill. 60525  
Indeck Power Equipment Co., 1075 Noel Ave., Wheeling, Ill. 60090  
M.A.N. AG Werke Augsburg Postfach 10 00 80 D-8900 Augsburg 1 Germany  
Mitsui Engineering & Shipbuilding Co. Ltd., 6-4 Tsukiji, 5-chome, Chuo Ku, Tokyo, Japan  
Oosterhuis Industries Inc., 1800 Engineers Road, Belle Chasse, La. 70037  
Power & Propulsion Systems, Inc., 9821 Katy Freeway, Houston, Texas 77024

## DIVERS

International Underwater Contractors Inc., 222 Fordham Street, City Island, New York 10464

## DOORS—Watertight—Joiner

Walz & Krenzer Inc., 400 Trabold Road, Rochester, N.Y. 14624

## EDUCTORS

Vita Motivator Co., 200 West 20th Street, New York, N.Y. 10011

## ELECTRICAL EQUIPMENT

Argo Marine, Div. of Argo Intl., 140 Franklin St., New York, N. Y. 10013  
Merrin Electric, 1120 Clinton Street, Hoboken, N. J. 07030  
Midland Ross Corp., Electrical Products Div., P.O. Box 1548, Pittsburgh, Pa. 15230  
Oceanic Electrical Mfg. Co., Inc., 159 Perry Street, N.Y. 10014  
Port Electric Supply, 157 Perry Street, N.Y., N.Y. 10014  
Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201

## EQUIPMENT—Marine

American United Marine Corp., 575 Madison Ave., New York, N.Y. 10022  
Argo Marine, Div. of Argo Intl., 140 Franklin St., New York, N. Y. 10013  
Comet Marine Supply Corp., 157 Perry St., New York, N.Y. 10014  
Kearfott Marine Products, 550 South Fulton Ave., Mount Vernon, N.Y. 10550  
Nicolai Joffe Corp., P.O. Box 2445, 445 Littlefield Ave., So. San Francisco, Calif. 94080  
Merrin Electric, 1120 Clinton Street, Hoboken, N.J. 07030  
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186

## EVAPORATORS

Riley-Beard, Inc., P.O. Box 1115, Shreveport, La. 71130

## EXPANDED METALS

Niles Expanded Metals Inc., 700 North Pleasant Ave., Niles, Ohio 44446

## EXPANSION JOINTS

H.S. White Co., 2056 Dixie Highway, Ft. Lauderdale, Fla. 33305

## FANS—VENTILATORS

Joy Manufacturing Co., 338 So. Broadway, New Philadelphia, Ohio 44663  
Merrin Electric, 1120 Clinton Street, Hoboken, N.J. 07030  
Zidell Explorations, 3121 S.W. Moody St., Portland, Ore. 97201

## FENDERING SYSTEMS—Dock & Vessel

Hughes Bros., Inc., 17 Battery Place, New York, N.Y. 10004  
Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062  
Morse Chain Company, Div. Borg Warner, So. Aurora St., Ithaca, N.Y. 14850

## FINANCING—Leasing

General Electric Credit Corp., P.O. Box 8300, Stamford, Conn. 06904  
Kidder, Peabody & Co., Inc., 10 Hanover Square, New York, N.Y. 10005  
Lehman Brothers Inc., One Williams Street, New York, N.Y. 10004  
Warburg Paribas Becker, Inc., 2 First National Plaza, Chicago, Ill. 60670

## FITTINGS & HARDWARE

Robvon Backing Ring Co., 675 Garden St., Elizabeth, N.J. 07207

## FURNITURE

Bailey Joiner Co., Inc., 74 Sullivan Street, Brooklyn, N.Y. 11231

## GANGWAYS

Rampmaster Inc., 1226 N.W. 23rd Ave., Fort Lauderdale, Fla. 33311

## GAUGES—Pressure

General Instrument Corp., 3811 University Blvd. W. #26, Jacksonville, Fla. 32217

## HULL CLEANING

Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932  
East Coast Marine Associates, Inc., 80 Broad St., New York, N.Y. 10004  
Fekete & Co., Storgt, 47, P.O. Box 250, 3101 Tonsberg, Norway  
Phosmarin Equipement (Phoceenne Sous-Marine S.A.), 21 Boulevard de Paris, 13002 Marseille, France

## HYDRAULICS

Abex Corp., Denison Div., 1160 Dublin Rd., Columbus, Ohio 43216  
Voss, Inc., Building J, 7029 Huntley Road, Columbus, Ohio 43229

## INERT GAS—Generators—Systems

Foster Wheeler Boiler Corp., 110 So. Orange Ave., Livingston, N.J. 07039  
Fredriksstad mek. Verkstedt, N. American Agents, American United Marine Corp., 575 Madison Ave., New York, N.Y. 10022  
Gaulin Corporation, Garden Street, Everett, Mass. 02149  
Smit Nymegen Corporation, 1511 K Street, N.W., Washington, D.C. 20005

## INSULATION—Cloth, Fibreglas

Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231

## INSURANCE

Adams & Porter, 1819 St. James Place, Houston, Texas 77027  
Adams & Porter, 5 World Trade Center, Suite 6433, New York, N.Y. 10048  
Alexander & Alexander, Inc., 1185 Ave. of the Americas, New York, N.Y. 10036  
R.B. Jones Insurance, 911 Main St., Kansas City, MO 64199  
R.B. Jones Insurance, 120 S. Central Ave., St. Louis, MO 63105  
R.B. Jones Insurance, 160 Water St., New York, N.Y. 10038  
Marsh & McLennan Inc., 1221 Ave. of the Americas, New York, N.Y. 10020

## KEEL COOLERS

Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062

## LADDERS

Duo-Safety Ladder Co., 513 West 9th Ave., P.O. Box 497, Oshkosh, Wisc. 54901

## LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights

Automatic Power Inc., 213 Hutchinson Street, Houston, Texas 77003  
Midland Ross Corp., Electrical Prod. Div., P.O. Box 1548, Pittsburgh, Pa. 15230  
Oceanic Electrical Mfg. Co., 157 Perry Street, New York, N.Y. 10014  
Perko Inc., P.O. Box 6400D, Miami, Florida 33164  
Port Electric Supply Corp., 157 Perry Street, New York, N.Y. 10014  
Tideland Signal Corp., P.O. Box 52430, Houston, Texas 77052

## LNG CONTAINMENT

McDonnell Douglas Astronautics Co., 5301 Bolsa Ave., Huntington Beach, CA 92647

## MACHINE TOOLS

Master Machine Tools, Inc., 1300 East Avenue A, Hutchinson, Kansas 67501

## MARINE MACHINERY REPAIR

Worthington Service Corp., 233 Mount Airy Road, Basking Ridge, N.J. 07920

## MOORING SYSTEMS

Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110

## NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS

Advanced Marine Enterprises, Inc., Suite 500, 2341 Jefferson Davis Highway, Arlington, Va. 22202  
Alpha Engineers, 7215 N.E. 13th Ave., Vancouver, Wash. 98665  
American Standards Testing Bureau, Inc., 40 Water Street, New York, N.Y. 10004  
Amirikian Engineering Co., Chevy Chase Center Bldg., Suite 505, 35 Wisconsin Circle, Chevy Chase, Md. 20015  
J.L. Bludworth, 8207 Glen Loch, Houston, Texas 77061  
Breit & Garcia, Naval Architects, 441 Gravier St., New Orleans, La. 70130  
CADCOM Inc., 2024 West St., Suite B, Annapolis, Md. 21401  
R.A.CADY-Marine Survey Practice, 2301 Leroy Stevens Road, Mobile, Ala. 36609

C.D.I. Marine Co., Regency East, Suite 222, 9951 Atlantic Blvd., Jacksonville, Florida 32211  
Childs Engineering Corp., Box 333, Medfield, Mass. 02052  
Coast Engineering Co., 711 W. 21st St., Norfolk, Va. 23517  
Crandall Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, Mass. 02026  
Crane Consultants Inc., 15301 1st Ave., So. Seattle, Washington 98148

Francis B. Crocco, Inc., Box 1411, San Juan, Puerto Rico  
CTS & Associates, 11320 S.W. 108 Court, Miami, Fla. 33176  
C.R. Cushing & Co., Inc., One World Trade Center, New York, N.Y. 10048

Daniel Yacht & Ship Brokerage Ltd., 1861 S.E. 17th St., Suite 206, Ft. Lauderdale, Fla. 33316  
Norman N. DeJong & Associates, Inc., 1734 Emerson St., Jacksonville, Fla. 32207

Design Associates, Inc., 3308 Tulane Ave., New Orleans, La. 70119  
Designers & Planners Inc., One State Street Plaza, New York, N.Y. 10004

M. Mack Earle, 103 Mellor Ave., Baltimore, Md. 21228  
Parker C. Emerson & Associates, 17935 Cardinal Drive, Lake Oswego, Oregon 97034

Frank J. Ferri & Associates, Inc., 1218 South Lakeside Drive, Lake Worth, Fla. 33460  
Christopher J. Foster, Inc., 14 Vanderverter Ave., Port Washington, N.Y. 11050

Friede and Goldman, Ltd., 225 Baronne St., New Orleans, La. 70112  
Gibbs & Cox, Inc., 40 Rector Street, New York, N.Y. 10006  
John W. Gilbert Associates, Inc., 58 Commercial Wharf, Boston, Mass. 02110

Arthur A. Grant & Son, Inc., 1745 First National Bank of Commerce Bldg., New Orleans, La. 70112

Phillip Gresser & Associates (PTE) Ltd., 122 Eng Neo Ave., Singapore 11  
Morris Guralnick Associates, Inc., 550 Kearny Street, San Francisco, Calif. 94108

J.J. Henry Co., Inc., Two World Trade Center—Suite 9528, New York, N.Y. 10048

Hydraonautics, Incorporated, 7210 Pindell School Road, Howard County, Laurel, Maryland 20810  
Jantzen Engineering Co., 6655-H Amberton Drive, Baltimore, Md. 21227

James S. Krogen & Co., Inc., 3333 Rice St., Miami, Fla. 33133  
Littleton Research and Engr. Corp., 95 Russell St., Littleton, Mass. 01460

Maclear & Harris, Inc., 28 West 44 Street, New York, N.Y. 10036  
Robert H. Macy, P.O. Box 758, Pascagoula, Miss. 39567  
Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, Ohio 44114

Marine Design Inc., 401 Broad Hollow Road, Rte. 110, Melville, N.Y. 11746

Maritime Service Company, 1357 Rosecrans St., Suite B, San Diego, CA 92106

Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225

Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063

John J. McMullen Associates, Inc., 1 World Trade Center, New York, N.Y. 10048

George E. Meese, 194 Acton Rd., Annapolis, Md. 21403  
Metritape, Inc., 77 Commonwealth Ave., West Concord, Mass. 01742

Nelson & Associates, Inc., 2001 N.W. 7th Street, Miami, Florida 33125

Nickum & Spaulding Associates, Inc., 811 First Ave., Seattle, Wash. 98104

Norgaard and Clark, 114 Sansome St., San Francisco, CA 94104

Ocean-Oil International Engineering Corporation, 3019 Mercedes Blvd., New Orleans, La. 70114

Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida 33156

S.L. Petchul, Inc., 1380 SW 57th Ave., Fort Lauderdale, Fla. 33317  
V. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013  
and 657 Mission St., San Francisco, Calif.

Sargent & Herkes, Inc., 611 Gravier St., New Orleans, La. 70130  
Schmahl and Schmahl, Inc., 1209 S.E. Third Ave., Fort Lauderdale, Florida 33316

Seaworthy Engine Systems, 73 Main Street, Essex, Conn. 06426  
George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007

T. W. Spaetgens, 156 West 8th Ave., Vancouver, Canada V5Y 1N2  
SRS Shipping Research Services Inc., 205 S. Whiting St., Alexandria, VA 22304

The Stanwick Company Maritime Systems Department, 3661 E. Virginia Beach Blvd., Norfolk, VA 23502

R.A. Stearn, Inc., 253 N.1st Ave., Sturgeon Bay, WI 54235  
Richard R. Taubler Inc., 8 Columbia St., Milford, Del. 19963

H.M. Tiedemann & Co., Inc., 295 Greenwich Ave., Greenwich, Conn. 06830

Thames Engineering Consultants Inc., P.O. Box 589, New London, Ct. 06320

Timsko, 951 Government St., Suite 2161, Mobile, Alabama 36604  
Corning Townsend III, 18 Church St., Georgetown, CT 06829

Undersea Systems, 112 W. Main St., Bay Shore, N.Y. 11706  
Wesley D. Wheeler Associates, Ltd., 104 East 40 St., Suite 207, New York, N. Y. 10016

## NAVIGATION & COMMUNICATIONS EQUIPMENT

American Hydromath Co., Buckwheat Bridge Rd., Germantown, N.Y. 12526

Anschutz of America, 485 5th Ave., New York, N.Y. 10017  
Automated Marine Systems Division, Litton Systems Canada Limited, 21101 Oxnard St., Woodland Hills, CA 91364

Frank Beier Radio Company, P.O. Box 10307, Jefferson, La. 70181  
Calvert Electronics, Inc., 220 East 23rd Street, New York, N.Y. 10010

Communication Associates, Inc., 200 McKay Road, Huntington Station, N.Y. 11746

Comsat General Corp., 950 L'Enfant Plaza, S.W., Washington, D.C. 20024

Electro-Nav, Inc., 1201 Corbin St., Elizabeth Marine Terminal, Elizabeth, N.J. 07201

Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080  
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913

Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011  
Intermarine Electronics, Inc., Flowerfield Bldg. #7, St. James, N.Y. 11780

Iatron Corp., 5 Alfred Circle, Bedford, Mass. 01730  
ITT Decca Marine Inc., P.O. Box G, Palm Coast, Fla. 32037

ITT Mackay Marine, 2912 Wake Forest Road, Raleigh, N.C. 27611  
Krupp Atlas—Elektronik, A Div. of Krupp Intl. Inc., P.O. Box 58218, Houston, Texas 77058

Vagnavox Navigation Systems, 2829 Maricopa St., Torrance, Ca! 90503

Maritel Inc., 2510 Riva Road, Annapolis, Md. 21401  
Mieco, Inc., 109 Beaver Court, Cockeysville, Md. 21030

Nav-Com, Inc., 2 Hicks Street, North Lindenhurst, N.Y. 11757  
Raytheon Marine Co., 676 Island Pond Road, Manchester, N.H. 03103

Raytheon Co., Submarine Signal Div., P.O. Box 360, Portsmouth, R.I. 02871

RCA Service Co., Building 204-2, Camden, N.J. 08101  
Simrad Inc., 1 Labriola Court, Armonk, N.Y. 10504

Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

Tracor, Inc., Industrial Products Div., 6500 Tracor Lane, Austin, Texas 78721

(Continued Next Page)

## BUYERS DIRECTORY (continued)

### OILS—Marine—Additives

Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019  
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002  
Mobil Oil Corporation, 150 East 42nd St., New York, N.Y. 10017  
Texaco, Inc. (International Marine) 135 East 42nd St., N.Y., N.Y. 10017

### PAINT—Coatings, Protective

Carboline Co., Marine Div., 350 Hanley Industrial Court, St. Louis, Mo. 63144  
Devoe & Reynolds Co., Inc., P.O. Box 7600, Louisville, Ky. 40207  
Farboil Company, 8200 Fischer Road, Baltimore, MD 21222  
Hanline Bros., Inc. (Consol Paint), 1400 Warner St., Baltimore, Md. 21230  
International Paint Co., 17 Battery Place North, Suite 1150, New York, N.Y. 10004  
Mobil Chemical Co., Maintenance & Marine Coatings Dept., P.O. Box 250, Edison, N.J. 08817  
Patterson Sargent Co., 1471 Jersey Ave., New Brunswick, N.J. 08901

### PETROLEUM SUPPLIES

Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002

### PILOT LADDERS—Wood Products

A.L. Don Co., 58 Grant Avenue, Carteret, N.J. 07008

### PIPE—HOSE—Cargo Transfer, Clamps, Couplings

Camlock Flange Sales Corp., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696  
Hydro-Craft, Inc., 4223 Edgeland, Royal Oak, Mich. 48073  
Kubota, Ltd., 22, Funade-cho 2-chome, Naniwa-Ku, Osaka, Japan  
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

### PLASTICS—Marine Applications

Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231

### PLATENS

Welding Wholesale Co., Div. J.A. Cunningham Eqpt., Inc., 2151 Dreer St., Philadelphia, Pa. 19125

### PROPELLERS: NEW AND RECONDITIONED—SYSTEMS

Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150  
Bird Johnson Company, 110 Norfolk St., Walpole, Mass. 02081  
The Columbian Bronze Corp., 216 North Main Street, Freeport, N.Y. 11520  
Coolidge Propellers, 1601 Fairview Ave. East, Seattle, Wash. 98102  
Voith Schneider—U.S. Agent: Krupp International, Inc., 550 Mamaroneck Ave., Harrison, N.Y. 10528

### PROPULSION—Marine

Combustion Engineering, Inc., Windsor, Connecticut 06095  
Delaval Turbine Inc., Turbine Div., Trenton, N.J. 08602  
In-Place Machining Co., 1929 N. Buffman St., Milwaukee, WI 53212  
Maritime Industries, Ltd., 6307 Laurel St., Burnaby, B.C. Canada V5B 3B3  
Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014  
Schottel of America, Inc., 8375 N.W. 56 Street, Miami, Fla. 33166  
Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523

### PUMPS—Repairs—Drives

Delaval Turbine Inc., IMO Pump Division, P.O. Box 321, Trenton, N.J. 08602  
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030  
Worthington Pump Inc., P.O. Box 1250, Mountainside, N.J. 07092

### RATCHETS

CM American, Division Columbus McKinnon Corp., P.O. Box 74, McKees Rocks, Pa. 15136

### REFRIGERATION—Refrigerant Valves

Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231  
Part Refrigeration Div., 157 Perry Street, New York, N.Y. 10014  
Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 19523

### RIGGING & BLOCKS

D. Van Beest En Zn.B.V., P.O. Box 57, Merwestraat 1-5, Slidrecht, The Netherlands

### ROPE—Manila—Nylon—Hawser—Fibers

American Mfg. Co., Inc., Willow Avenue, Honesdale, Pa. 18431  
Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110  
Wall Rope Works, Inc., Beverly, N. J. 08010

### RUDDER ANGLE INDICATORS

Anschutz of America, 485 5th Ave., New York, N.Y. 10017  
Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142  
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913  
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011  
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

### SCAFFOLDING EQUIPMENT—Work Platforms

Chamberlain Manufacturing Corp., 845 Larch Ave., Elmhurst, Ill. 60126  
Patent Scaffolding Co., 2125 Center Ave., Fort Lee, N.J. 07024  
Spider Staging Sales Co., P.O. Box 182, Renton, Washington 98055  
Trus Joist Corp., P.O. Box 60, Boise, Idaho 83707

### SEWAGE—Pollution Control

American United Marine Corp., 575 Madison Ave., New York, N.Y. 10022  
Argo Marine, Pollution Systems Division, 140 Franklin St., New York, N.Y. 10013  
Clear Water, Inc., N. Main Street, Walworth, WI 53184  
Colt Industries, Water & Waste Management Operation, Beloit, Wisc. 53511  
Demco, Inc., P.O. Box 94700, Oklahoma City, Oklahoma 73109  
Marine Moisture Control Co., Inc., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696  
Marland Environmental Systems, Inc., N. Main Street, Walworth, WI 53184  
Microphor, Inc., P.O. Box 490, Willits, CA 95490  
Research Products/Blankenship, 2639 Andjon, Dallas, Texas 75220  
St. Louis Ship FAST Sewage Systems, 611 East Marceau St., St. Louis, Mo. 63111

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Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913  
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

### SHIPBREAKING—Salvage

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The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202  
National Metal & Steel Corp., 691 New Dock St., Terminal Island, Cal. 90731  
Zidell Explorations, Inc., 3121 S. W. Moody St., Portland, Ore. 97201

### SHIPBUILDING STEEL

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Bethlehem Steel Corp., 25 Broadway, New York, N.Y. 10004

### SHIPBUILDING—Repairs, Maintenance, Drydocking

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Astilleros Espanoles, S.A., 17, Padilla, Madrid 6, Spain  
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150  
Bergeron Industries Inc., P.O. Box 38, St. Bernard, La. 70085  
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004  
Blohm + Voss AG, D-2000 Hamburg 1, P.O.B. 10 07 20  
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Bremer Vulkan Schiffbau und Maschinenfabrik, P.O. Box 70023/24, 2820 Bremen 70, W. Germany  
Camden Ship Repair Co., Inc., Point & Erie Streets, Camden, N.J. 08102  
Carrington Slipways Pty. Ltd., Old Punt Road, Tomago, N.S.W., Australia 2322  
CCL Shipcare Limited, Easton Lane Winnall Estate, Winchester Hampshire, England SO237QU  
Centromor, One World Trade Center, Suite 3557, New York, N.Y. 10048

China Shipbuilding Corp., c/o Allegro Transportation Supply Co., 393 Seventh Ave., Room 234, New York, N.Y. 10001  
Conrad Industries, P.O. Box 790, Morgan City, La. 70380  
Curacao Drydock Co., Inc., P.O. Box 153, Willemstad, Curacao, Netherlands Antilles  
Curacao Drydock, 26 Broadway, Suite 741, New York, N.Y. 10004  
Delmar Systems, Inc., 160 Industrial Parkway, Lafayette, La. 70501  
Dravo Steelship Corp., R.4, Box 167, Pine Bluff, Ark. 71602  
Equitable Shipyards, Inc., P.O. Box 8001, New Orleans, La. 70122  
FMC Corp., Marine & Rail Equipment Div., 4700 N.W. Front Ave., Portland, Oregon 97208  
General Dynamics, Quincy Division, Quincy, Mass. 02169  
Halter Marine, Inc., P.O. Box 29266, New Orleans, La. 70189  
Havre de Grace, Havre de Grace, Md.  
Hillman Barge & Construction Co., P.O. Box 510, Brownsville, Pa. 15417

Hitachi Shipbuilding & Engrg. Co., Ltd., 47 Edoberi 1-Chome, Nishi-Ku, Osaka, Japan  
Hongkong United Dockyards Ltd., Kowloon Docks, Hong Kong  
Hyundai Shipbuilding & Heavy Industries Co., Ltd., 5 World Trade Center, Suite 679, New York, N.Y. 10048  
Jeffboat, Inc., Jeffersonville, Ind. 47130  
Kawasaki Heavy Industries, Ltd., Kawasaki Kisen Kaisha, Ltd., 8 Kaigan-dori, Kuta-ku, Kobe, Japan  
Kockums Shipyard, S-201, 10 Malmo 1, Sweden  
Lisnave Estaleiros, Navais de Lisboa, Apartado 2138, Lisbon 3 Portugal  
Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134

Marathon Manufacturing Company  
Marathon LeTourneau Offshore Company, 1700 Marathon Building, 600 Jefferson, Houston, Texas 77002  
Marathon LeTourneau Gulf Marine Division, P.O. Box 3189, Brownsville, Texas 78520  
Marathon LeTourneau Marine Division, LeTourneau Rural Station, Vicksburg, Mississippi 39180  
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Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655  
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National Steel & Shipbuilding Corp., San Diego, Calif. 92112  
Newpark Shipbuilding & Repair, P.O. Box 5426, Houston, TX 77012

Newport News Shipbuilding & Dry Dock Co., 4101 Washington Ave., Newport News, Va. 23607  
Northwest Marine Iron Works, P. O. Box 3109, Portland, Oregon 97208  
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Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501  
Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156  
Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862  
Part Allen Marine Service, Inc., P.O. Box 108, Part Allen, LA 70767  
St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111  
Savannah Machine & Shipyard Co., P.O. Box 787, Savannah, Ga. 31402

Sembawang Shipyard (Pte) Ltd., P.O. Box 3, Sembawang, P.O. Singapore, 27  
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Sun Shipbuilding, Foot of Morton Ave., Chester, Pa. 19013  
Swiftships Inc., P.O. Box 1908, Morgan City, LA 70380  
Tampa Ship Repair & Dry Dock Co., P.O. Box 1277, Hookers Point, Tampa, Fla. 33601

Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004  
Tracor Marine, P.O. Box 13107, Port Everglades, Fla. 33316  
Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087  
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Henry Gillen's Sons Lighterage, 21 West Main St., Oyster Bay, N.Y. 11771  
Gulf Mississippi Marine Corp., 225 Baronne St., New Orleans, La. 70112  
James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004  
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McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004  
McDonough Marine Service, P.O. Box 26206, New Orleans, La.  
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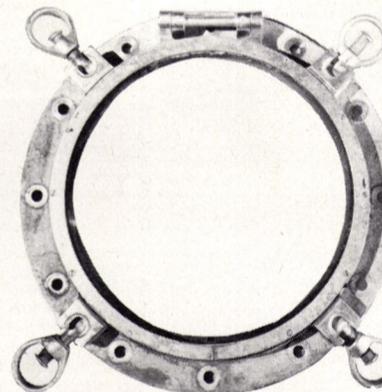
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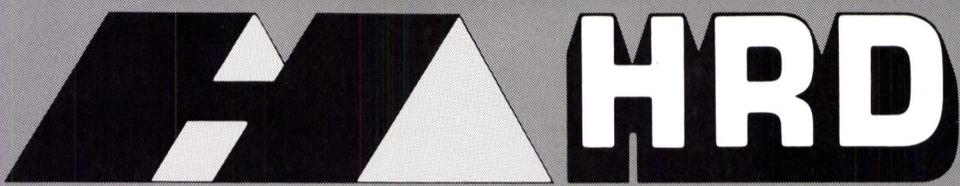
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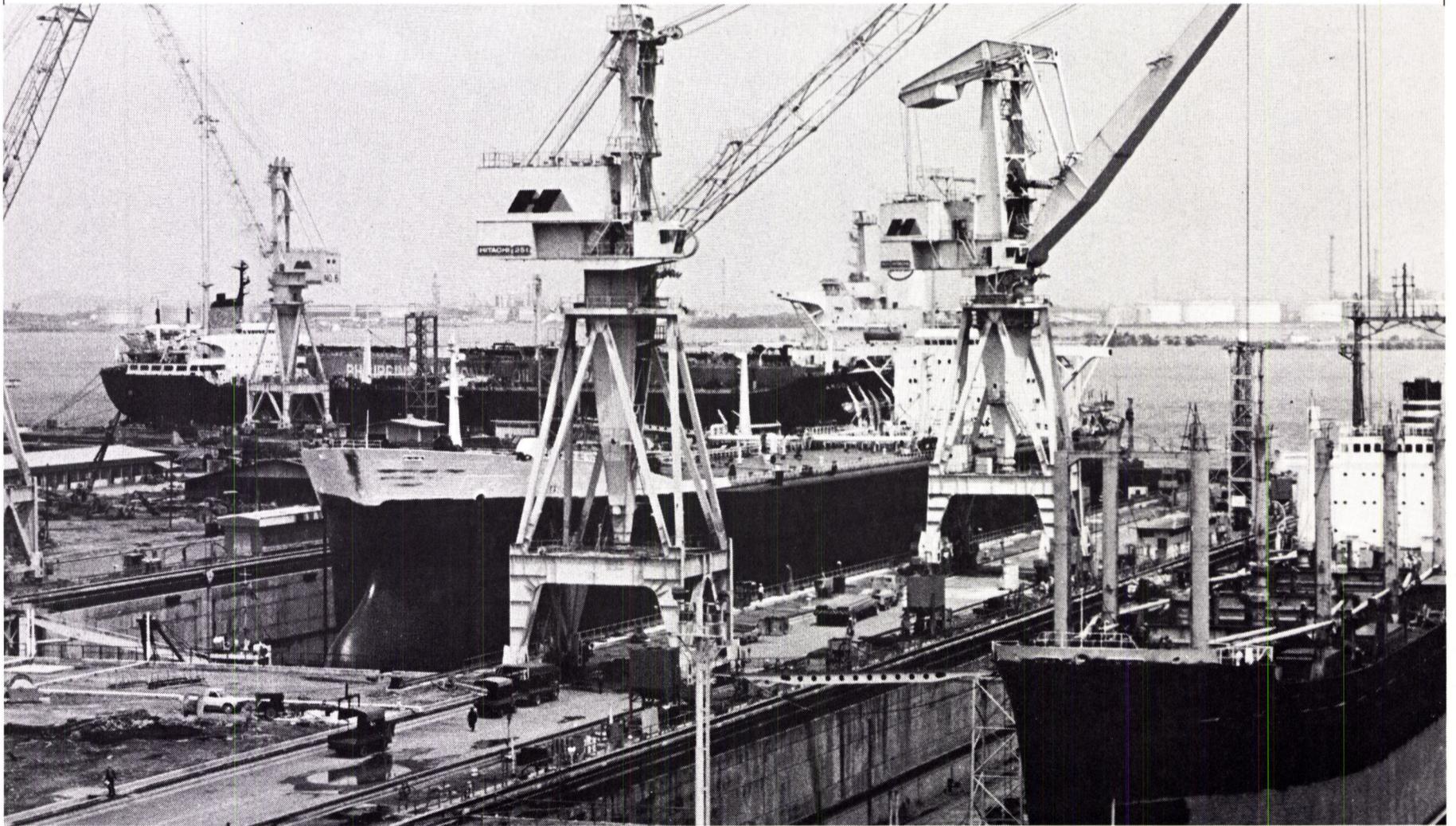
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