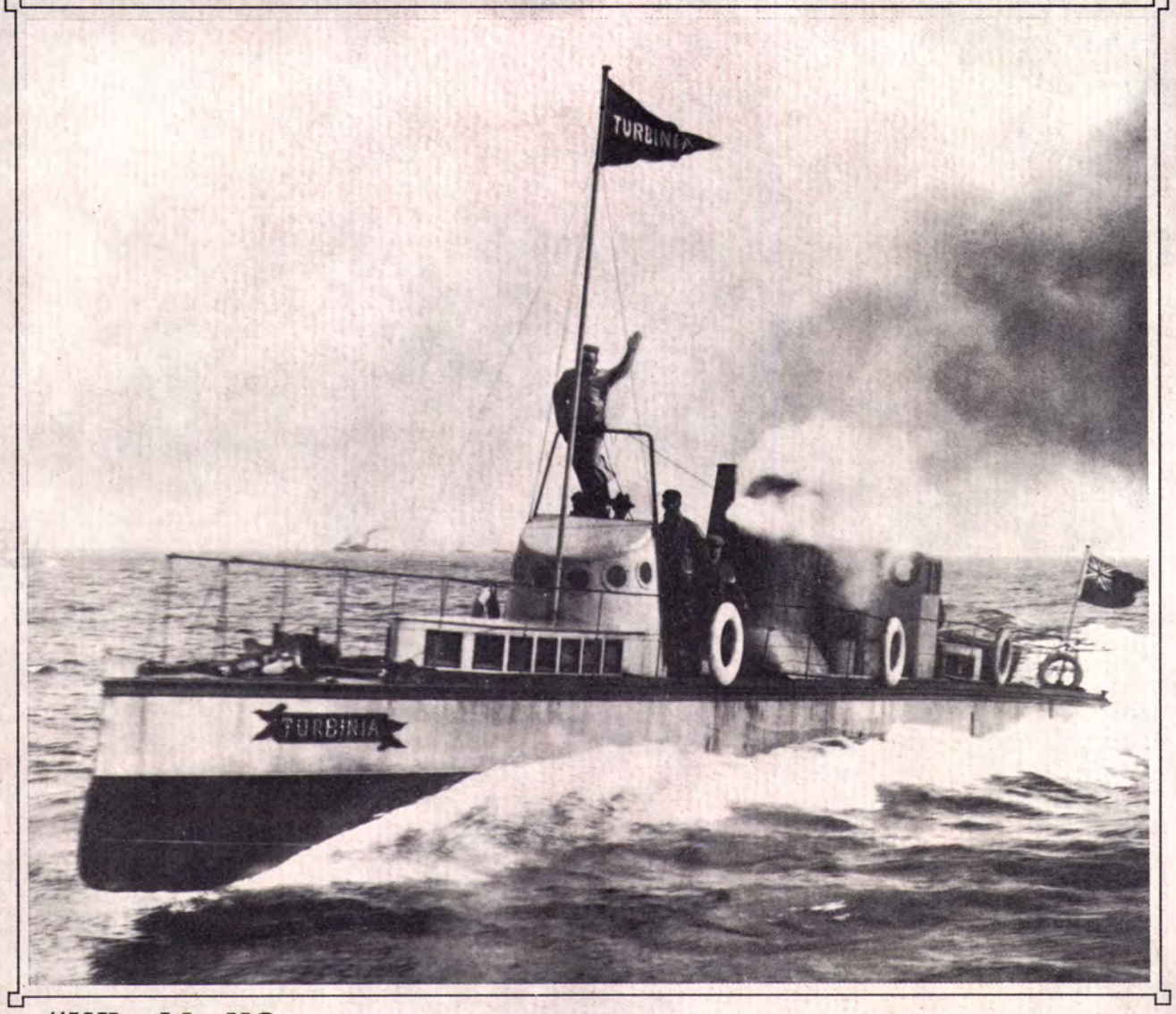
MARITIME
REPORTER
AND
ENGINEERING NEWS

Highly Automated Kockums Tanker
The 260,200-Dwt Daghild Meets
Newest Classification Standards

(SEE PAGE 6)

MAY 1, 1974

Photograph courtesy of The Science Museum, London.



"What is it? Where did it come from?"

The year was 1897. The occasion, the naval review celebrating the DIAMOND JUBILEE OF QUEEN VICTORIA.

Suddenly there dashed out among the assembled ships a small craft scooting along at the then incredible speed of 34½ KNOTS.

From the astounded naval officers came cries of, "What is it? Where did it come from?"

It was the "TURBINIA," the first ship powered by turbine engines. It had been built at Wallsend on the Tyne in 1894, with engines invented by SIR CHARLES PARSONS, and taken secretly to COWES for its surprise appearance in the naval review.

The "TURBINIA" was only 100 ft. long with a 9 ft. beam, and although it was a sensation, it was some time before Parsons could persuade commercial ship owners to take an interest in his invention.

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Japan Retains Lead In World Shipbuilding

According to the annual report of Lloyd's Register of Shipping, Japan again dominated world shipbuilding in 1973, with nearly 16-million tons launched from its yards.

According to the report, Sweden followed well behind with 2.5-million tons, followed by West Germany, Spain, France, Norway and Britain.

The report said demand was high for tankers, liquefied gas carriers and oil-rig supply ships.

M.I.T. Receives Grant For Ocean Teaching

The National Science Foundation has announced the award of $72,908 to the Massachusetts Institute of Technology, Cambridge, Mass., as part of a program to improve undergraduate education in naval architecture and ocean engineering design.

The award is part of a cooperative program that includes the University of Michigan at Ann Arbor, the Webb Institute of Naval Architecture at Glen Cove, N.Y., and M.I.T.—the three U.S. institutions that award undergraduate degrees in naval architecture.

Dr. **C. Chryssostomidis,** assistant professor of naval architecture, will head the M.I.T. effort.

Du Pont Brochure On Bearings Made From Teflon Fiber

E.I. du Pont de Nemours & Company Incorporated, Wilmington, Del., has published a folder containing information on bearings made from Teflon® TFE fluorocarbon fiber. Bearings of "Teflon" fiber withstand much greater load (up to 80,000 psi) than molded PTFE bearings and more important, do not have to be lubricated. "Teflon" fiber is the lubricant—the bearings have a coefficient of friction as low as .02. Included in the kit are bearing manufacturers' catalogs, technical and performance data, case histories of bearings in a diversity of uses, and informative matterial such as reprints of pertinent articles. This kit will be a valuable addition to bearing application files.

Inquiries for this brochure should be forwarded to Du Pont Company, Eden Park Building, New Castle Avenue, Wilmington, Del. 19898, Attention: PDM #15696.

MARITIME REPORTER AND ENGINEERING NEWS

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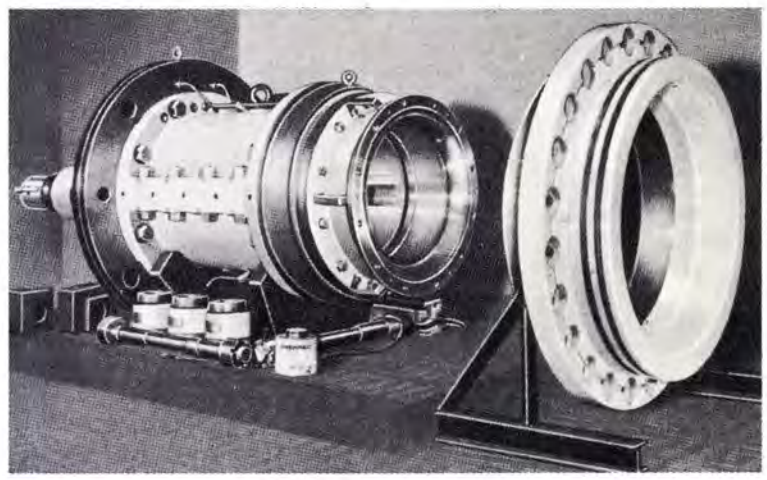
Revolutionary sterngear system allows bearing replacement at sea:



no drydocking required!

A boon for shipbuilders and shipowners alike, this new Glacier-Herbert* system of withdrawable sterngear reduces bearing inspection and replacement time to a matter of hours. It also reduces the *need* for replacement: Because this system provides the means for a more accurate alignment of the bearing with the shaft, and offers improved lubrication and cooling methods, it serves to extend bearing service life well beyond that expected from more conventional systems.

The new Glacier-Herbert system allows the stern bearing and seals to be completely serviced *from inboard* while the ship is afloat at normal trim and at any draft. This eliminates the need for drydocking for bearing service—a great time and cost advantage, particularly for tankers in the VLCC classes for which world ports offer only limited drydocking facilities. The system can be sized to fit within any vessel, and is compatible with all types of propellers and seals.

**Proved in Service*

G-H withdrawable sterngear systems have been at sea in several vessels since 1970. In every case, sterngear performance has been exemplary: the function and maintenance advantages designed into the system have proved out as actual cost and time savings to the vessels' owners. As a result of this verified reliability, contracts have been signed to install the system in several more large tankers now under construction.

Bethlehem is U.S. licensee

Bethlehem Steel Corporation has entered into an agreement with Glacier Metal Company Ltd., holder of the system patent, to manufacture, install, and maintain Glacier-Herbert withdrawable sterngear in the United States. With design work supplied by Glacier Metal, Bethlehem will build the systems, and then oversee their installation anywhere in the United States. Construction and maintenance work will be performed by our several repair yards on the East, Gulf, and West Coasts of this country.

Developed by the Glacier Metal Company Ltd., and Mr. C. W. Herbert, Consulting Engineer.

SEE IT IN HOBOKEN

You are cordially invited to inspect a complete assembly of the Glacier-Herbert withdrawable sterngear system. Manufactured for installation later this year, the assembly will be on display from May 13 through May 17, 1974 at Bethlehem's Hoboken shipyard, 1301 Hudson St., Hoboken, N.J. For details, please call Gus Jonsson at the yard: (201) 659-2070, extension 240.

BETHLEHEM STEEL
Shipbuilding

Todd Gets Two Offshore Contracts

The Offshore Company of Houston, Texas, has awarded Todd Shipyards Corporation contracts for two additions to its fleet. Todd's Houston Division will construct a "Discoverer" class drillship, and the Galveston Division will convert an existing cargo vessel into a drillship.

The new drillship, 374 feet by 70 feet by 26 feet and self-propelled, will be fabricated from steel provided by the customer. It will have a forecastle, after superstructure, and a centerline well with substructure and derrick above at midships. It will be longitudinally framed with two decks and two longitudinal bulkheads. Living quarters for 72 men will be located aft on the second deck, main deck, and upper deck. The top of the house will serve as a heliport, cantilevered aft. Propulsion will be accomplished by means of a single-screw diesel electric drive. In addition, the ship will be equipped with bow and stern thrusters.

For mooring during drilling operations, the ship will have a mooring plug within the drilling well, around which the ship can rotate. Lines will be lead off of winches on the plug, and the heading will be maintained by means of the bow and stern thrusters.

The vessel will be built under survey of the American Bureau of Shipping for class as +A-1 (E) (M) for unrestricted ocean use, with ABS class ice strengthening. The drillship will operate as a U.S.-flag vessel. Delivery will take place in about 24 months.

The Galveston contract will cover the conversion of the cargo vessel, a log carrier, into a 511-foot "Discoverer" class drillship. Components for the conversion will be prefabricated by Todd and will include a new 40-foot midship section, a center plug mooring turret, additional quarters, heliport and longitudinal bulkheads. Most of the steel required for the conversion will be supplied by Offshore. Engineering and design work for the entire conversion is being accomplish by Todd's wholly owned subsidiary, Designers and Planners.

It is expected that the vessel will enter the Galveston yard in September 1974 for cutting and installation of the prefabricated components and owner-furnished drilling equipment. Completion is slated for mid-1975.

Two Appointments At Kerr Steamship

Kerr Steamship Co. has announced two appointments. **William Sneyd** has been named manager of the Atlantic Interline Division, and **Patrick O'Hare Jr.** was appointed as general sales manager, Atlantic Division.

Highly Automated Kockums Tanker Meets Newest Classification Standards

Det norske Veritas plans to employ the insight gained from the Daghild to refine the classification rules.

Kockums Shipyard, Malmo, Sweden, has announced delivery of the T/T Daghild to the Norwegian shipping owners K/S A/S Dag & Co. (John P. Pedersen & Son) of Oslo, on March 27.

The 260,200-dwt T/T Daghild is the 18th in a series of 20 such Kockums - built steam turbine VLCCs, and one of the first supertankers to meet the rigorous new classification rules for navigation and bridge systems developed by the Norwegian classification society Det norske Veritas (DNV).

The highly automated Kockums-built Daghild has been specially equipped with an automatic navigational system, Norcontrol, and anticollision radar and satellite signal receiver. The steam turbine ship has also been outfitted with 3 and 10 cm radar units (Raytheon), a Doppler Speed Log (Edo Western) with transducers mounted in the bows, and two Anschutz gyrocompasses, which provide an alarm for course deviation in case a fault should occur in either compass.

The classification of the comprehensive navigation equipment is on Det norske Veritas initiative and comes about as a result of a year-long effort undertaken by the classification society A/S Dag and Kockums. Each unit in the navigation system and each component of the bridge design, layout, lighting, and field of vision has been designed, developed and tested for installation, reliability and performance according to DNV requirements.

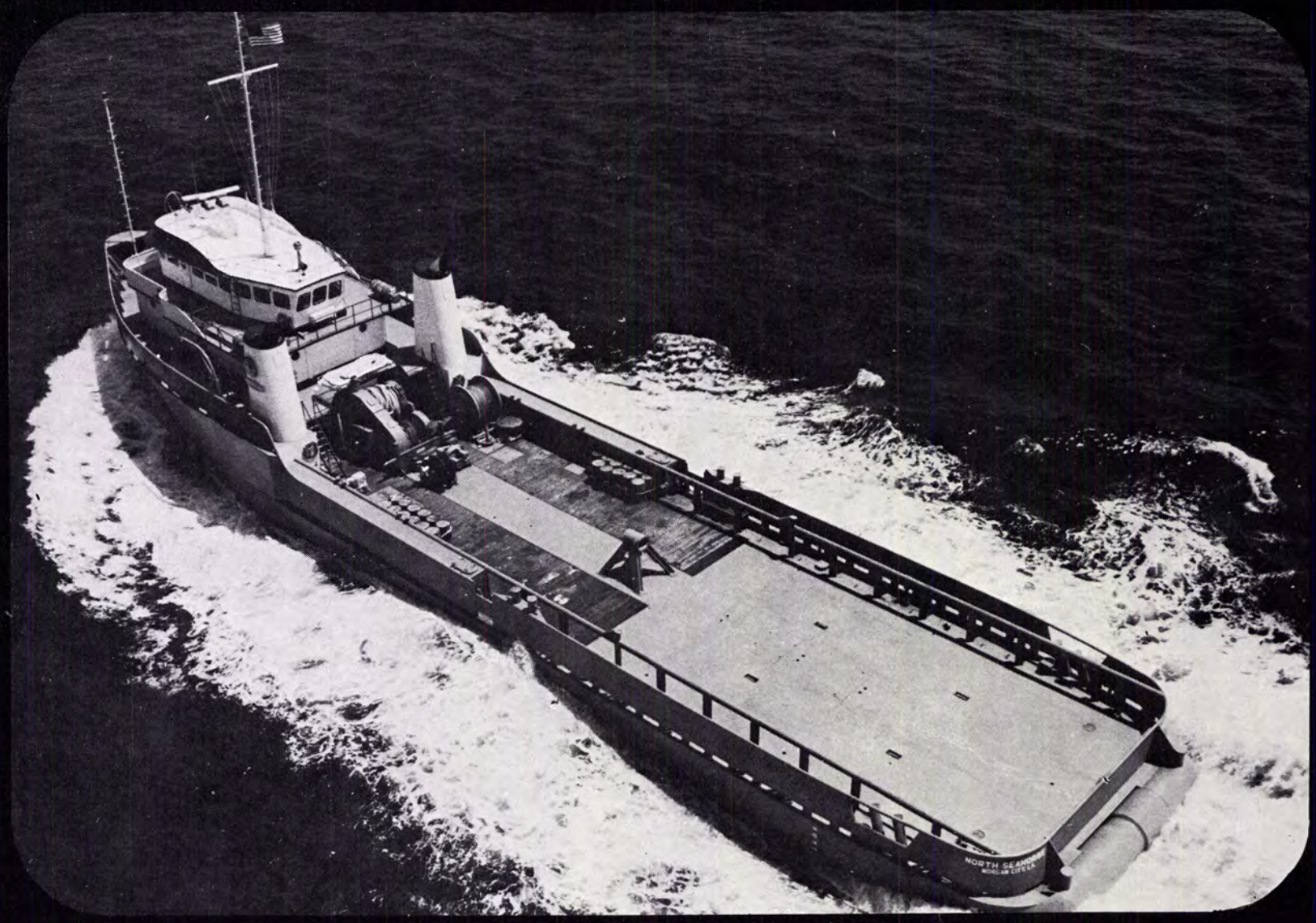
Det norske Veritas expects that eventual acceptance of the tougher standards will contribute to greater safety at sea.

At present, determination of navigational specifications has been left to the individual shipyards and shipping lines. The T/T Daghild is only one of some four such ships built to meet the comprehensive navigation standards.

The Norwegian classification society plans to utilize the insight gained from the development of the Kockums-built Daghild to refine the classification rules prior to introducing the standards in final form. After the rules are formalized, ships which carry the required equipment will receive the notation "NAV" in the Shipping Registry. Additional specifications will also be coded. For example, the T/T Daghild will be registered "NAV-N-A." This title signifies that the Daghild has not only met the new classification rules but is also equipped with automated navigational "N" and anticollision "A" systems.

Other salient data reads as follows: overall length, 1,117 feet; gross registered tonnage, 125,120; length between perimeters, 1,080 feet; molded breadth, 170 feet; depth to main deck, 84 feet; draft, 66 feet; cargo space, 338,750 cubic meters; ballast space, 7,707 cubic meters; pump capacity, 16,000 cubic meters/hour; shaft horsepower, 32,000 shp at 85 rpm (Kockums-Stal-Laval steam turbine), and trial speed, 15.9 knots.

The Tougher The Going The More You Can Depend On New Bedford Rope



That's why the M/V North Seahorse, recently put into operation by the Levy Boat Service, Inc., is outfitted with 100% nylon stretch lines from New Bedford Cordage Company.

She'll be towing rigs in all kinds of weather in the North Sea, where you know it gets rough enough to test the stamina of men and equipment — hour after hour, day after day — straining every fiber of the tow lines or tie-up lines.

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$3-Million Drillship Planned By New Anglo-American Firm

Ben-ODECO, a newly created British-based offshore drilling company, represents an important breakthrough by United Kingdom interests into a field dominated by American companies.

This Anglo-American partnership is between Ben Line Steamers of Edinburgh and Offshore Drilling and Explorations (ODECO) of New Orleans, La., one of the world's most experienced offshore drilling concerns.

Negotiations are in the final stage for Ben-ODECO to place a $38.4-million contract with the lower Clyde shipbuilders, Scott Lithgow, for a dynamically positioning drillship which will be owned and operated by the new company.

Ben-ODECO will come into existence as the owner and operator of the jackup rig Ocean Tide, built on the Clyde in 1971, and now working in the North Sea. This will provide facilities for staff and management training.

$34-Million Award Ups Burrard-Yarrows Backlog To $70 Million

With the recent award of a $34-million contract from the British Columbia government for construction of two large passenger-car ferries, the Burrard-Yarrows Group shipyards have more than $70-million contracted in new ships on the building berths and on the order books.

It's a boom time for the yards—Burrard Dry Dock Company in North Vancouver, B.C., and Yarrows Limited in Victoria—which have seen some lean periods in the last decade.

The turnaround, at least in part, reflects a new policy instituted by the new owners, Cornat Industries Limited, a Vancouver-based management and financial services company, which bought the shipyards in 1972.

Cornat president **Peter Paul Saunders** said that: "When Cornat became involved, we felt the shipyards should build up a stabilized work force, which meant bidding on ships that would give a reasonable profit.

"More emphasis has been placed on sales and bidding because we believe that we will make a profit by building more ships, rather than making more on each ship."

Vancouver is Canada's busiest port in terms of tonnage handled, and Mr. **Saunders** said the shipyards are an essential part of the shipping trade. A big port has to be able to offer the repair and refit services to keep the fleets on the move—and this service also dictates a stable work force.

And new construction—together with the irregular repair jobs—is the key to maintenance of steady crews of skilled shipyard men.

New work under way or on the order books includes:

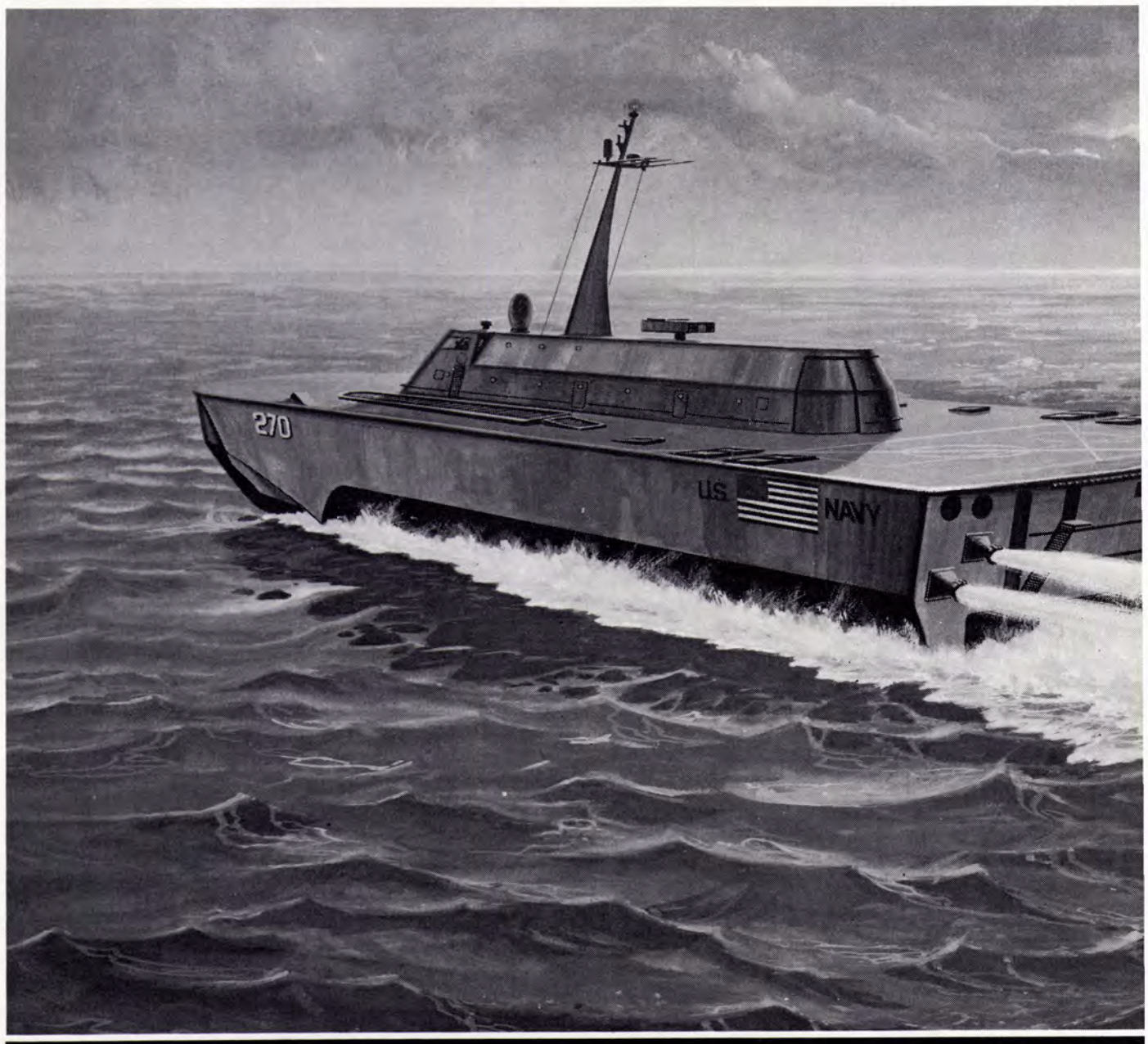
Yarrows is building a 126-foot triple-screw coastal tug, and Yarrows and Burrard are each building one 210-foot cargo barge for Northern Transportation Company operations in Hudson Bay. The contract is worth $5.25 million.

Yarrows is building two 95-foot tugs for use by the Canadian Navy on the West Coast under a $5.55-million contract.

Also under way at Yarrows is the $7.9-million log carrier for Kingcome Navigation, a 420-foot vessel that is unique in its class. It will not only be self-loading and self-dumping, but will also be self-propelled.

At Burrard, two self-propelled railcar transporters are being built for Incan Ships Limited at a total contract price of about $11 million. The ships are basically the same at about 382 feet in length. One will see service on the Great Lakes and the other in the lower St. Lawrence River.

Also at Burrard, a $4.5-million 202-foot oceanographic research vessel for Cayman Island Vessels Ltd. is nearing completion, and five large dump barges are being built under a $2.25-million contract for Northwestern Dredging Co. Ltd. for use in the Arctic and the Mackenzie River Delta.



American Maritime Management, Inc. Opens Two Offices

American Maritime Management, Inc. has opened offices in Stamford, Conn., and in New York to provide shipowners with United States-flag shipping expertise in ship management and to participate in all forms of marine consulting to the maritime industry. **Edmund E. Davis,** president and chief executive officer, is the founder.

Mr. **Davis** said that American Maritime Management, Inc. will furnish prospective or existing shipowners a full range of services, including but not limited to professional consulting of a technical nature, act as owner's representative from planning through operation, including feasibility studies, cost analysis, control of construction, and expert services related to all phases of vessel management.

Services also include the entire spectrum of marine management for all modes of petroleum, chemical and other specialized transportation requirements, including tankers and chemical carriers. Manning, contract negotiations, labor relations, maintenance and repair, coordination, cost control, reliable husbanding service, claims and insurance expertise, and supervision of independent support services in worldwide ports are among the many services expertly provided by this company.

Edmund E. Davis

As president of this firm, Mr. **Davis** draws upon years of experience in marine management. He was formerly vice president of States Marine International, Inc., and vice president of Isthmian Lines. A graduate of the Massachusetts Maritime Academy, he is a member of the board of advisors of the State of Massachusetts Board of Education for that academy, a member of The Society of Naval Architects and Marine Engineers, has served as chairman of the ship technical operations committee, formerly a member of the steering committee, a member of the Maritime Law Association, and on the board of directors of several companies and industry associations.

Complementing Mr. **Davis's** expertise are other officers of American Maritime Management, Inc., formerly of States Marine International Inc. **Philip J. Lamneck,** treasurer and vice president; **Francis J. Rhatigan,** vice president, labor relations and marine personnel, and **John S. Bates,** vice president, purchasing/commissary. Principal offices for American Maritime Management, Inc. are at High Ridge Park, P.O. Box 7171, Stamford, Conn. 06904, with a branch office at 90 Broad Street, New York, N.Y. 10004.

W.H. Williams Named APL Vice President

William H. Williams has been named a vice president by the board of directors of American President Lines, San Francisco, Calif., **Norman Scott,** president, announced.

Previously assistant to the vice president in APL's Washington, D.C. office, Mr. **Williams** succeeds **E.T. Sommer,** who recently retired after 26 years with the company and its American Mail Line Division.

Mr. **Williams** will represent APL in governmental affairs and act in a liaison capacity with Federal agencies and industry groups in the Washington, D.C., area.

Mr. **Williams** has served in the company's Washington office for 24 years. He is a member of The Propeller Club, Traffic Club, and the National Defense Transportation Association.

Crutcher To Acquire Duquesne Natural Gas

Crutcher Resources Corporation, P.O. Box 3227, Houston, Texas 77001, and Duquesne Natural Gas Company have announced that the two companies have reached a tentative agreement calling for the acquisition of Duquesne by Crutcher for approximately 1,000,000 shares of Crutcher common stock.

Duquesne is comprised principally of four subsidiaries:

AWI, which operates six inland water barge workover and drilling rigs from Harvey, La.

Cherco Equipment, Inc., Longview, Texas, which fabricates package compressor units used in the handling of natural gas which it sells or leases to companies in the natural gas industry.

Hill Bros. Transport and Service Company, Inc., Kilgore, Texas, which cleans the bottoms of large volume storage tanks and provides transportation services to the petroleum industry.

Don H. Hartmann, president of Crutcher Resources, and **J.E. Hardegree,** president of Duquesne, said the agreement is subject to further review and the approval of the boards of directors of both companies, and the stockholders of Duquesne.

Leslie Davison Named To Board Of London Graving Dock

Leslie Davison

The Thames and southeast coast ship repairers, The London Graving Dock Group, have announced the appointment of **Leslie Davison** to the holding company board.

Mr. **Davison** will continue as managing director of the Group's electrical / mechanical engineering subsidiary, Ayrodev Processes Limited, which operates plants at Basildon, Silvertown, Tilbury and Cardiff. Mr. **Davison** joined Ayrodev in 1971, and took up his position as managing director in August 1972.

First Tug-Barge Title XI Leveraged Lease Financing Announced

The first Title XI leveraged lease financing of an oceangoing integrated tug-barge was announced by Salomon Brothers and Matrix Leasing International, Inc. The tug-barge, costing approximately $20 million, will be chartered to Bulk Food Carriers, Inc. of San Francisco, Calif.

Salomon Brothers placed the Government guaranteed Title XI Bonds, while Matrix Leasing International, Inc. structured the transaction and placed the equity funds. The equity funds will be provided by the First National Bank of Minneapolis, Security Pacific Leasing Corporation, and Crocker National Bank.

The 25,000-dwt tug-barge is actually two vessels—a tug and a barge—which fit together into one unit. The unit will be used to transport rice, lumber and other commodities between California, Florida, and Puerto Rico, pursuant to contracts with the California rice producers, and Pacific Northwest lumber companies.

Canal Barge Files For Aid To Build Towboats And Barges

A Title XI application has been filed with the Maritime Administration by Canal Barge Co., Inc., 812 Gravier Street, New Orleans, La., for mortgage loan and guarantee to aid in building one 7,000-bhp river towboat, one 5,600-bhp river towboat, and two integrated four-barge tows. The vessels would be built by Dravo Corporation, Pittsburgh, Pa., at a total cost of $8 million.

Moran Tug/Barge Operations help meet critical transportation needs

Barge "Rhode Island," 64,000 barrel capacity, under tow of tug, "Eugenia Moran," 3160 horsepower.

Keeping pace with the ever-increasing requirement for petroleum products, Moran has helped maintain a steady, safe flow of fuels vital to our nation's health, comfort, and economy. Through the year millions of barrels are moved to refineries, distributors, and consumers along the Atlantic seaboard and inland waterways. More than a century of experience enables Moran tugs and barges to effect the greatest possible economy and efficiency.

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Aerojet, Todd And J.J. Henry Form Team To Compete For Contract To Design And Build Navy's New 2,200-Ton Surface Effect Ship

An artist's conception of the Navy's surface effect ship which will be capable of operating in open seas at speeds in excess of 80 knots.

Aerojet-General has announced it has formed a team with Todd Shipyards Corp. and the naval architectural firm of J.J. Henry Co., Inc., to compete for the contract to design and build the Navy's new 2,200-ton surface effect ship (SES).

Calling its consortium the "Triceps" team to denote triple strength, the Aerojet Surface Effect Ships Division said the team combines the different skills needed to build the revolutionary craft which represents a marriage of advanced shipbuilding and aerospace technologies.

The Navy has requested bids from industry for a ship which will be designed to travel at speeds of more than 80 knots on a cushion of air. Aerojet has already built a 100-ton version of such a craft, and it is now under test.

E.D. Ward, vice president and general manager of Aerojet SES Division in Tacoma, Wash., said the team's engineers and executives have jointly done extensive work in preparing the proposal submitted to the Navy.

"This ship," said Mr. **Ward,** "represents such a radically different design from conventional ships of the past that, to successfully introduce SES technology into a useful ship, the naval architect and shipbuilder must actively participate from day one. Our goal is to effectively 'marry' this new technology with proven marine practices, while providing clear technical options to the Navy. This consortium, together with the management controls established, offers a smooth transition as opposed to a 'shotgun wedding' later in the program."

J.J. Henry Co. of New York is one of the world's largest independent consulting firms of naval architects and marine engineers. It is highly regarded in the shipbuilding/shipowner community because of its innovative design of unique modern automated ships.

Todd Shipyards, also headquartered in New York, but with shipyards in other cities, including Seattle, Wash., represents shipbuilding experience dating back to 1916. It has some of the most modern yards in the world. The Seattle yard is currently fabricating a large aluminum-hulled air-cushioned amphibious landing craft under contract to Aerojet. The 2,200-ton surface effect ship will utilize the same kind of expertise in forming aluminum hulls and ship structures. When built, the new ship would be the largest oceangoing vessel ever constructed from aluminum alloys for the Navy.

Mooremack Studies Ship Modification

The possibility of modifying some of its C-4 Constellation-class cargoships so that the container capacity of each would be increased from 199 twenty-foot boxes or the equivalent to 521 is under study by Moore-McCormack Lines.

Described by company officials as very much in the tentative stage, the plan is outlined in the annual report of Moore McCormack Energy, Inc., parent company of the U.S.-flag shipping operation.

Mooremack has six of the 23-knot C-4 vessels. They are mainly assigned to the line's operations between the U.S. Atlantic Coast and the East Coast of South America.

According to the report, the plan under consideration calls for the fitting of new 115-foot midsections to the ships. They would also be equipped with shipboard cranes to facilitate rapid loading and discharge of cargo under varying port conditions.

The report estimates that the vessels could be altered for approximately $4.5 million each.

"When that sum is added to the book value of $3.7 million per vessel, it can be seen that the total cost of a longer life and more efficient ship still compares favorably with committing some $20 million for a new vessel.

"Management considers that increases in operating costs normally associated with increasing age of a vessel still are less expensive than the costs associated with building a new ship. Such rises in operating costs will be offset by other economies such as greater potential revenues per voyage," the report states.

Adding midbodies to three of the C-4 ships would have the effect of increasing Mooremack's overall carrying capacity to 35 percent and its container-carrying capacity by 70 percent, the company notes.

Describing the proposed project as consistent with the present and prospective composition of cargoes carried by its vessels, the report indicates that more than 70 percent of the freight Mooremack moves is unitized or containerized, with the latter now accounting for about 30 percent of its cargo business.

While considering a project that would involve the Mooremack operation more deeply in containerization, the report acknowledges that the line's operations are still limited by the "broad range" of cargoes in its trades.

The countries served by Mooremack are still heavily oriented to production of commodities, some of which can easily be unitized, the report points out.

SNAME Hawaii Section Hears Talk On Polynesian Navigation By Dr. Finney

Shown at the SNAME Hawaii Section meeting, left to right: **Hugh W. Kaiser,** membership chairman; **Robert E. Armstrong,** vice chairman; Dr. **Manley St. Denis,** executive committee; Dr. **Ben Finney,** principal speaker; **Sueo Hayashida,** chairman; **Harry R. Taplin,** secretary-treasurer, and **Richard R. Allen,** meetings chairman.

The Hawaii Section of The Society of Naval Architects and Marine Engineers met recently at the Bishop Museum in Honolulu. The evening started at 6 p.m. with a presentation entitled "Polynesian Skies," which was given in the planetarium of the museum.

The program was narrated by **George Bunton,** who helped develop the special program to show how the ancient navigators from Micronesia, Polynesia and Melonesia used the stars to find their way on long ocean voyages. He graphically illustrated how the "Stone Age" navigators used the evening skies to plot their courses and find their way. The remarkable way this skill was passed on by chants from generation to generation by societies without books, instruments, steel and many aids available to the modern navigator stands out as a testament to the skill and ability of these ancient voyagers who sailed the Pacific before Westerners discovered the Americas.

After a social hour and dinner, Dr. **Ben Finney,** widely published author, professor of anthropology at the University of Hawaii, and president of the Polynesian Voyaging Society, spoke to the group about that society's plans to build and sail a vessel between Hawaii and Tahiti, following as closely as possible original ship design and voyaging conditions.

Controversy over possible methods of discovery of Hawaii (intentional or accidental), set against an explanation of probable Polynesian syche and knowledge of then existing technology, triggered lively debate over the probabilities, and an especially interesting discussion of the "inverted" sail and its efficiency. The combination of the planetarium presentation and Dr. **Finney's** discussion left little doubt that for some reason the Polynesians were seeking land, perhaps even land in Hawaii's specific location.

The Polynesian Voyaging Society plans to demonstrate that early Polynesians could well have traveled to Hawaii intentionally. They are building a voyaging canoe, 60 feet long and twin-hulled, as similar as possible to the ancient canoes. They will provision and man the craft according to specifications found in legends, and will use no tool or convenience not known to have existed in early Polynesia. They will use the navigation techniques shown to the Hawaii Section of SNAME to sail to Tahiti and back.

The story, the society, and the voyage are all astounding and captivating in every detail. Full details can be obtained through the Hawaii Section of SNAME, or from Dr. **Ben Finney,** 2467 Aha Aina Place, Honolulu, Hawaii 96821.

Dr. **Finney's** presentation was enhanced by slide reproductions of the outstanding paintings of Hawaii's artist, **Herb Kane,** whose very authentic drawings are widely displayed on calendars in the Islands.

The strong motivating theory of the ancient Polynesians was that for every island there was a star, and that if a canoe arrived at the precise spot under that star when it was at its zenith, there would be land. The probabilities were fairly good that the islands of the Pacific were colonized by peoples following that belief.

Interstate Oil Seeks Subsidy Aid For Tanker To Be Built By Kelso

An application for subsidy to aid in the construction of a 42,900-dwt tanker has been filed with the Maritime Administration, Washington, D.C., by Interstate Oil Company, Philadelphia, Pa.

Interstate said in its application to the agency that a letter of intent to build the vessel for an estimated $20 million was signed with Kelso Shipbuilding Company of Galveston, Texas.

Traditionally, the Texas-based shipbuilder produces smaller vessels.

If contracts are signed, Interstate said, the tanker will be operated to carry petroleum products in the United States foreign trade.

IHI Appoints New Gen'l Superintendents In Three Shipyards

IHI (Ishikawajima-Harima Heavy Industries Co., Ltd.), Japan, has announced the appointment of new general superintendents at its Tokyo, Yokohama and Nagoya shipyards.

According to the announcement, **Koji Yamada** was assigned to the post of general superintendent of the Tokyo Shipyard, which specializes in construction of Fortune vessels, naval vessels, special purpose ships, dredges and floating cranes.

Tetsuya Aoyama, formerly general superintendent of the Tokyo Shipyard, has been transferred to the same post at the Yokohama Shipyard, where VLCCs are constructed.

Yasunari Mochizuki has been transferred from general superintendent of the Yokohama Shipyard to become general superintendent of the Nagoya Shipyard, which is engaged in ship repairing and manufacture of industrial machinery and marine structures.

Nat'l Marine Services Applies To Construct Towboat And 21 Barges

National Marine Services Inc., St. Louis, Mo., has applied for construction loan and mortgage insurance to help finance 21 double-skinned petroleum channel tank barges and one 2,200-horsepower diesel-powered towboat.

The total cost of the project, according to an application filed with the Maritime Administration, is expected to be $6.6 million for the barges and $856,000 for the towboat. No builder has been contracted with. The barges will be used on the inland waterways.

Prudential-Grace Lines Promotes J.J. Mullin

John J. Mullin has been named regional controller-domestic outports and East Coast for Prudential-Grace Lines, according to an announcement by **Thomas W. Lyons,** controller of PGL.

Since 1972, Mr. **Mullin** has been controller of the Philadelphia office of the carrier, Mr. **Lyons** said. In his new post, he will continue to be located in Philadelphia, Pa., but will have jurisdiction over all Prudential offices in ports from Philadelphia south.

Mr. **Mullin** joined Prudential in 1972 after working as controller of United Aero Products, a division of Macrodyne Industries. Prior to that, he was a senior financial analyst with Philco-Ford Corp.

A native of Philadelphia, he holds a B.S. degree from La Salle College in that city, and attended Temple University in an MBA-accounting program.

Mr. **Mullin** is an associate director of the Philadelphia chapter of the National Association of Accountants, a member of the Philadelphia Marine Trade Association, the Philadelphia Chamber of Commerce, and the Maritime Society of Philadelphia.

American And British Partnership Formed To Acquire British Yard

A new Anglo-American North Sea equipment partnership has been formed, specializing in the fabrication of offshore modules ranging from 200 to 1,200 tons.

BTR Limited of London and the United States Filter Corporation have formed, through subsidiaries, a new jointly owned company to be known as William Brothers Offshore Limited.

The company is taking over the former Ryton Marine Shipyard on Tyneside, northeast England, involving a land area of some 14 acres, covered fabrication facilities of 100,000 square feet, and 850 feet of waterfront.

Operations will start at the company's waterside facility in early June.

Argentine Line Orders Nine Cargoships

Empresa Lineas Maritimas Argentinas (ELMA), the Argentine state-owned shipping line, has placed an order for nine British-designed SD-14 type cargoships in a complicated package deal with the U.K. firm A. and P. Appledore.

The deal embraces the Scottish shipbuilding firm Robb Caledon, which is to build three of the ships for delivery commencing early 1976, and the Argentine yard, Astilleros y Fabricas Navales del Estado (AFNE), which will construct the remaining six to British design.

Charles Longbottom, chairman of Appledore, said that the nine 15,000-dwt ships had been specially designed to ELMA's specifications to include refrigeration and vegetable oil space.

The Robb-Caledon-built vessels will cost the Argentinians more than $28.4 million, while the state-owned AFNE yard will be using U.K. steel, costing $7.1 million, U.K.-built Doxford engines and some U.K. equipment, the supply of which has been arranged and coordinated by the shipbuilding design consultants, Appledore.

According to Appledore, the contract with ELMA was won from nine competitors in Germany, Spain, Greece and Argentina itself.

ELMA has recently ordered ten 20,500-ton Santa Fe types from Spain to fill out its bulk carrier fleet at a cost of approximately $110 million.

The line is in the process of building up its fleet to lessen its heavy foreign-flag charter commitments, according to shipping sources in London. Some 40 percent of ELMA's fleet is more than 20 years old, with an even higher percentage engaged in the nonstate subsidized sector allocated to Argentine-Brazilian costal trade.

John A. Serrie Jr. Elected President Seatrain Shipbuilding

John A. Serrie Jr.

Seatrain Lines, Inc. has announced the election of **John A. Serrie Jr.** as president of the company's Seatrain Shipbuilding Corporation subsidiary. Mr. **Serrie** was vice president-operations at the Ingalls Shipbuilding Division of Litton Systems, Inc., in Pascagoula, Miss.

Born in Jersey City, N.J., and a graduate of the Massachusetts Institute of Technology in Boston, Mass., Mr. **Serrie** had been with Ingalls Shipbuilding since 1968 as vice president-engineering and materiel, becoming vice president, operations of the company's East Yard in 1971, and vice president-operations of the combined yards in 1972. Prior to joining Litton Systems, he had been with the Electric Boat Division of General Dynamics in Groton, Conn., since 1953 and was an engineering officer in the U.S. Navy since 1946. A member of The Society of Naval Architects and Marine Engineers, he is vice chairman of its Gulf Coast Section.

Koehler-Dayton Names Electro-Nav, Inc. As East Coast Sales Rep

Koehler-Dayton, Inc., Division of Litton Industries, New Britain, Conn., has announced the appointment of Electro-Nav, Inc., New York City, as their East Coast sales representative.

Electro-Nav will be responsible for the marketing of the firm's commercial marine waste management systems. Koehler-Dayton, with over 15 years of experience in solving complex sanitation problems, also markets a complete line of waste management systems to railroads, the aircraft industry and the U.S. military.

Athena Asks Title XI Covering Two Tankers To Be Built By NASSCO

A Title XI application for a mortgage and loan guarantee in connection with two 89,700-dwt tankers, to be built by National Steel and Shipbuilding Co. (NASSCO), has been filed by Athena Marine Shipping Co., 410 Lakeville Road, Lake Success, N.Y. The cost of the vessels is estimated at $38.4 million each.

Fulton Seeks Title XI To Build Bulk Carrier At Bay Shipbuilding

The Fulton Steamship Co. located at 555 Madison Avenue, New York, N.Y., has filed a Title XI application with the Maritime Administration, Washington, D.C., to assist in constructing a self-unloading bulk carrier. The 28,100-dwt bulk carrier will measure 704 feet in length, have a 78-foot beam and a depth of 45 feet. Costing approximately $14.7 million, the vessel would be built by Bay Shipbuilding Corp. of Sturgeon Bay, Wis.

Four Offshore Vessels To Be Constructed By James Brown & Hamer

Talbot, Jackson & Associates have recently received an order to design four offshore supply vessels. They are to be built by James Brown & Hamer of Durban, South Africa, for KS West Supply A/S of Bergen, Norway. The approximate measurements of the vessels will be 190 feet in length, with a beam of 45 feet and a draft of 15 feet, giving a minimum freeboard of 5 feet. They are designed to carry 850 tons of pipe on deck. The main engines are by M.A.K. type 6M 453 AK developing 2,100 bhp at 600 rpm, with Reintjes reduction gearboxes type SUA 560 giving a propeller speed of 240 rpm. The reverse controllable pitch propellers will be made by Seffle and the cement tanks by Smatco.

Talbot, Jackson & Associates introduced the owners and the shipyard in this case, which is a typical example of the service they provide to shipyards wishing to enter the supply vessel market, but having no previous experience of this type of vessel or contact with the market. In addition to designing the vessels, Talbot, Jackson bring to such a contract their wide knowledge of current trends in the Offshore Oil Industry.

The basis of the design for these ships is the fact that as more and more anchor handling is done by tugs specially designed for the work, there is a growing demand for straight forward supply vessels with a good deadweight and the ability to carry large quantities of pipe on deck, so that they can also be used to supply lay barges.

The ships being built for KS West Supply A/S have been designed to fulfill both roles, having a deadweight of over 1,500 tons and able to carry 850 tons of pipe on deck, with the 20 percent allowance required by the Norwegian regulations. The vessels are being built to the requirements of Det norske Veritas and Norwegian Sea Control.

James Brown & Hamer are a well-known shipbuilding and ship repair establishment in Durban, who have recently built a series of sophisticated freezer trawlers and are at present building a large tug for Safmarine.

Talbot, Jackson & Associates is an offshoot of the well-known Vancouver firm run by **Gerald Talbot.** The British office was started two years ago by **Christopher West,** who trained at Durham with Mr. **Talbot** and has spent most of his working life managing shipyards in Malaya, Canada and the United Kingdom. The British office was set up to specialize in the design of offshore supply vessels, and to this end Mr. **West** spent some time aboard various ships, experiencing conditions in the North Sea and witnessing all aspects of the work they undertake.

Talbot, Jackson & Associates Ltd.'s Canadian office is located at 208 Pemberton Avenue, North Vancouver, British Columbia. The United Kingdom office is at 77 Seckford Street, Woodbridge, Suffolk, England.

Belcher Towing Orders New 3,000-Hp Tug From Marine Industries

Belcher Towing Company has placed an order for a new 3,000-hp tug for use in the Miami harbor, according to an announcement by **L.C. Morris,** manager of the company.

The new tug, currently under construction at Marine Industries of Morgan City, La., as yet unnamed, is scheduled for delivery in December of this year.

Designed by Marine Design, Inc. of New York City, the tug will be 96 feet long, with a beam of 27 feet 6 inches, and will be powered by two 12-cylinder EMD645-E6 engines equipped with Falk gears. The vessel will carry two 75-kw generators driven by Detroit Diesel 6-71s. She will be a ship-docking and coastal towing tugboat built to U.S. Coast Guard and ABS specifications.

As stated by Mr. **Morris,** the tug is being constructed to help handle the larger vessels that are now able to come into Miami due to the 36-foot harbor deepening project.

A 1,100 horsepower 70-foot pusher tug constructed by Atlantic Marine in Jacksonville was delivered last December to Belcher Oil Company of Miami, an affiliate of Belcher Towing.

Mr. **Morris,** who is active in American Waterways Operators, Inc. (AWO), has been named chairman of that association's Environmental Control Committee, replacing **Harold G. Williams** of Gulf Atlantic Transportation Corporation, who has been chosen AWO board chairman.

Seatrain Sells Ships Used In Hawaii Trade To Matson Navigation

Joseph Kahn, chairman of the board of Seatrain Lines, Inc., has announced the sale of the vessels and container and chassis equipment, used by Seatrain in its Hawaii and Guam trade, to Matson Navigation Company. He expressed regret for the need to discontinue Seatrain's service to Hawaii and Guam and said that this action was required by the continuing losses in these services. Seatrain will continue to operate its other Pacific container services.

Mr. **Kahn** said that although the sale of these assets for approximately $14 million resulted in a nonrecurring loss of approximately $5 million, the cash proceeds in excess of debt repaid would be useful in other parts of the company's business. The sale will also eliminate a source of substantial operating losses which have been experienced in the container division, he said.

Mr. **Kahn** stated that although volume and operating results in the remainder of the container division had improved, that division continued to operate at a loss.

The charter division continued to operate profitably, Mr. **Kahn** said, even though the current level of charter rates is substantially below the record high rates of the company's second fiscal quarter. It was his judgment that the lifting of the Mideast oil embargo and the return to prior levels of production by certain of the Arab Petroleum Exporting States should result in improved charter rates.

Mr. **Kahn** stated that Seatrain's shipbuilding subsidiary, which recently sold and delivered the T/T Brooklyn, has three additional American-flag supertankers presently under construction. Approximately $3.1 million, constituting the then current estimate of excess cost to complete construction of the tankers Brooklyn and Williamsburgh over the proceeds from their sale, was charged to income in the quarter ended December 31, 1973. The latest estimate of cost to complete the T/T Williamsburgh, the second ship in the series, indicates additional cost of approximately $10 million. However, the U.S. Tanker Preferential Bill, which was recently reported favorably out of the House Merchant Marine Subcommittee, could if enacted, result in a higher sales price for the American-flag supertanker Williamsburgh, which would mitigate the effect of the additional construction cost.

Brazilians Order Hovermarine Fleet

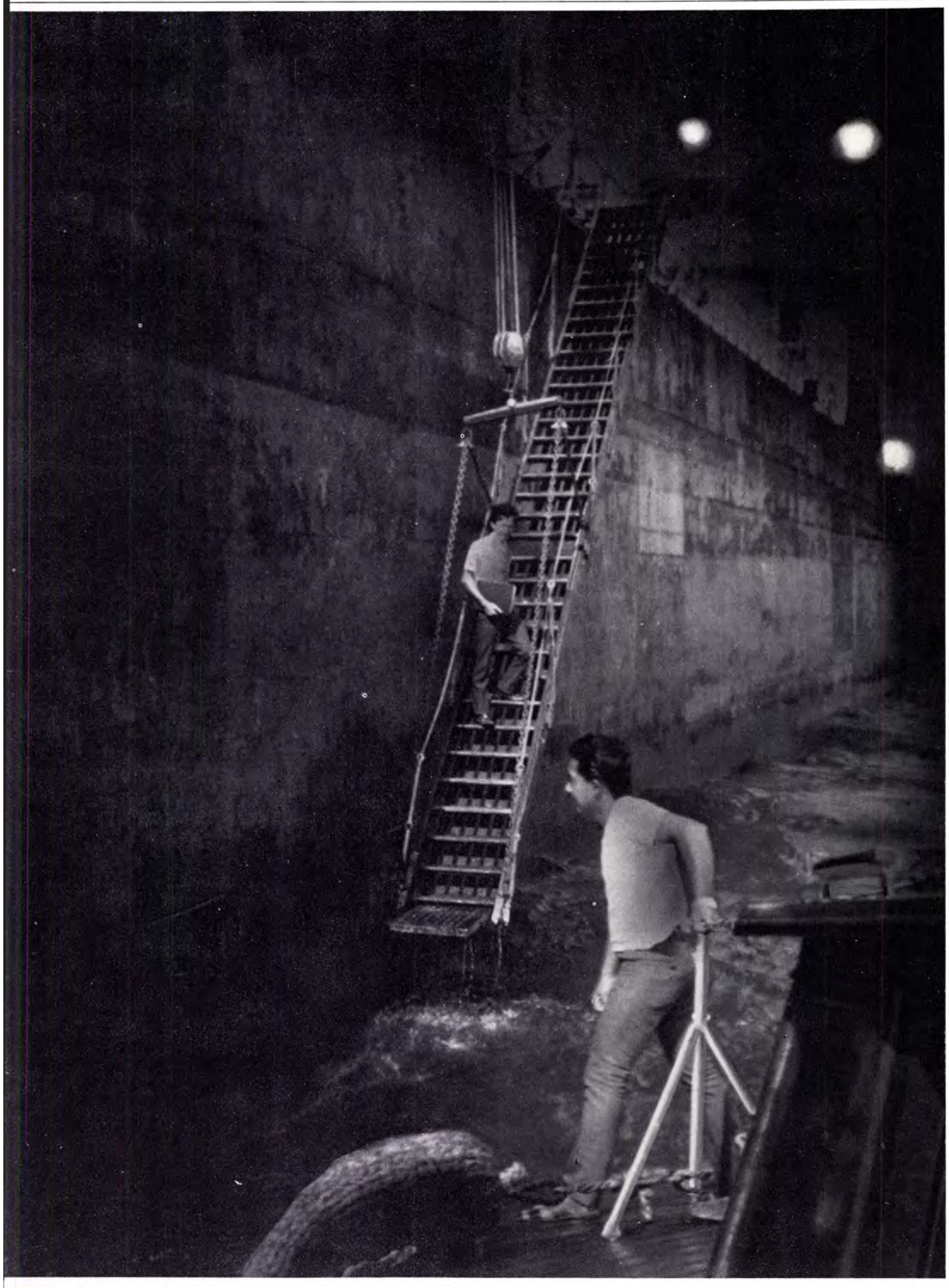
Hovermarine Transport Ltd., Southampton, England-based manufacturer of high-speed commercial hovercraft, has announced the sale of three HM.2 Sidewall Hoverferries for service in Brazil.

"The three hoverferries were ordered by Servicos de Transportes da Baia da Guanabara (STBG), a Brazilian ferry operating company which plans to run commuter services on the Bay of Guanabara between the business district in Rio de Janeiro and the suburban residential community of Niteroi," says **Donald D. Adams,** director of marketing, Hovermarine Transport Limited. "The three-mile run is presently serviced by large conventional ferries, some of which will be replaced by the HM.2s.

"Finance for this contract, which is in excess of 500,000 pounds has been arranged by our recently formed subsidiary company, Hovermarine Finance Ltd."

"The craft are under construction at Hovermarine's Southampton factory and are scheduled for delivery and entry into service this summer," says **Edward F. Davison,** Hovermarine managing director. "In spite of the current shortages of materials," Mr. **Davison** says, "we do not anticipate any problem in meeting requirements for this order, and delivery will be unaffected by the three-day week."

According to marketing manager **Bill Bickerdike,** the route in Rio de Janeiro will be a five-minute run and HM.2s will depart at five-minute intervals. Current ferry service takes almost 25 minutes to cover the same route. The 65-seat HM.2 was chosen by STBG and approved by the Brazilian Ministry of Transport as the most suitable fast-water transport in its class.



Elkan Acquired By Port Electric Affiliate

Fred Corrado, president of Hose-McCann Telephone Company, an affiliate of Port Electric Supply, recently announced the acquisition of Elkan Electric Cable Company by Hose-McCann.

The extensive Elkan facilities have been expanded and relocated in a newly acquired plant on a four-acre site at 248 3rd Street, Elizabeth, N.J. The company's plant was previously located for over 50 years in Brooklyn, N.Y.

Elkan maintains a complete stock of marine and Navy shipboard electrical cable, as well as IEEE 45. Inventories include coaxial, alpha, belden and electric wire (Mil-W-16878). The warehouse is Navy-authorized for stocking and handling requirements for U.S. Government inspected materials.

The Elkan Company originated and pioneered the use of armored cable for shipboard installations over 50 years ago.

Ingalls Iron Works Elects Reid S. Byers VP-Marine Division

Sam M. Boykin Jr., president and chairman of the board of The Ingalls Iron Works Company, has announced that **Reid S. Byers** was elected vice president-Marine Division.

Mr. **Byers** joined Ingalls in 1956 as plant manager of the Decatur Shipyard and transferred to Birmingham in 1962 as general manager of the Plate, Tank and Marine Division.

Mr. **Byers** is a native of Uniontown, Pa., and a graduate of Carnegie Institute of Technology with a B.S. degree in civil engineering. During World War II, he served in the U.S. Navy as lieutenant (j.g.) in the Submarine Service. He is a director of the Shipbuilders Council of America, a member of The Society of Naval Architects and Marine Engineers, and a member of the Western Rivers Technical Committee of the American Bureau of Shipping. Prior to joining Ingalls, he was associated for 10 years with a manufacturer of marine transportation equipment in Pittsburgh.

Mrs. Sarah M. Murphree was also elected assistant secretary at the same time. **Mrs. Murphree** serves as an executive secretary and has been with Ingalls for 20 years.

Bulk Shipping Pools And Consortia Study Prepared By Drewry

While a large amount of cargo is still carried by independent bulk shipping interests, British and overseas shipowners are having to accept new concepts for ship ownership, management and—most important of all—marketing. Cooperation between individual owning or operating companies, either by the "pooling" of tonnage or through membership of one of the many bulk shipping consortia formed in recent years, is becoming increasingly common." Pooling," and other ventures involving some sacrifice of traditional independence, have primarily been a response to very rapid growth of the bulk shipping market over the past 10 to 15 years, new shipping and chartering methods, as well as the increasingly competitive market, demanding specialization by owners. The changing market—particularly the preference for freight contracts and other long-term shipping arrangements—has led to the formation of a large number of pools and consortia able to compete for, and secure, long-term business appropriate to the size and type of ship the members place at their disposal. These ventures are discussed and analyzed in "Bulk Shipping 'Pools' and Consortia," the 21st in a series of in-depth studies prepared for by the Research Division of H.P. Drewry (Shipping Consultants) Limited for worldwide distribution.

Most of the British bulk shipping companies—including Cunard, P & O, Ocean, Bibby, Ropner and Bowring—have either formed, or become members of, bulk "pools" and consortia, and an introductory section suggests why owners have been willing to rationalize management and marketing resources. Many of the pooling arrangements involve shipowners of the same nationality, British and Norwegian consortia being especially prominent. However, the 60-page report reveals that multinational groupings are growing in importance, especially in the large bulk carrier —cum—OBO market.

The operations of all known bulk shipping pools and consortia are reviewed in the Drewry survey, the various national and multinational groupings being classified according to the type and size of ship each has at its disposal, as well as their specialization. Separate sections of the report are devoted, for example, to those bulk pools specializing in the shipment of forest products, cars, etc. A clear distinction is also made between pools operating large, medium and handy-sized bulk carriers and combined carriers, in order to compare their spheres of operation and illustrate their different approaches to marketing, ship scheduling, etc. Analysis of shipping movements reveals significant differences between, for example, Seabridge Shipping and Associated Bulk Carriers, the P & O subsidiary, although the composition of their fleets is similar.

There has been a tendency for the smaller pools and consortia—some of which have substantial fleets—to concentrate on one sector of the market (for example, the Western Canadian forest products trade) or to restrict their main marketing effort to particular areas, such as the Pacific. The trading pattern reflects the dependence on particular trades and commodities, while the report also refers to the composition of each fleet, the tonnage contributed by the members of the pool and chartering operations. Fuller details of each fleet are presented in an appendix to the report, including the amount of cargo-handling gear available.

The concluding section of "Bulk Shipping 'Pools' and Consortia" takes a look at the changing structure of the Japanese bulk shipping industry, reference being made to the various overseas subsidiaries and affiliates set up to facilitate chartering operations or enable newbuilding to be financed outside the framework of the domestic shipbuilding program under the so-called "tie-in" system.

"Bulk Shipping 'Pools' and Consortia," No. 21 in a series of reports prepared by the Research Division of H.P. Drewry (Shipping Consultants Limited), Palladium House, 1-4 Argyll Street, London W1V 1AD, England, is available on a subscription basis (£60 per 10 consecutive reports) or a single copy rate of £20.

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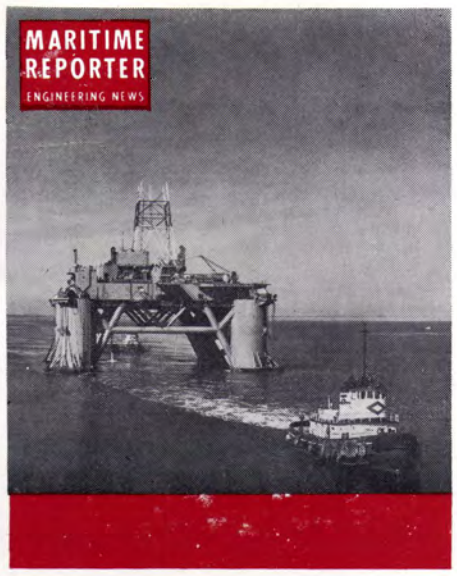

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Knox Joins GATX In Financial Capacity

Lance L. Knox

Lance L. Knox has joined General American Transportation Corp. (GATX) to assist executive vice president **Henry Nord** in the company's financial activities.

T.M. Thompson, chairman, who made the announcement, noted there has been a significant growth in GATX assets, arising from the acquisition of Marine Transport Lines, American Steamship Co., and development of international and domestic financial, insurance and real estate investments.

"In order to assist in the integration of these assets into a comprehensive well-ordered financial plan, it is necessary that the corporate financial department be expanded," Mr. **Thompson** said.

Mr. **Knox** formerly served as a vice president of First National City Bank of New York, where he specialized in ship financing and more recently in financial services to worldwide corporations.

CTI Announces Two Appointments

CTI-Container Transport International, Inc., White Plains, N.Y., has announced two executive appointments in international operations. **Anthony Kolff** has assumed the title of district manager, CTI Belgium, and **Sadric Lam** has been appointed district manager, CTI Hong Kong.

Mr. **Kolff,** who will continue as district manager for Holland, reports directly to **Hans Koschland,** vice president, Europe.

Mr. **Lam** reports directly to **Frederick Gutterson,** vice president, Pacific. Mr. **Kolff** and Mr. **Lam** are responsible for marketing and operations in their districts.

Mobil Tankers Christened In Japan

The Mobil Mariner on trial run before christening.

The first of five 270,000-dwt supertankers being built for Mobil Oil Corporation in Japan was christened Mobil Mariner on March 11 by **Mrs. G.J.G. Docters,** wife of the vice president of the International Division. The Mobil Mariner was built at the Oppama shipyard of Sumitomo Shipbuilding & Machinery Co. Ltd. Immediately after launching, she set sail for the Persian Gulf.

Two weeks earlier, at the Honmoku Works of the Yokohama Shipyard & Engine Works, **Janice P. Luck,** daughter of **Henry J. Luck Jr.,** vice president, Mobil South Inc., rechristened the Mobil Astral. The vessel was originally launched as a 100,000-dwt tanker in September 1964. Following conversion to 150,000 dwt, she shares with the tanker Mobil Daylight the distinction of being the world's largest converted vessel.

Mrs. G.J.G. Docters uses a ceremonial hatchet to cut ribbon, signifying the christening of the supertanker Mobil Mariner.

Miss Janice P. Luck rechristens the tanker Mobil Astral at the Honmoku Works of the Yokohama Shipyard & Engine Works.

Washington Chain Forms Service Group To Expedite Inquiries

Washington Chain and Supply Company has formed an "expertise" customer service group to expedite the handling of inquiries for marine products, according to **Harry (Capt.) Schwartz,** president.

Each man on the service group will be able to answer all requests regarding quantities available, specific engineering data, pricing, delivery dates, requirements for ILO and ABS testing and certification, and related information on any products handled by the company. Information is available 24 hours a day, seven days a week.

The five men on the team, all well-known on the waterfront up and down the Pacific Coast for their background and experience, are **Jim Ballard,** manager, **Darrell Castle, Ken Steik, Ron Willis,** and **Walt Koshman.** The men have all been with Washington Chain and Supply for years, in different positions. Their coordinated efforts provide 100 percent coverage of the company's services and product lines at all times.

Washington Chain and Supply Company is a distributor for a wide range of top-rated marine products, including Bethlehem wire rope, Crosby marine accessories, Brewer-Titchner, Peck and Hale, and Young Corporation. The company's head office and warehouse is at 2901 Utah Avenue South, Seattle, Wash. 98124.

R.W. Peach Opens Consulting Engineering Firm In Maryland

Robert W. Peach

Robert W. Peach has announced a new consulting engineering service, R.W. Peach Engineering Associates. The company, which will specialize in mechanics and hydraulics, is in the Baltimore-Washington-Annapolis area at 888 Pine Trail, Arnold, Md. 21012.

Mr. **Peach** has over a quarter century in marine design experience with Bethlehem Steel Company, Central Technical Department; Electric Boat Division; Maryland Shipbuilding & Drydock Co.; and Westinghouse Electric Corporation, Oceanic Division. He is a member of The Society of Naval Architects and Marine Engineers, American Society of Naval Engineers, Marine Technology Society, and is a registered professional engineer in Connecticut and Maryland. Both of his degrees, B.S.E. in naval architecture and marine engineering and M.S.E. in engineering mechanics, are from the University of Michigan. In addition, he has authored about a dozen technical papers in the marine field.

Burmah Oil Ltd. Tests Produce Oil

Burmah Oil (North Sea) Limited, operator for a group of companies drilling in Block 3/3, about 110 miles northeast of the Shetland Islands, has encountered an economic pay thickness on its first well, 3/3-1.

Burmah officials said a series of drill stem tests carried out on separate intervals across the reservoir flowed oil through small chokes up to one-half inch at rates from 2,600 barrels to 8,200 barrels per day.

Results so far confirm that a major part of Ninian Field is within Block 3/3, which the operator has called an oil discovery of commercial importance.

Partners in the Burmah group include Imperial Chemical Industries, 26 percent; Chevron Petroleum (U.K.) Ltd., 24 percent; Murphy Petroleum Ltd., 10 percent; Ocean Exploration Co., a subsidiary of Ocean Drilling & Exploration Co., 10 percent, and Burmah Oil (North Sea) Ltd., 30 percent.

Well 3/3-1 is being drilled by Odeco's Ocean Kokuei, a self-propelled semisubmersible unit built in Japan last year.

Pott Industries Plans Shipyard Improvements Costing $5.8 Million

Pott Industries, Inc., St. Louis, Mo., in its annual report said it plans to spend $5.8 million to expand and improve its shipyards this year, compared with $4,648,000 spent in 1973.

All three of the firm's inland shipyards will operate at capacity in 1974 and "well beyond," said **Richard P. Conerly,** president. After the Houma, La., shipyard completes four vessels for an outside customer this year, the facility will primarily build tugs and supply boats for Pott's Offshore Marine Services Division.

The report said the firm's Metal Fabrication and Distribution Division plans to concentrate investment primarily in marine-oriented businesses, with strong emphasis on marine services to the offshore petroleum industry.

As previously reported, Pott recently disposed of interest in the Behm Companies of Osawatomie and Greeley, Kan., and Fab-Co. Metals Ltd., Sarnia, Ontario.

The division earned $1,543,000 on sales of $34,889,000 last year, compared with earnings of $1,182,000 on sales of $28,038,000 in 1972.

Propulsion Plant Standards Contract To M. Rosenblatt & Son

M. Rosenblatt & Son, Inc., naval architects and marine engineers, has been awarded a $115,000 subcontract to perform a feasibility study for propulsion plant standards. The subcontract is a portion of the ship producibility research and development program contracted by the Maritime Administration, in conjunction with the shipbuilding industry, to the Bath Iron Works Corporation of Bath, Maine. The program is aimed at reducing the cost of ships built in the United States.

M. Rosenblatt & Son, Inc., will work closely with U.S. shipyards, ship operators and propulsion equipment suppliers on this project in order to determine the feasibility of significantly reducing the cost of building commercial ships in the United States by developing standards for the standardization of propulsion plant equipment, and by forming propulsion plant families. A program for the development of these standards will be initiated.

The study will cover propulsion plants for tankers, ro/ro ships, containerships, bulk carriers, OBOs, general cargoships, and large special-purpose vessels such as drilling rigs. Major elements included in the survey are power generators, prime movers, transmissions, thrust devices and controls. Standards candidates will be selected on a cost effectiveness basis, and it is anticipated that propulsion plants will be subdivided into standard families by type, size and power groupings. The project is expected to be completed by the end of 1974.

Raymond International Now Full Owners Of Two Offshore Rigs

Raymond International Inc., Houston, Texas, has assumed full ownership of two mobile, self-elevating offshore drilling platforms, the George F. Ferris and the John C. Marthens.

Prior to the transaction, Raymond owned 62½ percent interest in the rigs; the remaining interest was owned by three separate parties, each of which sold its respective interest to Raymond.

The John C. Marthens has drilled a series of successful discovery wells for a U.S. oil consortium off Indonesia since 1972, and is expected to be occupied in that area through mid-1975.

The George F. Ferris completed a drilling program in the Santa Barbara Channel, California in 1973. Early in 1974, Raymond began outfitting the Ferris for a long-term drilling contract in Lower Cook Inlet, Alaska.

Twin City Barge Promotes Two At St. Paul Division

Richard F. Lambert, vice president and general manager of the St. Paul Division of Twin City Barge & Towing Company, has announced two promotions within the division. They are **Robert Jorgens,** promoted from senior dispatcher to traffic manager, and **Duane Kahl,** promoted from second dispatcher to operations manager.

Mr. **Jorgens** joined Twin City Barge in 1969 and was formerly with Peavey Company, where he was a barge coordinator in Alton, Ill. He is a graduate of St. Olaf College, Northfield, Minn., and has a B.A. degree in business administration.

Mr. **Kahl,** a native of St. Paul, Minn., was formerly employed as a dispatcher by Oscar Roberts Cement Company, Minneapolis, Minn. He joined Twin City Barge in 1971.

Twin City Barge has served the Twin Cities since 1937 and Chicago since 1961. The company operates harbor towing, petroleum barge service and barge fleeting service within these cities, and transports commodities throughout the U.S. inland waterways. Twin City Shipyard, with a new 86,000-square-foot marine fabrication facility, is principally engaged in the manufacture of jumbo hopper barges for river traffic.

Contract Signed To Publish Handbook On Port Of New York

Shown signing the contract, left to right: (seated) **Thomas M. Torrey,** treasurer, and **Edward J. Barber,** chairman, promotion committee, Maritime Association of the Port of New York, and (standing) Adm. **John M. Will,** USN (ret.), a member of the board of directors.

In a ceremony at The Whitehall Club, New York City, members of the board of Directors of The Maritime Association of the Port of New York signed a contract authorizing the group to publish the 1974 edition of the New York Port Handbook.

The source book of all information on world trade services and modes of transport in the New York Port Area will be published later this year and distributed worldwide, and will list the supply and service organizations and Government agencies serving New York Harbor. It is sponsored by more than 50 New York metropolitan area commercial and transportation-related groups and associations.

Robert L. Thompson Joins Waukesha Motor

Robert L. Thompson has joined the International Organization of Waukesha Motor Company in the capacity of international projects analyst.

The announcement was made by **P.C. Trombley,** international field sales director for the Waukesha, Wis.-based engine and power systems equipment manufacturer. He indicated that Mr. **Thompson's** initial involvement will be in order processing and quotations as they relate to the company's overseas marketing activities.

Mr. **Thompson** is a graduate of the Thunderbird Graduate School of International Management in Arizona, and holds a masters degree in marketing/finance. He also has a B.A. degree in Latin American studies earned at Louisiana State University. He has studied in Mexico at the University of Guadalajara. Before joining Waukesha, Mr. **Thompson** gained extensive experience overseas, including Latin America and the Far East, doing intelligence work for the U.S. Army.

Course Offered On Behavior Of Materials In Ocean Environment

A one-week graduate course on Behavior of Materials in the Ocean Environment, sponsored by the Institute of Ocean Science and Engineering, will be conducted on June 3-7, 1974, at The Catholic University of America, Washington, D.C., under the direction of Dr. **A. Thiruvengadam.**

This course is designed to provide continuing graduate-level education for engineers and scientists in the field of material behavior in the ocean environment. Emphasis will be placed upon both fundamental and applied topics, including basic characteristics of corrosion, stress corrosion, corrosion fatigue, fouling, protective coatings, fracture, erosion, future trends in oceangoing materials, as well as elements of chemical and physical oceanography which most affect behavior.

The course is especially recommended for engineers or scientists who may be trained in other fields, but who seek familiarity with oceangoing materials problems.

Further information may be obtained by contacting **Deepak Kenkeremath,** Program Manager, Civil & Mechanical Engineering Department, School of Engineering & Architecture, The Catholic University of America, Washington, D.C. 20017.

Ameron Increases Customer Service Staff For Amercoat Products

Darryl J. Petersen, director of national marketing, Amercoat products, Ameron Corrosion Control Division, has announced a major expansion of the Amercoat sales and customer service force. The expansion calls for increased staffing in the firm's Los Angeles, San Francisco, Houston, New Orleans, Jacksonville, Philadelphia, Chicago, and New York area sales offices.

According to Mr. **Petersen,** the purpose of the increased staffing is to "make available Ameron's 35 years of experience and technology to industrial and marine customers at the local level."

The sales offices, new and existing, will provide complete full-service sales and technical staffs in each area. Full-time technical service representatives working from each office will be available to give Amercoat customers and Amercoat sales personnel immediate field technical assistance.

The Amercoat line of high-performance protective coatings and specialty cements are produced by Ameron's Corrosion control Division for the marine, chemical processing, petroleum, food processing, power, steel, pulp and paper, offshore, municipal, mining and inland transportation industries.

The division is headquartered in Brea, Calif., and has plants in Brea and Buffalo, N.Y. Worldwide affiliates maintain sales and manufacturing facilities in major international markets.

Colt Names Fay VP-Marketing, Sales Fairbanks Morse Div.

E.L. Fay Jr.

In order to provide expanded coverage of its overall marketing activity, Colt Industries' Fairbanks Morse Engine Division has announced several new appointments in its marketing management group. **John F. Morgan,** division president, stated that **E.L. Fay Jr.** has been appointed vice president-marketing and sales as head of the group.

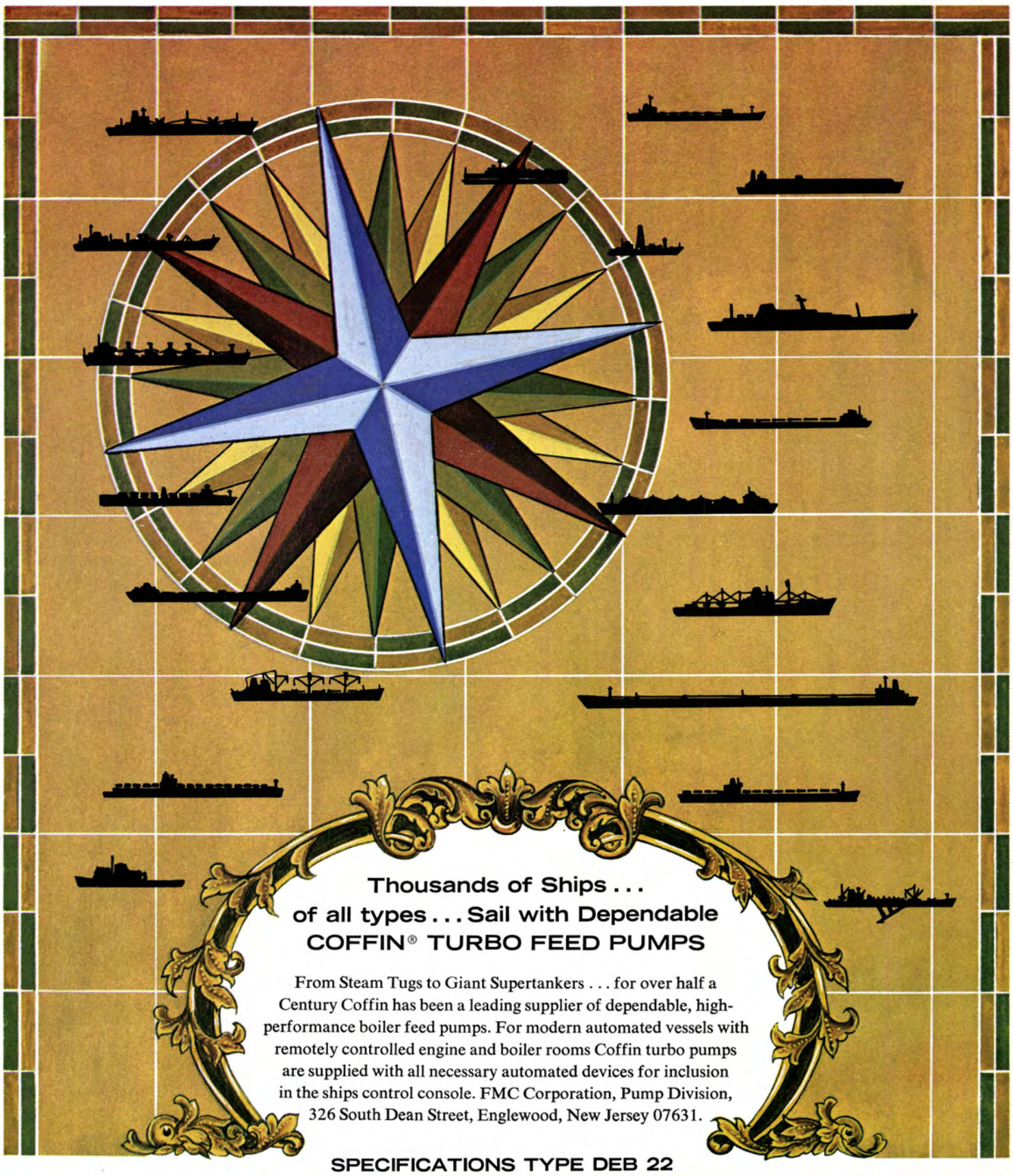
Mr. **Fay** joined the division in 1972 as vice president-marine engine sales. He is a graduate of the United States Merchant Marine Academy, with a degree in marine engineering. Prior to joining Colt, he was associated with Delaval Turbine Inc.

Mr. **Fay** announced that in order to provide expanded marketing coverage, **W.T. Hailey,** vice president of industrial power and sales, will be responsible for all sales activity in the Eastern and Western sales regions, as well as all international sales. Also **D.N. Sims,** manager of municipal and utility sales, will head marketing activities in the Southern and Midwestern sales regions. **R.D. Jacobs, T.J. Bullock,** and **J.M. Moriarty** will continue in headquarters marketing management in the marine, Government and utilities areas. Mr. **Fay** also stated that marketing support activity will be staffed by **G.E. Lanzendorfer,** manager of contract administration; **M.E. Weiss,** manager of inquiries and proposals; **V.T. Stonehocker,** manager, systems engineering, and **L.A. Nystrom,** manager, marketing information services.

Matson Terminals Promotes Malkus

Matson Terminals, Inc. has promoted **Robert J. Malkus** to regional terminals manager, Southern California, it was announced by **James P. Gray,** president.

Mr. **Malkus** was formerly regional operating manager at Matson's Terminal Island freight facility. He started with Matson Terminals in 1960 at the former Wilmington container yard.



Thousands of Ships . . . of all types . . . Sail with Dependable COFFIN® TURBO FEED PUMPS

From Steam Tugs to Giant Supertankers . . . for over half a Century Coffin has been a leading supplier of dependable, high-performance boiler feed pumps. For modern automated vessels with remotely controlled engine and boiler rooms Coffin turbo pumps are supplied with all necessary automated devices for inclusion in the ships control console. FMC Corporation, Pump Division, 326 South Dean Street, Englewood, New Jersey 07631.

SPECIFICATIONS TYPE DEB 22

PUMPING CONDITIONS:

Capacity to:	1320 GPM	300 M³/Hr.
Total Head to:	1710 PSI	120 Kg./cm²
	3950 Ft.	1205 Meters
Liquid Temperatures to:	325°F.	163°C.
Suction Pressure, Max.:	100 PSIG	7 Kg./cm²G

STEAM CONDITIONS:

Inlet Pressure to:	1050 PSIG	73.8 Kg./cm²G
Initial Temp. to:	975°F.	524°C.
Exhaust Pressure to:	80 PSIG	5.63 Kg./cm²G

(Ratings may be exceeded for special installations)

UNIT SIZE & WEIGHT:

Length:	70″	178 Cm.
Width:	50″	127 Cm.
Height:	76″	193 Cm.
Approx. Cube:	154 Cu. Ft.	4.36 M³
Weight:	5900 Lbs.	2682 Kg.

FMC Fluid Control Equipment

Fully automatic navigation aid

Just set the selectors for the desired Loran C chain and turn the mode selector to AUTO...DL91 does the rest.

The master and two slave stations are locked and matched on the third cycle. The intervals are displayed as digital LOP readouts with one-tenth of a microsecond accuracy. And the lines of position are continuously tracked and updated.

With DL91 you automatically acquire a fast and accurate fix.

Highest accuracy and longest range

Unlike combined Loran A/C units, DL91 is a cycle matching receiver specifically designed to make *full use* of Loran C transmissions. Accuracy of groundwave fixes varies from 100 feet at short range to 500 yards at ranges of 1000 miles. Repeatable accuracy within 50 feet lets you return to the same position time after time.

Skywave coverage, especially at night, extends out to 2500 miles.

Exclusive extended range coverage

In addition to complete manual back-up controls, DL91 has a unique extended range mode which automatically shifts cycle matching from the third to the seventh cycle.

This extends the groundwave coverage an additional 250 miles.

Complete with antenna and coupler

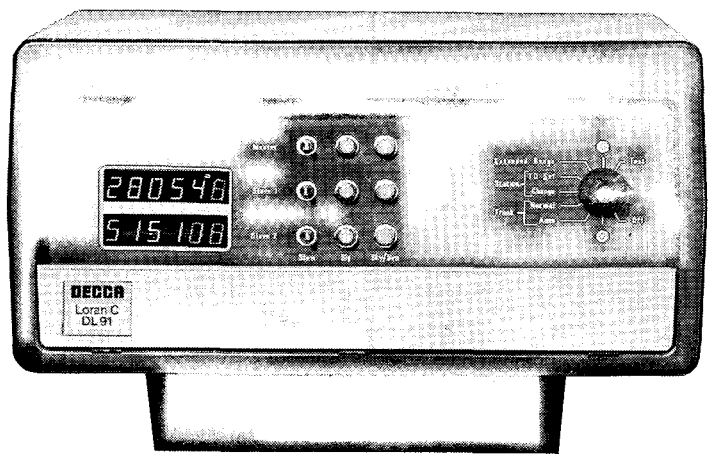
Other features of DL91 include a six foot whip antenna and specially tuned coupler, two tuneable notch filters, four optional plug-in filters, a built-in system test, on-line monitor, and outputs for data processors and automatic plotters.

Exceptionally light and compact, DL91 mounts almost anywhere—table top, overhead, console, bulkhead, vertically or horizontally. An optional remote dual display unit is available.

We make our guarantee work

Completely solid state, the American made DL91 uses plug-in modular circuit boards and integrated circuitry for maximum reliability. However, if it ever should need servicing, you can depend on the factory trained technicians of our 100 nationwide ITT Decca Marine dealers—and the world-wide Decca organization—to have you underway quickly.

For more information and the name of your nearest dealer, contact ITT Decca Marine, Inc., Dept. MR5, 386 Park Avenue South, New York, N.Y. 10016, (212) 685-5157.



DL91
Dual Automatic
Loran C

DECCA
ITT DECCA MARINE

Introducing DL91 Loran C. Two simultaneous LOP's for more accurate fixes up to 2500 miles. Automatically.

National Cargo Bureau Elects Thomas Smith Chairman Of Board

Thomas J. Smith

The 23rd Annual Meetings of Members and Directors of National Cargo Bureau, Inc., were held April 8, 1974, at 99 John Street, New York City. **Thomas J. Smith,** president, Farrell Lines Incorporated, was elected chairman of the board of directors of the bureau, succeeding **Robert A. Murphy. John R. Walbridge,** resident secretary of the Insurance Company of America, was elected deputy chairman of the board, and **Neils W. Johnsen,** chairman, Central Gulf Lines, Inc. was elected treasurer. Capt. **Hewlett R. Bishop,** president, Capt. **S. Fraser Sammis,** vice president and chief surveyor, and **Jerome P. Scully,** vice president and secretary, continue in their respective positions.

The members elected the following to the board of directors: Rear Adm. **J.D. Chase,** USN, Commander, Military Sealift Command; **Thomas O. Clark,** vice president, Marine Commercial Union Companies; **G.C. Halstead,** president, Alcoa Steamship Company, Inc.; **G.V.S. Pepperell,** president, Talbot Bird & Co., Inc.; **T.J. Smith,** president, Farrell Lines Incorporated; Capt. **A.P. Spidle,** vice president, marine operations, Prudential-Grace Lines, Inc., and **J.R. Walbridge,** resident secretary, Insurance Company of North America.

In his annual chairman's message, Mr. **Murphy** commented on the bureau's operations during 1973, in which 26,751 surveys were conducted. The chairman reported on the bureau's cooperation with the U.S. Coast Guard and the State Department in international maritime matters pertaining to cargo carriage through the Inter-Governmental Maritime Consultative Organization. Captain **Bishop** was chairman of the IMCO Sub-Committee on Containers and Cargoes, assisted by Captain **Sammis,** who also served with Capt. **Donald W. Gates** as advisors to the U.S. Coast Guard on the IMCO Sub-Committee on the Carriage of Dangerous Goods. Mr. **Murphy** mentioned the current educational program whereby the bureau has been assisting the U.S. Coast Guard in presenting color slides with a narration explaining the incorporation of the Coast Guard regulations for water transport of packaged hazardous materials from Title 46 to Title 49 of the Code of Federal Regulations. The chairman also reported on the distribution of cargo stowage booklets, the bureau's self-study course on ship's stability, and its National Safety Council participation.

In a special report, Captain **Bishop,** president, informed the members of a number of projects which are of extreme importance to the maritime industry. The IMCO Code of Safe Practice for Bulk Cargoes is now only a recommendation, and Captain **Bishop** advised the meeting that this code should become mandatory not only in the United States but also worldwide. He cited instances where the code was completely ignored in the transport of ore concentrate cargoes. He appealed to the marine fraternity, steamship owners and operators and Government members to do what they could in order to achieve this goal.

Captain **Bishop** also informed the meeting that the bureau would continue its active participation with the U.S. Coast Guard in rewriting the regulations on the carriage of grain cargoes.

The bureau is a nonprofit organization dedicated to the safe stowage and securing of cargoes on vessels and containers. Its membership is composed of Government, steamship and marine insurance underwriting representatives.

U.S. Shipyards Lead In LNG Carrier Construction

The important role U.S. shipyards have assumed in the construction of liquefied natural gas carriers (LNGs) is described by **Edwin M. Hood,** president of the Shipbuilders Council of America, in the 1973 annual report of the organization. American yards account for half the LNGs of 120,000 cubic meters or more presently under construction or on order throughout the world.

Three years ago, the U.S. totally lacked capacity to build this type of vessel, Mr. **Hood** pointed out, but today four yards have on order 15 LNGs, and it has been forecast that another 20 will be ordered within the next five to seven years.

The rapid advance the U.S. has made in LNG construction capacity is matched by a similar increase in the ability to build big tankers, Mr. **Hood** noted.

Four years ago, no very large crude carriers (VLCCs) over 150,000 deadweight tons were under construction in the U.S., while today construction of 225,000 and 265,000-ton VLCCs is under way in two yards, he pointed out.

Three yards and possibly a fourth will soon be able to build ultra large crude carriers, vessels in the 400,000 to 600,000-ton range, Mr. **Hood** added.

The expansion of U.S. merchant ship construction, which began with passage of the 1970 Merchant Marine Act, accelerated in 1973, Mr. **Hood** noted.

Commercial shipbuilding contracts for the year covered 41 vessels of 1,907,200 gross tons, with the aggregate value of the orders amounting to more than $1.8 billion.

About 40 percent of the contracts were supported by Federal subsidy funding, Mr. **Hood** reported.

The level of subsidy per contract has been declining consistently, Mr. **Hood** pointed out, noting that in all cases it has been below the ceiling prescribed in the 1970 Act.

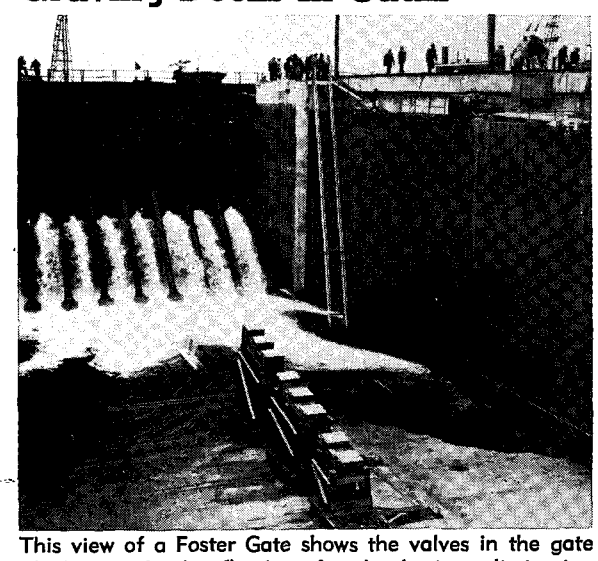
"In the case of LNG carriers, the subsidy has been far below the ceiling, and one contract covering four LNGs awarded in late 1973 involved only Federal ship mortgage guarantees," Mr. **Hood** stated.

Energy-oriented ships composed much of the U.S. shipbuilding industry order book in 1973, and will be a major influence on the market over the next few years, in Mr. **Hood's** view. American shipbuilders are gearing up for demands which may be imposed on them, he observed.

"More than $500 million have been authorized or committed for new or improved facilities for both merchant and Naval shipbuilding," he said Most of the projects involved are well under way, he added.

In regard to tanker production specifically, he noted that output capacity is expected to rise from the present 2,000,000 tons to considerably more than 3,000,000 by 1978 and later.

Astilleros Espanoles Orders Foster Gates For Two New Graving Docks In Cadiz



This view of a Foster Gate shows the valves in the gate which provide the flooding for the basins, eliminating costly flooding chambers in the side walls.

Christopher J. Foster, Inc., naval architects and engineers with offices in New York, Washington and Florida, received contracts for design and supervision of construction of two Foster (Patented) Gates, one to be used for the building dock, and the other for the repair dock now under construction for Astilleros Espanoles, S.A. in Cadiz, Spain.

The size of the building dock will be 1,719 feet long, 328 feet wide, by 51 feet deep. The repair dock, located on the south side of the Bay of Cadiz, will be 1,243 feet long, 218 feet wide, by 56 feet deep.

The Foster Gates will be the ninth and tenth installation.

A Foster Gate was chosen because it is the most economical to build and operate, has less maintenance, can be operated with minimum of personnel, and is raised and positioned in place in 10 minutes.

The standard floating caisson gate—which Foster also designs—is being replaced, since the enormous sizes of the new shipbuilding and repair docks require massive concrete abutments, foundations, electric shore power, controls, pumps, valves, towboats and other equipment to float, remove and reset the gate. Valuable mooring space to store a floating gate while the ship is being drydocked or launched is required, including the problems of maintaining stability and properly seating the gate to avoid excessive water leakage at the seats.

This leads to additional initial construction cost and later high maintenance and operational costs for the caisson gate, versus the economical Foster Gate.

Newport News Shipbuilding Names Taylor And Miller

Kirk J. Taylor

George P. Miller

Two appointments in the financial structure of Newport News Shipbuilding, Newport News, Va., have been announced by **W.H. Smith,** director of finance and comptroller of the Tenneco subsidiary.

Kirby J. Taylor has been named manager of treasury, and **George P. Miller** has been promoted to manager of capital and operating budgets.

Mr. **Taylor,** born in Peachland, N.C., holds a B.S. degree in industrial management from the University of Richmond. He is currently working toward a Master of Business Administration degree at the College of William and Mary.

He joined the shipyard in 1971 as a senior financial analyst in the treasurer's department, and in 1973 became a senior accountant in the taxes and benefits accounting department.

Mr. **Miller,** a native of Kings County, N.Y., received a bachelor's degree in business administration from Manhattan College. He served in the U.S. Air Force from 1962 to 1970, when he resigned from active service to join the financial division of the shipyard.

He has served as a senior financial analyst and subsequently as supervisor in the areas of budget planning, profit analysis, and financial reporting.

Atlantic Richfield To Build $30-Million Concrete Barge Designed For Gas Storage

The Concrete Technology Corp., 1123 Port of Tacoma Road, Tacoma, Wash., has signed a letter of intent with Atlantic Richfield of Los Angeles, for construction of a $30-million concrete barge designed to store liquefied petroleum gas produced in the Java Sea offshore of Indonesia.

An Atlantic Richfield unit, Atlantic Richfield Indonesia, is the operator for a group of American firms which holds a production-sharing contract covering 16,000 square miles in the Java Sea with the state-owned oil company, Pertamina.

Diplomatic Marine Issues Brochure On Marine Tape Applied On N/S Savannah

Diplomatic Marine, Inc., manufacturers of RAM-NEK Marine Tape, has just published a new brochure showing RAM-NEK Marine Tape applied on the nuclear ship Savannah to seal out water and atmospheric moisture as part of the vessel's dehumidification program.

One U.S. Government agency has been field testing RAM-NEK Tape for over 11 years and reports that the RAM-NEK Tape remains well bonded, does not crack, shrink, or dry out after 11 years of continuous exposure to severe variations in weather.

For copies of the new Savannah brochure and reports of the tests showing results after 11 years of field testing of RAM-NEK Tape, write Diplomatic Marine, Inc., 4101 San Jacinto, Houston, Texas 77004.

Bethlehem Steel To Exhibit Withdrawable Sterngear In Hoboken, N.J. Week Of May 13

Bethlehem Steel Corporation will exhibit the Glacier-Herbert withdrawable sterngear at its Hoboken, N.J., shipyard during the week of May 13.

Bethlehem and Glacier Metal Company, Ltd. have agreed to cooperate on a ship-by-ship basis for design and manufacture of the British company's withdrawable sterngear. Bethlehem's shipbuilding department will make the sterngear and will provide full marketing support in the endeavor.

The product will be marketed in the United States by Glacier Metal, which will do the design work.

With this system, it is unnecessary to drydock a vessel in order to dismantle the stern bearing for inspection or replacement. Major benefits that the Glacier-Herbert system is designed to provide include:

— provide dismantling of the stern bearing, with both forward and aft seals, by two or three men from inboard while the vessel is afloat at normal trim and at any draft;

— inspection of the shaft and outer shaft and outer seal liner at the same time;

— easy alignment in position after assembly of the propeller, again while the vessel is afloat and in any condition of loading;

— better lubrication and cooling of bearing and seals (the seals have separate lubrication systems).

The design is compatible with all known forms of propellers and seals, and standard designs are available for all shaft sizes from 540 mm to 940 mm. Any special size can be made to order.

The sterngear assembly that will be on display at the Hoboken Shipyard weighs eight tons. The exhibit will be available during normal business hours.

DIESEL GENERATOR SETS

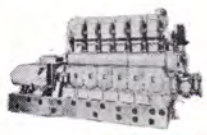
1

350 KW DIESEL GENERATOR SET

350 KW—120/240 volts DC—600 RPM—compound wound G.E. generator with switchgear. ENGINE: Ingersoll-Rand—heavy-duty type S—505 HP—10½x12—reconditioned to ABS.

2

250 KW DIESEL GENERATOR SET



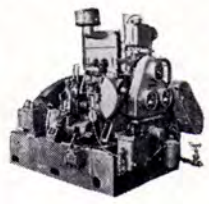
ENGINE: Enterprise 12 x 15 DSG-6 — 6 cyl. — 450 RPM crank No. 50J. GENERATOR: Westinghouse 250 KW—120/240 DC—1040 amps—450 RPM. Typical serial No. 3S-10P-913. Complete with switch gear.

3

EMERGENCY GENERATOR SUPERIOR 75KW 120/240 VOLT D.C. DIESEL GENERATOR SET

With switchgear. ENGINE: Radiator cooled Superior GBD-8—6 cylinder—1200 RPM GENERATOR: Electric Machinery Co.—120/240 volts DC—316 amps—1200 RPM—stab. shunt.

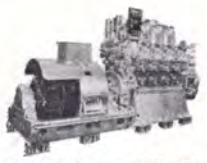
4



UNUSED 10 KW SUPERIOR DIESEL GENERATOR SET

GENERATOR: Delco 10 KW — 120 VDC — 83.3 amps—1200 RPM. ENGINE: Superior diesel—2 cyl.—4½x5¾ — 15 HP — heat exchanger cooled.

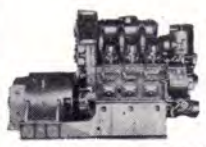
5



500 KW— 120/240 VOLT DC DIESEL GENERATOR SET EQUAL TO NEW

GENERATOR: Allis Chalmers—Compound wound. Has Class "A" insulation. Output 500 KW—120/240 volts DC—2080 amperes—720 RPM—drip-proof—self-cooling. Ambient 50°C—temperature rise 40°C. ENGINE: Model GM 8-278—2-cycle—Vee type—8½"x10½"—air starting—720 RPM. Complete with switchgear. Condition very good. Still aboard naval vessel. Has Ross shell & tube type lube oil & raw coolers—temp. control valve—shock mounts.

6



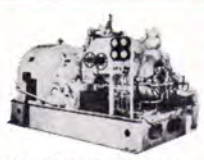
300 KW DIESEL GENERATOR SET

ENGINE: G.M. 6-278—6-cylinder—2 cycle—8¾"x10½"—750 RPM—with oil and water Ross Shell and Tube Heat Exchangers, instrument panel, pyrometer, etc. Vibro Isolators.

GENERATOR: G.E. 300 KW—120/240 volts DC—1250 amps—shunt wound—continuous overload rating 375 KW—2 hours—55° Weight of unit approximately 26,000 pounds. Complete with shock mounts. Unit 13' 2" long, 64" wide, 8' high.

TURBO GENERATOR SETS

7



400 KW WESTINGHOUSE TURBO GEN SETS FOR BETH. SPARROWS PT. HULLS 400 TO 4500; QUINCY HULLS 1600

400 KW (500 KVA)—80% PF—1200 RPM—450/3/60. TURBINE: 585 lbs—840°TT—28½" vacuum—9018 RPM—serial 10A4462-3 & 10A4462-4. GEAR: 9018/1200 RPM. A.C. GENERATOR: 500 KVA—400 KW—450 volts—641 amps—80%PF—3 phase 60 cycle—1200 RPM—CR 40°—excitation amps 41—excitation voltage 120. Instruction book 5442. Switchgear available.

8

UNUSED 300 KW—240 VOLT DC WESTINGHOUSE LOW-PRESSURE TURBO-GENERATOR SET

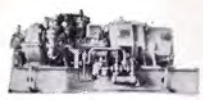
GENERATOR: 300 KW—240 VDC—1250 amps—1200 RPM. GEAR: 5286/1200—frame 6x15—serial 10A-2612-4. TURBINE: Frame C-325—225 PSI—397° TF—5286 RPM—Serial 10-A-2611-4. Wt. 16,700 lbs. —complete in original factory crate.

9

LOW-PRESSURE UNUSED 300 KW G.E. 120/240 VOLT DC TURBO-GENERATOR SET

GENERATOR: 300 KW—120/240 VDC—1250 amps—1200 RPM. REDUCTION GEAR: 8.344:1 — 10012/1200 RPM—type S-182. TURBINE: DOR418N—449 H.P.—10012 RPM—working pressure 180/220 PSIG.

10



WESTINGHOUSE 440/3/60 200 KW UNIT

GENERATOR: Westinghouse 200 KW—250 KVA—450/3/60—1200 RPM—80% PF—with 40 KW—120 VDC on same shaft. GEAR: 9989/1200 RPM—double helical. TURBINE: Westinghouse — 540 PSI — superheat 322°F. Test 930 PSI 800°TT. Also operate 615 PSI—850°TT.

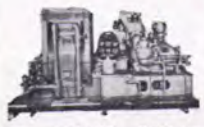
11

1250 KW G.E. 10-STAGE TURBO GENERATOR SET

TURBINE: 525—615 PSI—850°TT—7938 RPM—10-stage—type FSN. GEAR: Single helix—7938/3600. GENERATOR: 1250 KW—450/3/60/3600—.80 PF—type ATB with surface air cooler. Overload 25%— 2 hours—1563 KW.

12

6 EQUAL-TO-NEW LATE TYPE 500 KW SHIPS SERVICE TURBO GENERATORS



1962—DeLaval. Very little use. Completely preserved with rotors and diaphragms crated separately. TURBINE: DeLaval —585 PSI — 840°TT—6-stage—6391 RPM—class CD — Also suitable 440 lbs.—740°TT—25" vac. GEAR: 6391/1200 RPM. GENERATOR: Allis-Chalmers—450/3/60. Totally enclosed, with static exciter and voltage regulator system. Weight 17,665 lbs. Complete with latest dead front switch gear. Also available are the condensers, circulating and condenser pumps. All very up-to-date, compact construction. Turbines will easily handle 600 KW if up-grading is desired.

13

AP2 VICTORY WORTHINGTON-MOORE CROCKER-WHEELER 300 KW UNIT

TURBINE: 440 PSI—740°TT—28½" vacuum—type S4 — 5-stage — 6097 RPM — serial 7547 & 7548. GEAR: 6097/1200. GENERATOR: 300 KW—120/240 volts DC—1250 amps—compound wound—973643—999759. Armature flange 8½"; B.C. 7"—12 holes. ALSO NEW ARMATURES IN STOCK & 300 KW SHUNT ARMATURES.

14

UNUSED C-4
CROCKER-WHEELER
500 KW
GENERATOR ENDS ONLY
120/240 VOLTS D.C.—1200 R.P.M.

FORMERLY USED WITH WORTHINGTON-MOORE TURBINES & GEARS

Upgraded by U.S. Navy—rewound in glass. Generator Frame and Armature—Marine 500 KW type 3-1200—dripproof enclosure—base mount. Modified from Crocker-Wheeler generator frame 152HD — 240/120 volts DC — 2083/521 amps — 1200 RPM. Ambient temperatures 50°C. APPLICATION: For C-4-SA1; C4-SA-3; T-AP-134 vessels, using Worthington-Moore Turbine—Form S-6 and generator Form 14 x 10. No pedestal bearing.

15

WESTINGHOUSE 400 KW TURBO-GEN 835 LBS — 840°TT

Newport News Hulls 480—541 Esso ships. TURBINE: Westinghouse 835 lbs/840°TT—9018 RPM—6-stage —instruction book 1430-C1—serial 5A-7090-7 & 8. GEAR: 9018/1200 RPM. GENERATOR: Westinghouse 400 KW—440/3/60/1200 RPM—rewound field—instruction book 5442. EXCITER: 5.5 KW.

16

TWO 538 KW WESTINGHOUSE T-2 AUX. GENERATORS
(COMPLETE)

TURBINE: 538 KW @ 5010 RPM—438 PSIG—750°TT—28½" vacuum. GEAR: 5010/1200 RPM. A.C. GENERATOR: 400 KW 450/3/60/1200—0.8 PF. DC EXCITER: 32.5 KW—120 volts (variable voltage)—shunt—4-pole—DC excitation 5 KW. ALWAYS WELL MAINTAINED BY MAJOR OIL CO.

TURBINES & ROTORS

MAIN PROPULSION

17

BETH. CLASS—13,600 H.P.

Sparrows Point & Quincy 1600 hulls. H.P. turbine casing only. Excellent blading & labyrinth packing.

KNOWN 'ROUND THE WORLD

THE BOS

313 E. BALTIN

Main Office: (30

18

H.P. & L.P. COUPLINGS

1 Set—for Beth Class 13,600 HP 4400 hulls and Quincy 1600 hulls.

19

G.E. 6690 HP @ 7062 RPM HIGH PRESSURE 8-STAGE TURBINE

835 lbs—840°TT—#83341—originally built for Esso Christobol—Newport News.

T-2 TURBINES & ROTORS

20

COMPLETE WESTINGHOUSE T-2 MAIN TURBINE—UNSHROUDED 6600 HP—435 PSI—750°F 28" VACUUM—3720 RPM

Instruction book IB-8345—type D—serial No. 5A-2124-6—unshrouded. Unit complete with all packing, stationary blading, linkage, governors, diaphragms, nozzles, etc. WILL SELL ROTOR SEPARATELY OR COMPLETE TURBINE CASING & ROTOR. Always well maintained by major oil company.

21

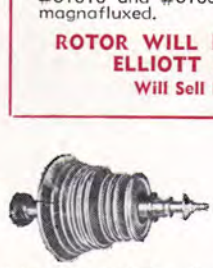
2 COMPLETE T-2 G.E. TURBINES

#61818 and #61834—large Lynn—all stages magnafluxed.

ROTOR WILL INTERCHANGE WITH ELLIOTT MAIN TURBINE

Will Sell Rotors Separately

22



T2-SE-A1 MAIN PROPULSION ROTOR — G.E.

Large Schenectady — serial 77418 — reconditioned Bethlehem Steel 1970—all stages magnafluxed.

23

T-2 TANKER
UNUSED—4 UNITS AVAILABLE
AUX. G.E. TURBO GEN. ROTORS

DORV — 325M — 5645 RPM — for 525 KW G.E.

VICTORY SHIP TURBINES & ROTORS

24

8500 H.P. 8-STAGE TURBINES FOR LARGE VICTORY SHIPS

L.P. – 3509 RPM
H.P. – 6159 RPM

LP Serial #77943—HP Serial #77942—Interchanges Ingalls C-3—Class 442 & Sun C-4 vessels—U.S. Navy Victory "Liberty".

LP Serial #72272—HP Serial #72271—Interchanges Ingalls C-3—10 boxes of spares.

LP Serial #62042—HP Serial #62043—GEI 16263—Ridgeway Victory.

WRITE OR PHONE FOR DETAILED INFORMATION AND PRICES

'ON METALS CO.

ORE ST. • BALTIMORE, MD. 21202

539-1900 Marine Dept.: (301) 355-5050

25 **VICTORY SHIP AP2 H.P. & L.P. TURBINES NEW — UNUSED — 6000 H.P. SETS**

G.E.—H.P. & L.P.—with throttle valve
Westinghouse—L.P.—with throttle valve
Allis-Chalmers—H.P & L.P.—with throttle valve

26 **6000 H.P. G.E. — NORTH CAROLINA C-2**

H.P.—8-stage—serial 78040
L.P.—7-stage—serial 78043
G.E.I. 16262

27

19 STAGE WESTINGHOUSE H.P. ROTOR FOR AP2 VICTORY

Reconditioned — balanced—with ABS. Serial 4A-2079—type B — 19 stage reaction blades. Excellent — just out of shop. 13" Flange diameter with 14 bolts.

28

G.E. 8500 H.P. REDUCTON GEAR FOR LARGE AP3 VICTORY & C3

MD-48A—8500 HP—6159/3509/763/85 RPM.

29 **ALSO 6000 H.P. VICTORY AP2 REDUCTION GEAR**

Westinghouse 4A-1640.

PUMPS

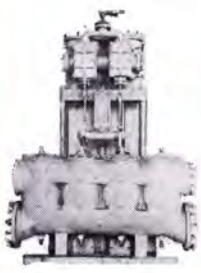
30

CARGO STRIPPING PUMPS

BRONZE T2 TANKER STRIPPING PUMPS

14x14x12—700 GPM at 100 lbs. Same pump available in steel for fuel oil transfer, etc.

31



WORTHINGTON 16"x14"x18" VERTICAL DUPLEX STRIPPING PUMP

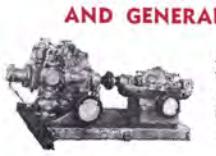
1400 GPM @ 110 PSI—suction lift 11.5 ft.—steam back pressure 15 lbs. Suction 14" — discharge 10"—steam 2½" — exhaust 4". Overall width 6'8"—overall height 9'11½" — depth 3'9½"—wt. approx. 10,000 lbs.

32

UNUSED DELAVAL IMO ROTARY PUMP

175 GPM—35 PSIG—10 HP—120 volts DC—1750 RPM—serial E-8619—frame 324 VY—76 amps—mfg. by Electro Dynamics. With magnetic control. Excellent condition.

33 **NEW TURBINE DRIVEN FIRE AND GENERAL SERVICE PUMP**



Allis-Chalmers 6 x 5 pump, type SKH—1200 GPM—125 PSI—3500 RPM. Coppos turbine type TF-22-2½ — 3500 RPM. 273#—50° superheat.

34

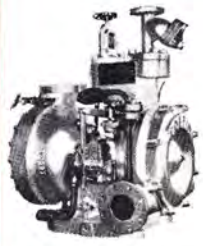
DAYTON-DAWD 2-STAGE FIRE AND BILGE PUMP

Vertical 2-stage type TDV-10—20 HP—200 GPM @ 184'—3" discharge—4" suction—1775 RPM—Maumee Sun. Motor: 120 volts DC—20 HP—1775 RPM.

BOILER FEED PUMPS

Suitable for Navy and Merchant Vessels

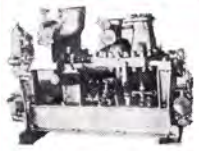
35



COFFIN TYPE CG-4A FEED PUMP

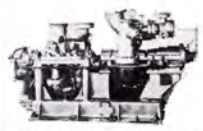
2 Available—very little use. Maximum 325 GPM—1760' head or 750 lbs Steam inlet 575 lbs. — 540°TT — exhaust 20 lbs. — speed 760 RPM.

36 **UNUSED DD445 CLASS WORTHINGTON TURBINE-DRIVEN FEED PUMP**



Worthington — drawing SL5043—425 GPM—1675' total dynamic head—5000 RPM 3-stage — double suction. Flanged 4½" inlet—4" outlet. Powered by Sturtevant steam turbine—282 HP—590 PSI. For Fletcher DD-445 Class Destroyers.

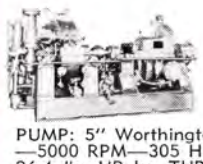
37



BUFFALO SIZE 4 FEED PUMPS

Terry Turbine—BM—273 HP—550 RPM—exhaust 15 lbs—590 PSI—superheat 0°—425 GPM Buffalo Pump—discharge pressure 750 lbs—5"x4"—built for USN DD destroyers. DD 445 Class Fletcher.

38



WORTHINGTON 3-STAGE UNUSED BOILER FEED PUMP

PUMP: 5" Worthington—460 GPM @ 750 PSI—5000 RPM—305 HP—steam flow 8052/hr—26.4 lbs HP hr. TURBINE: Sturtevant C-22—type 21—575# dry saturated steam—15 lb. back pressure—259°F water temperature—15 lbs/inch suction pressure.

39 **INGERSOLL-RAND BRONZE CARGO PUMP**

10GT—4500 GPM at 125 lbs.—2-stage—size 14x12.

40 **C-25 CARGO PUMP TURBINE SPARE GEARS**

One set of gears available for Westinghouse C-25 Cargo Pump Turbine.

MISCELLANEOUS

DOUBLE REDUCTION GEARS for Diesel Drive

41

3200 HP DOUBLE INPUT SINGLE OUTPUT DIESEL REDUCTION GEARS 20 DEGREE OFFSET

Farrell-Birmingham — 3200 SHP. REDUCTION GEAR: 1.81:1—handles two 1600 HP diesels @ 720 RPM. With hydraulic couplings & Fawick clutch. Port and starboard. Gear output 400 RPM. Suitable for dredge pumps. Non-reversing. OK for 38D8-⅛ engine.

42 **2:67:1 RATIO DOUBLE IN-LINE GEARS**

Farrell-Birmingham 3200 HP non-reversing — from seaplane tenders. Ratio 1.867:1. Complete with hydraulic couplings, etc. Will handle two 38D8-⅛ FM diesels. Has Fawick clutch.

43 **2100 HP DOUBLE INPUT SINGLE OUTPUT GEARS—3:435:1 RATIO**

Farrell-Birmingham — heavy duty — originally built for 2 heavy-duty direct-reversing engines —300 RPM—1050 HP each. Ratio 3.435:1.

44 **SINGLE ENGINE REDUCTION GEAR**

Farrell-Birmingham — non-reversing—1600 HP at 2.4909:1. With hydraulic couplings.

45 **ANCHOR WINDLASS**

Hyde 2-11/16" — 12x14 — 100 PSI — steam — 54,100 lbs.

46

SHARPLES LUBE & DIESEL OIL PURIFIERS

Type M-34-W22-UM—15,000 RPM. BOWL MOTOR: 2 HP—230 volts DC—8.5 amps—3450 RPM—250 to 300 GPH. Originally built for C-1-A diesel vessels.

47

UNUSED 1135 SQ. FT. C.H. WHEELER CONDENSER

20" Ex. inlet—⅝" CU-NI tubes—with or without air ejector.

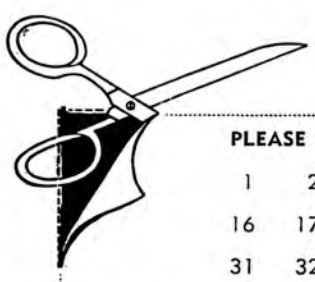
48

UNUSED 70 HP McKIERNAN-TERRY WINDLASSES

Chain and two 10640 lb anchor & 30 fathoms chain @ 30 FPM. 70 HP—230 volts—shunt DC motors—233 amps—550 RPM—55°C rise. Wildcat centers 47½". Base 9'5" wide x 11' long. Weight 36,000 lbs.

INQUIRE FOR ALL OTHER ITEMS

Forced draft blowers, reduction gear parts, bilge and ballast pumps, main circulators, general service pumps, F.O. transfer pumps, lube oil service, standby feed pumps, condensate pumps, aux. circulating pumps, feed water heaters, wash water pumps, etc.



PLEASE SEND INFORMATION ON THE FOLLOWING: (Please circle items) 5/1/74

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NAME..... COMPANY.....

ADDRESS..... POSITION..... PHONE.....

CITY..... ZONE..... STATE.....

Charles Zeien Addresses New York ASNE Section

Shown at the New York Section ASNE meeting, left to right: **Robert Fricke,** new chairman; Capt. **Ed Barker,** USN, past chairman; **George Ireland,** USCG, outgoing chairman, and **Charles Zeien,** speaker.

Charles Zeien, executive vice president of J.J. Henry Co., Inc., addressed the Metropolitan (New York) Section of the American Society of Naval Engineers at the Whitehall Club on April 2, 1974. During the luncheon meeting, Mr. **Zeien** spoke on metrication, describing its inevitability and importance, particularly with U.S. goods manufactured for export. He related that once there is a demand for goods built to metric standards, production will follow. Further, cost for shipyard conversion to metrication is not prohibitive.

The annual election of officers took place at this meeting, with **Robert Fricke, Jose Feminia** and Lt. **Greg Labas,** USCG, being elected chairman, vice chairman and secretary-treasurer, respectively. Capt. **Lee Mitchell,** USN, was elected to the executive committee.

Following the meeting, plaques were presented to Mr. **Zeien,** the speaker; Capt. **Ed Barker,** USN, initial chairman of the N.Y. ASNE Chapter; and to Lt. Cmdr. **George F. Ireland,** USCG, outgoing chairman.

New Yard In Texas Building Towboats

Crumpler's Shipbuilding Company has been formed by Crumpler's Machine and Welding Service, Inc., a firm located in the Port Arthur, Orange and Beaumont, Texas, area, well-known for machine welding, repair and fabrication work.

Currently under construction at the Crumpler yard, located in Orange on the Sabine River, are two 65-foot by 24-foot towboats, which the firm will offer for sale when completed. The duplicate vessels will be powered by D353 Caterpillar engines.

James O. Crumpler, president; **Dulin Crumpler,** vice president, and **Eugene Rambo,** welding foreman, make up the key personnel at Crumpler's.

Saguenay Shipping Ltd. Announces Staff Changes

John L. Eyre, president of Saguenay Shipping Ltd., has announced the naming of Capt. **C. Sabinsky** as vice president and general manager of the firm. Previously vice president, he will be succeeded by Capt. **William H. Cook,** formerly assistant to the president. Replacing Captain **Cook** as assistant to the president is Capt. **Philippe I. Georges.** Capt. **Rae Gunston** continues as assistant to the general manager.

Other staff changes include the appointment of **John D. Bell** as manager of all agency operations. Mr. **Bell,** who will move from Toronto to Montreal, will be replaced by **John D. Brannen** as manager of the Toronto office. **Stewart C. Cummings** has been appointed agency sales manager.

American Ship To Construct 1,000-Foot Self-Unloader For National Steel Corporation

National Steel Corporation, Pittsburgh, Pa., has augmented its expansion program with a commitment for a large ore-coal-carrying vessel.

The 1,000-foot-long self-unloading Great Lakes bulk carrier will be built at Lorain, Ohio, by The American Ship Building Company and will be added to the National Steel fleet which is operated by The Hanna Mining Company, it was announced by **George A. Stinson,** chairman of National Steel.

"Committing so major and long-term a capital investment as this vessel represents reflects our urgency about the expansion of American steel supply," Mr. **Stinson** said. "At National Steel, we have tried to make clear in recent months that the market is growing strongly, that we expect to share fully in that growth and that we must have better profits if we are to be able to pay for what we intend to build.

"This project is a key part of our two programs for additional production capacity. Hence, we are committing it now."

The vessel is expected to operate during the 1978 Lakes shipping season. It will transport the bulk of the additional 3.6-million tons of iron ore pellets which will be produced yearly at National Steel Pellet Plant, Keewatin, Minn. Capacity there will be more than doubled in a program announced recently by National Steel.

The self-unloading vessel will have a capacity to transport 59,000 gross tons of iron ore pellets, at maximum summer draft, or 52,000 net tons of coal, at full-load speed of 16 mph. It will be equipped with a 250-foot unloading boom, operable on either side of the 105-foot beam, at capacities of 10,000 gross tons of pellets or 6,000 net tons of coal per hour. It will be powered by two 8,000-hp diesel engines driving twin screws. Both propulsion equipment and the pilothouse will be located aft.

The agreement between National Steel Corp. and The American Ship Building Co. for the construction of the new 1,000-foot self-unloading ore- and coal-carrying vessel marks the third ship of this super-size now on order at American Ship's Lorain, Ohio, yard. A 680-foot self-unloader is also building at the company's Toledo, Ohio, facility.

Announcement of the agreement was made jointly by **George A. Stinson,** chairman of National Steel, and **George M. Steinbrenner,** chairman and chief executive officer, and **Jacob O. Kamm,** president, both of American Ship.

Negotiations that resulted in the agreement were completed by **Richard E. Thompson,** Group vice president of National Steel; **Howard F. Andrews,** vice president, marine services, The Hanna Mining Co., which will operate the vessel, and **Gordon Stafford,** executive vice president, The American Ship Building Co.

Fairbanks Morse Engine Bulletin Available From Colt

A new engine bulletin describing Fairbanks Morse opposed piston diesel engines for marine propulsion use is available from Colt Industries' Fairbanks Morse Engine Division, 701 Lawton Avenue, Beloit, Wis. 53511. The 12-page book is in full color and describes the Fairbanks Morse 38D8-⅛ series diesel engines built at the division's Beloit plant. The engine is available in both blower scavenged and turbocharged configurations.

Typical marine applications are shown. A transverse cutaway in full color clearly illustrates the engine's opposed piston configuration with detailed operating and dimensional data.

CREWBOAT TO FERRY: The ferryboat Kingston recently completed trials at Swiftships, Inc.'s yard at Morgan City, La., before her Caribbean trip to the Island of Jamaica. Slated for duty in Kingston Harbor, the 150-passenger vessel is a welcome addition to a nation dependent upon water transportation. Swiftships, Inc. also recently delivered a 65-foot air sea rescue vessel for service in Kingston Harbor. The M/V Kingston was a conversion job which originally began as a 65-foot crewboat, with the final product being the 150-passenger vessel pictured above. This necessitated completely removing the old cabin and replacing it with the full-length cabin as shown. In addition to seating below, additional seating is provided topside, providing passengers with a picturesque view of Kingston Harbor.

Atco Marine Corp. Appoints Russ-Taylor

Atco Marine Corporation, 603 Dean Street, Brooklyn, N.Y. has announced the appointment of Russ-Taylor Company of New Orleans, La., as U.S. Gulf Coast representatives. Atco Marine has an integrated product line for heavy marine new tanker and gas carrier construction, as well as for the offshore drill rig industry, which includes automatic magnetic pilot hoists, marine sewage disposal systems, Ingersoll-Rand pumps, and fiberglass-covered lifeboats.

GE Gas Turbines To Power Fast Frigates Built In Italian Yard

GE's Marine and Industrial Projects Department (M&IPD) has received its first international order for LM2500 marine gas turbine propulsion equipment from Fiat S.p.A. Turin, Italy.

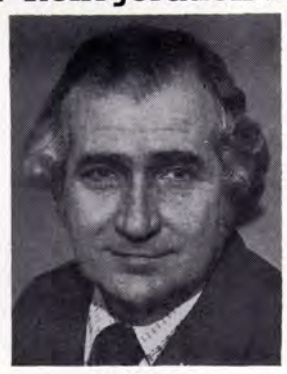
Fiat's order with M&IPD includes eight LM2500 gas turbines, associated power turbine parts and assembly hardware, four engine base and enclosure assemblies, and four lube oil storage and conditioning assemblies. Eight additional engines on option are included in the order.

The propulsion equipment will be used to power new 2,500-ton Fast Frigates being built by an Italian shipyard, Cantieri Navali del Tirreno e Riuniti, for the Italian and Peruvian Navies. The ships are CODOG (Combined Diesel or Gas Turbine) powered with one LM2500 engine and one marine diesel operating on each shaft of the twin-shaft/twin-propeller system. The LM2500 provides the ship dash speed capability with 25,000 metric horsepower available in each module.

Fiat is licensed by GE to manufacture parts for the LM2500 engine and will add these components to the GE-supplied core engine built and assembled in GE's Evendale, Ohio, facility.

The LM2500 propulsion system has been selected for the U.S. Navy's Spruance-class destroyer, the Patrol Missile Hydrofoil, and the Patrol Frigate.

Port Electric Appoints Ed Toale To Manage New Refrigeration Div.



Ed Toale

Port Electric Supply Corporation of 155 Perry Street, New York City, has announced the appointment of **Ed Toale** as manager of the company's newly established Refrigeration Division. The new division specializes in marine refrigeration and air-conditioning equipment and offers the marine industry a large inventory of new equipment and replacement parts for all makes of marine refrigeration and air-conditioning machinery.

Mr. **Toale** brings with him over 20 years of experience in the marine air-conditioning and refrigeration field. Mr. **Toale** was formerly associated with Tomlinson Refrigeration & Supply Co. in the position of director of sales for many years.

Britain Sets Standards For Offshore Equipment

Regulations, shortly to be published in Britain, lay down minimum standards for the design and construction of offshore installation employed on the drilling for, and production of, mineral resources (including oil and gas) on the United Kingdom Sector of the continental shelf. Standards for the safety of equipment on board are also laid down.

The Regulations come into force on May 1, subject to the approval of Parliament. They require all installations operating on the United Kingdom Sector of the continental shelf to have a valid Certificate of Fitness by August 31, 1975.

Because of the rapid developments taking place in offshore technology, the Regulations prescribe only in broad terms the minimum acceptable standards of design and construction. Detailed technical standards required are contained in a document "Guidance on the Design and Construction of Offshore Installations," which will be amended from time to time in the light of further developments.

Mobil Oil Corporation Promotes John Knepper

John T. Knepper

John T. Knepper has been appointed manager, U.S. fleet in Mobil Oil Corporation's marine transportation department. He was manager, Gulf-East Coast fleet, and was succeeded by **Robert F. Desel** on April 1.

Mr. **Knepper** received his Bachelor of Science degree in marine engineering from Kings Point in 1947 and joined Mobil upon graduation. He sailed in the fleet as engineer officer from third assistant to chief engineer.

In 1956, while in the technical division, he spent two years with the N/S Savannah Project, the development of the world's first nuclear-powered merchant ship. He also served as senior research technologist in the technical service laboratories in Brooklyn, and later as employee relations manager of the marine department before becoming Gulf-East Coast manager in 1969.

Mr. **Desel** received a B.S. degree in naval architecture and marine engineering from the University of Michigan and a naval engineering degree from Massachusetts Institute of Technology. Prior to joining Mobil in September 1969, he served in the U.S. Navy with the rank of captain, holding various posts in design, engineering and construction.

Mr. **Knepper** succeeds **Arthur E. Fischer,** who has become manager, relations, for the marine transportation department.

Two 5-Day Programs Announced By M.I.T. For Summer Of 1974

The Massachusetts Institute of Technology Department of Ocean Engineering has announced two five-day programs to be given at the institute in Cambridge, Mass., during the summer of 1974.

The first, "Ship Structural Analysis and Design," is to be held July 8 through July 12. The intent of this special summer program is to discuss several of the most important aspects of ship structural design as they have developed during the very recent past. The program is an outgrowth of the book "Ship Structural Design Concepts," sponsored by the Ship Structure Committee, which is to be published this spring. It will be supplied to participants, and selected authors of chapters in the book will give lectures on the statistics of hull loadings and structural strength, compression strength of welded grillages, margins of safety, first cycle midship section design synthesis and applications of optimization and structural synthesis methods.

This first program is under the supervision of Prof **J. Harvey Evans** of the M.I.T. Department of Ocean Engineering. Tuition is $400, due and payable upon notification of admission. No academic credit is offered.

The second program, "Quantitative Methods of Ship Production Control," will be given August 19 through August 23. This program is designed for ship production planners and managers and will deal with the theoretical and applied aspects of modern quantitative techniques of production planning control, and scheduling. It is under the general direction of Prof. **Ernst G. Frankel** of the Department of Ocean Engineering, and lectures will be given by members of the staff of M.I.T. and selected guest speakers from industry. Tuition is $500, due and payable upon notification of admission. Academic credit is not offered.

Further information may be obtained by writing to: Director of Summer Session, Room E19-356, Massachusetts Institute of Technology, Cambridge, Mass. 02139.

The answer to your bilge-water discharge problem: Keene Marine Discharge Control System™.

Ready now–to meet the July 1 deadline.

Keene has long been part of the marine industry—supplying Keene (Bowser) fuel and lube filters and other equipment for over 75 years. So to help you meet the July 1 deadline, we've developed a complete system that automatically assures that bilge discharge is within limits acceptable under the Federal Water Pollution Control Act and related Coast Guard regulations:

Automatic fail-safe control.

The Keene Marine Discharge Control System removes oil and other contaminants from bilge water and monitors the effluent stream. The fail-safe control permits only sheen-free water to be discharged.

Proof of compliance.

The system includes a real-time continuous recorder which prints a chart verifying the purity of all overboard discharge. This data becomes part of the captain's or master's log, providing permanent proof of compliance.

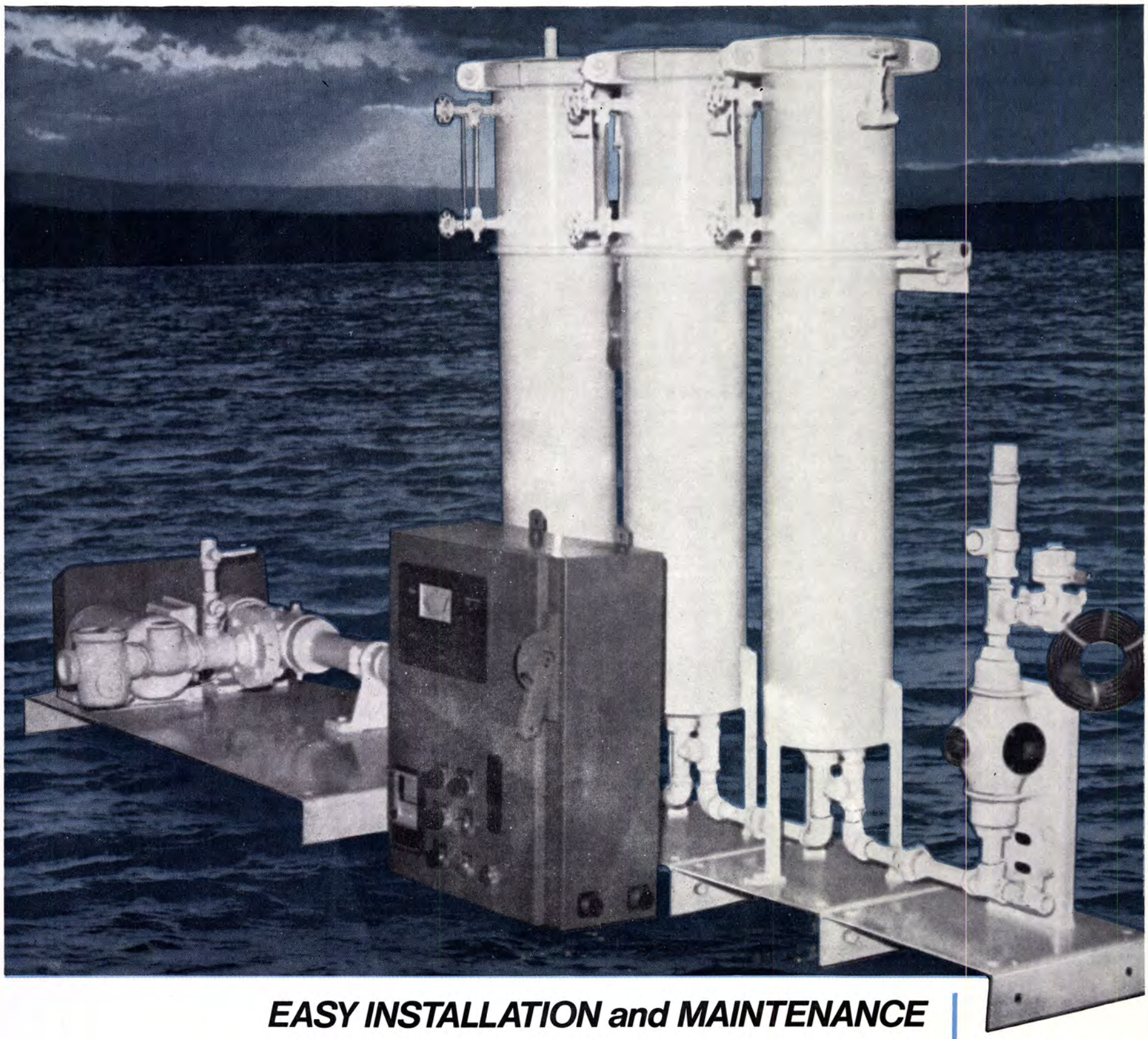
Passes Coast Guard regulations.

Bilge water discharged through the Keene system exceeds EPA and Coast Guard "no sheen" requirements. In addition, the U.S. Coast Guard has agreed to waive the bilge containment provisions of Title 33, Subchapter 0, paragraphs 155.330 through 155.360 to vessels with the Keene system installed.

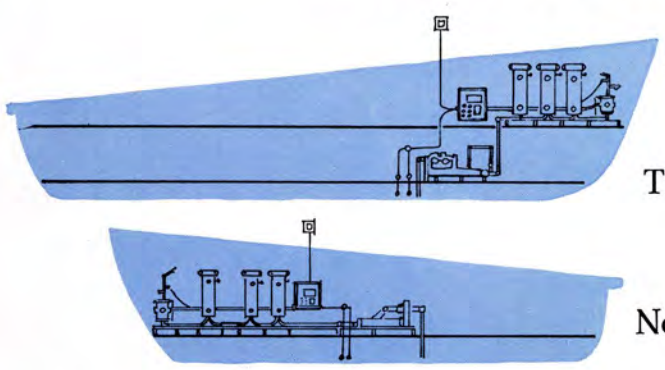
Pennant to identify installation.

Large reflective pennants are furnished for attachment to the exterior of vessels which have the Keene system installed. These pennants readily identify Keene-equipped vessels, and may eliminate these vessels as suspected polluters.

KEENE MARINE DISCHARGE CONTROL SYSTEM PROTECTED



EASY INSTALLATION and MAINTENANCE



The system can be installed in one compact area, or modules can be separated to fit wherever you have available space.

Modular design.

The rotating shaft of the positive displacement pump is the only moving part in the system.

Only one moving part.

No steam cleaning, blow-down or backwashing required.

Disposable separation elements.

The system is ready now. Keene Marine Discharge Control Systems are installed and working today. They are available now through an authorized Keene marine distributor or shipyard. For further information, and the name of the distributor nearest you, call (615) 526-9571. Or write Keene Corporation, Fluid Handling Division, Dept. EW, Cookeville, Tenn. 38501. Time is short—act now!

KEENE
CORPORATION
FLUID HANDLING DIVISION

Major Growth In Domestic Commercial Fleet Forecast

A recently released Maritime Administration report on "Domestic Waterborne Shipping Market Analysis," prepared by the Chicago, Ill.-based Kearney: Management Consultants, sees a 200 percent jump by the year 2000 in tonnage carried by U.S. domestic marine industry, encompassing inland waterways transportation, contiguous and noncontiguous trades, and Great Lakes services.

Growth—predominantly in carriage of petroleum, basic ores and chemicals—is forecast to increase from today's total movement of 893 million tons to 2.7 billion tons, with accompanying demand for vessel construction.

By Kearney forecast, the inland waterways fleet would expand from its present dimension of 2,400 towboats and 17,000 barges—aggregating 22-million gross tons—to 5,000 towboats and 29,000 barges, totaling 38-million gross tons.

In domestic ocean movements, in addition to transport of raw materials, major opportunities for coastwise container feeder and roll-on/roll-off services are foreseen.

Little expansion of the Great Lakes Fleet is predicted. Most of the 202 vessels in the fleet in 1972 were bulkers (to carry iron ore, coal, limestone or grain) or tankers (to carry fuel). The average age of the fleet is over 45 years. Though only 11 new Great Lakes vessels have been built since 1960, shipbuilding replacement opportunities in the form of self-unloading bulk carriers, railcar ferries and general cargo vessels, it is noted, could develop. At least eight ore carriers are now on order or under construction.

Newport News Names Bradley Operations Planning Manager

William E. Bradley

William E. Bradley has been named manager of the operations planning department at Newport News Shipbuilding. The announcemen was made by **George M. Bonnett,** manager of waterfront engineering for the Tenneco subsidiary.

Mr. **Bradley** is taking over the duties of **Ralph D. Bradway,** who has been transferred to the yard's new Commercial Ship Division as manager of hull construction.

A native of Newport News, Mr. **Bradley** joined Newport News Shipbuilding in 1963 after receiving a bachelor's degree in mechanical engineering from the University of Virginia. In 1969, he was awarded a Master of Business Administration degree from the College of William and Mary.

For the past year, he has been manager of quality assurance in the yard's steel fabrication shops. Previously, he had been a member of the Steel Hull Division staff, serving successively as staff supervisor, production coordinator, progress and budget coordinator and finally, as chief of process engineering.

In his new position, Mr. **Bradley** will be responsible for long-range planning and scheduling of waterfront facilities, and for conceptual ship construction plans and schedules.

He is a member of the Progressive Club, The Propeller Club, and the Engineers Club of the Virginia Peninsula.

Trans-World Shipping Names Swarts To Head East Coast Operations

William M.B. Ajemian, president of Trans-World Shipping Services, Inc., Toledo, Ohio, has announced the appointment of **Frank P.J. Swarts** as vice president and general manager of the firm's Baltimore office. Mr. **Swarts** will be in charge of the company's East Coast operations.

Tracor, Inc. Names Robert M. St. Pierre

Robert M. St. Pierre has been appointed division vice president and general manager for the Applied Technology Division, Sciences & Systems Group of Tracor, Inc., Austin, Texas, according to Tracor Group vice president Dr. **Wayne Rudmose.**

Mr. **St. Pierre** had been president of Astro-Science Corporation, a Tracor company sold in 1973. He has been associated with Tracor since 1969, when he left his position of project business management director of AVCO Corporation's missile system division.

Mr. **St. Pierre** holds a Bachelor of Arts degree from De Paul University in Chicago, and is a member of the National Contract Management Association, American Ordnance Association, Council of Defense and Space Industries Associations. and the National Security Industrial Association.

Maritime Fruit Reports On Shipbuilding Sales Contracts Completed

Maritime Fruit Carriers Company Limited, worldwide shipping concern, has reported financial results for the year ended December 31, 1973.

At the same time, the company announced that sales of a number of shipbuilding contracts, which had been agreed upon in late 1973, were consummated in early 1974. In addition, MFC has reached agreements in principle for the sale of other shipbuilding contracts.

As a result of the consummated sales, the company will realize gains, net of minority interests, and attributable deferred taxes of approximately $21.5 million and in addition, upon finalization of the agreements in principle, an additional $20 million of after-tax gains will be realized. A substantial portion of these gains will be reported in 1974, with the balance deferred and taken into income through 1977.

MFC's revenues for 1973 rose to $98,909,000, compared to $57,137,000 in 1972. Net income for 1973 amounted to $13,004,000, equal to $2.72 per fully diluted share. In 1972, the company had net income of $13,121,000, or $2.82 per fully diluted share.

Gross revenues do not include $6,698,000 in 1973, and $25,048,000 in 1972 of income from surrender of tax benefits. Net income attributable to this source in 1973 was only $533,000, compared with $8,385,000 in 1972. Net income figures are net of direct costs and deferred taxes associated with this income. These deferred taxes, amounting to $6.2 million in 1973 and $16.7 million in 1972, represent cash received and utilized by the company.

Consolidated revenues for 1973 include gains on the sale of shipbuilding contracts consummated during the year and amounting to approximately $9 million. After allowing for minority interests and other deductions directly attributable to this source, income from these operations amounted to approximately $7.9 million in 1973. There were no such sales in 1972.

The company estimates that profits from operations other than gains on the sale of shipbuilding contracts and surrender of tax benefits amounted to approximately $6.2 million in 1973, compared with $6.0 million in 1972. These estimates assume the allocation against these operations of all the company's net financial charges, but exclude other operating and general expenses in the amounts of $1,583,000 in 1973 and $1,267,000 in 1972.

The shipbuilding contract sales which were consummated in early 1974 include one liquefied petroleum gas carrier sold by MFC's subsidiary Universal Gas and Oil, and the sale of approximately 752,000 deadweight tons of crude and refined product carrying capacity.

The newly announced agreements in principle involve the sale of a 50 percent interest in two very large crude carriers, aggregating over 650,000 deadweight tons presently under construction and due for delivery in 1977, as well as the outright sale of contracts for the construction of 372,000 deadweight tons of crude carrying capacity.

Newport News Shipbuilding Promotes Callis And Jennings

Allen E. Callis

Claude B. Jennings

Allen E. (Mike) Callis has been named superintendent of the pipe department at Newport News Shipbuilding, Newport News, Va. He succeeds **Claude B. Jennings,** who has been appointed construction control supervisor for the yard's CVAN (carrier) project.

The changes were announced by **James P. Fox Jr.,** director of nuclear construction for the Tenneco shipyard.

Mr. **Callis,** a native of Mathews County, has been with the shipyard since 1955. In 1960, after graduation as a machinist from the yard's Apprentice School, he was promoted to foreman in the machinery installation department. He advanced to lead foreman in 1968 and general foreman in 1970.

He was appointed nuclear construction manager on the yard's frigate project in June last year.

Mr. **Jennings** is a native of Elizabeth City, N.C., and graduated from the Apprentice School in 1947. He joined the pipe department at the shipyard in 1951, and was promoted to foreman in 1956. He became general foreman in 1970, and superintendent in 1973.

First Steel Shrimp Trawler Launched From Rysco Shipyard In Blountstown, Florida

The first steel hull shrimp trawler built by Rysco Shipyard, Inc., Blountstown, Fla., was christened Fresco De Chan, and is one of a fleet of six being built for Attaraya, S.A., San Salvador, El Salvador, Central America.

Over a thousand Blountstown and area residents were on hand to witness the launching at the shipyard site at Mayhaw Drive on the Apalachicola River.

Antonio Alfaro, Attaraya president, and **Mrs. Alfaro** were accompanied by company officials, relatives and friends, as honored guests of Rysco. **Mrs. Alfaro** served as sponsor for the christening of the 72-foot fully equipped trawler.

Dignitaries who participated in the christening celebration were Sen. Don **Fuqua; Doyle E. Conner,** Commissioner of Agriculture; Representative **W.J. (Billy Joe) Rish,** and Representative **Donald L. Tucker.** Commissioner **Conner** was the principal speaker and Representative **Rish** acted as master of ceremonies.

Rysco officials who attended with their wives were **T. Noah Smith Jr.,** president and chairman of the board; **R.A. (Rick) Brock,** San Antonio, Texas; **Tommy Smith,** and **Sam Simpson,** Corpus Christi, Texas.

Rysco Shipyard, Inc. is an affiliate of Rockport Yacht & Supply Co., Inc., Rockport, Texas. The modern shipbuilding facility, complete with production line, transfer bridge, marine launching and storage basin, has completed two trawlers, and construction work on five 72-foot steel hull vessels is in various stages of completion.

Other officers of the firm include **Bill Stubbs,** vice president and general manager; **Al Silchenstedt,** vice president and general manager of design and production, and **Jim Taylor,** yard superintendent.

Drew Chemical Launches $2-Million Expansion Program

Drew Chemical Corporation, a leading producer of marine and industrial chemicals, has launched a $2,000,000 year-long expansion and modernization program at its Kearny, N.J., plant, designed to help the company meet sharply increasing demands from domestic customers. Drew, which has its executive offices in Parsippany, N.J., is a subsidiary of the United States Filter Corporation.

Dr. **Emilio Savinelli,** president, said that the Kearny project is one phase of wide-ranging development plans to be carried out over the next 10 years. The total program, he said, will give prime stress to further improving the company's product development capacity and further increases in manufacturing efficiency.

The Kearny project, already under way, will be concerned with the 4.2-acre site and plant buildings at 1106 Harrison Avenue in that city, which Drew purchased three and one-half years ago.

M. Piergrossi, assistant vice president and director of manufacturing, stated that bulk raw material storage capacity will be enlarged by 90 percent.

The plant serves a major portion of the domestic market, stores and ships more than 200 products, and handles particularly chemicals used for water and waste treatment, marine requirements, and specialized industrial chemicals.

Navy Asks Bids To Build Utility And Personnel Boats

Requests for proposals for the construction of twenty to forty 18-foot utility boats with engines has been submitted to various shipyards by the Naval Ship Systems Command, Washington, D.C. These vessels would be delivered to Portsmouth, Va., and San Diego, Calif.

NSSC is also requesting proposals for the construction of five 40-foot MK4 personnel boats, under invitation N00024-74-B-0557. Bids to build 33 utility boats with 85-horsepower outboard engines have also been requested. Invitation number is P066.

CONGO BOUND: The first of two Equity 65-foot Standard Water Taxis is shown loaded aboard the S/S Delta Paraguay destined for Port Gentile, Congo, via Dakar. The Sirene is for the account of Union des Remorqueurs de Dakar. The company maintains its headquarters in Dakar, with offices in Paris. The Sirene will operate under Senegalese flag and registry. The company also owns and operates other Equity vessels. Equitable Equipment Company builds various types of offshore support vessels, self-propelled drilling ships, pipelaying barges, and other marine equipment for the petroleum and related industries worldwide, and is one of the world's largest builders of tugs, supply vessels and barges, including barges for both the LASH and SEABEE systems for ocean/inland cargo movement.

Power And Controls Group Of American-Standard Names Benson As Marine Specialist

Ronald H. Benson has been named marine specialist for the Marine Department of the American-Standard Power and Controls Group, according to **Paul S. Tilton,** marine sales manager. The Marine Department is headquartered in Houston, Texas.

Mr. **Benson** is based at 185 Chamberlain Street, Holliston, Mass. He will cover the East Coast and Great Lakes areas, and will handle contract work with U.S. Governmental agencies, including the U.S. Navy Bureau of Ships, the American Bureau of Shipping and the U.S. Coast Guard. He will also handle sales to the general maritime industry in these market areas of American-Standard head exchangers and WABCO fluid power products. These products include marine heat exchangers of various sizes and types, pneumatic valves and accessories, pneumatic and hydraulic cylinders, and WABCO Panelmaster® and Logicmaster® propulsion control systems.

Mr. **Benson** holds a B.S. degree in electrical engineering from Penn State University and is a member of Penn State Alumni Association. He joined American-Standard in 1962, and has held numerous field sales positions with the company, including sales engineer, senior sales engineer and district manager.

The American-Standard power and Controls Group includes the American-Standard Industrial Products Division in Dearborn, Mich., the American-Standard Heat Transfer Division in Buffalo, N.Y., the WABCO Fluid Power Division in Lexington, Ky., and American-Standard Industrial Products Ltd., Bramalea, Ontario.

Halter Marine Fabricators, Inc. Delivers New North Sea Boat

The Jean LaFitte, a new 194-foot offshore towing, anchor-handling, and supply ship, left recently for the North Sea for service offshore in that growing oil and gas province.

The ship was built by Halter Marine Fabricators, Inc., Moss Point, Miss., large ship division of Halter Marine Services, Inc., New Orleans. Its owner/operator is Euro-Pirates International, Inc., New Orleans.

The Jean LaFitte is one of a series of vessels being built for Euro-Pirates International by Halter Marine Services for operation in foreign offshore fields and is part of a more-than-$60-million backlog of contracts held by Halter for vessels under construction for the oil and gas industry offshore. In 1972, Halter Marine Services delivered, or had under construction, 96 vessels for the marine industry worldwide, with four shipyards in full production. The shipbuilding company is one of the largest in the world, producing offshore, inland river, general marine, and specialized vessels for a great diversity of operations.

The Jean LaFitte's primary propulsion power is provided by two MWM-16 cylinder diesel engines rated at 2,400 metric brake horsepower at 900 revolutions per minute each. The vessel has a free-running speed of 12 knots. Overall dimensions are 194 feet by 40 feet by 17 feet, and her design permits optimum performance in any sea condition, exceptional seakeeping abilities, and extremely good maneuverability. The ship is built to ABS A-1 Maltese Cross, Full Ocean (E), has an ABS certificate for Class "C" Ice Strength, and is USCG certificated.

The ship is fitted with a bulk mud system of four 700-cubic-foot vertical tanks, a Smatco Model 66-DAW-200 diesel-driven towing winch, Murray & Tregurtha Model BT-30 300-horsepower bowthruster, two 150-kw generators, and Halter Marine-designed stern roller for handling anchors.

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An electro-hydraulic steering system is used for fore and aft operation, with stations located in the pilothouse and aft of the pilothouse overlooking the stern and cargo deck. Steering, anchor handling, towing, bulk system, and deck machinery controls are located at the aft station.

The ship is equipped with a complete engine alarm system permitting monitoring of all engines while in operation from the pilothouse and the engine room.

The Jean LaFitte is completely air-conditioned and heated and has accommodations for 19. The mess area and galley are equipped with a walk-in cooler and freezer.

The electronics on the vessel include three radios (two are single sideband), two Raytheon 48-mile-range radar sets, a Tracor Omega navigation and Tracor recorder direction finder, a Raytheon DE-731 digital depth recorder, and an Anschutz gyrocompass/auto pilot.

Sumitomo Shipbuilding On Belgian Stock Exchange

According to company officials, the Sumitomo Shipbuilding and Machinery Co., Ltd. of Japan has introduced its activities on the Belgian Stock Exchange.

A signatorial ceremony was attended by the Japanese ambassador to Belgium, **Nobuhiko Iwasaki,** the president of the Sumimoto Co., and **Louis Camu,** the president of the Bank of Brussels' administrative council.

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Dr. **J.R. Paulling** of the University of California, and **Godik Gyldenge** of Industrial Underwater Services presentation, a film was run showing the capsizing in "heavy seas" of a large containership model in the experiments. The results have greatly aided in the development of understanding of the mechanism

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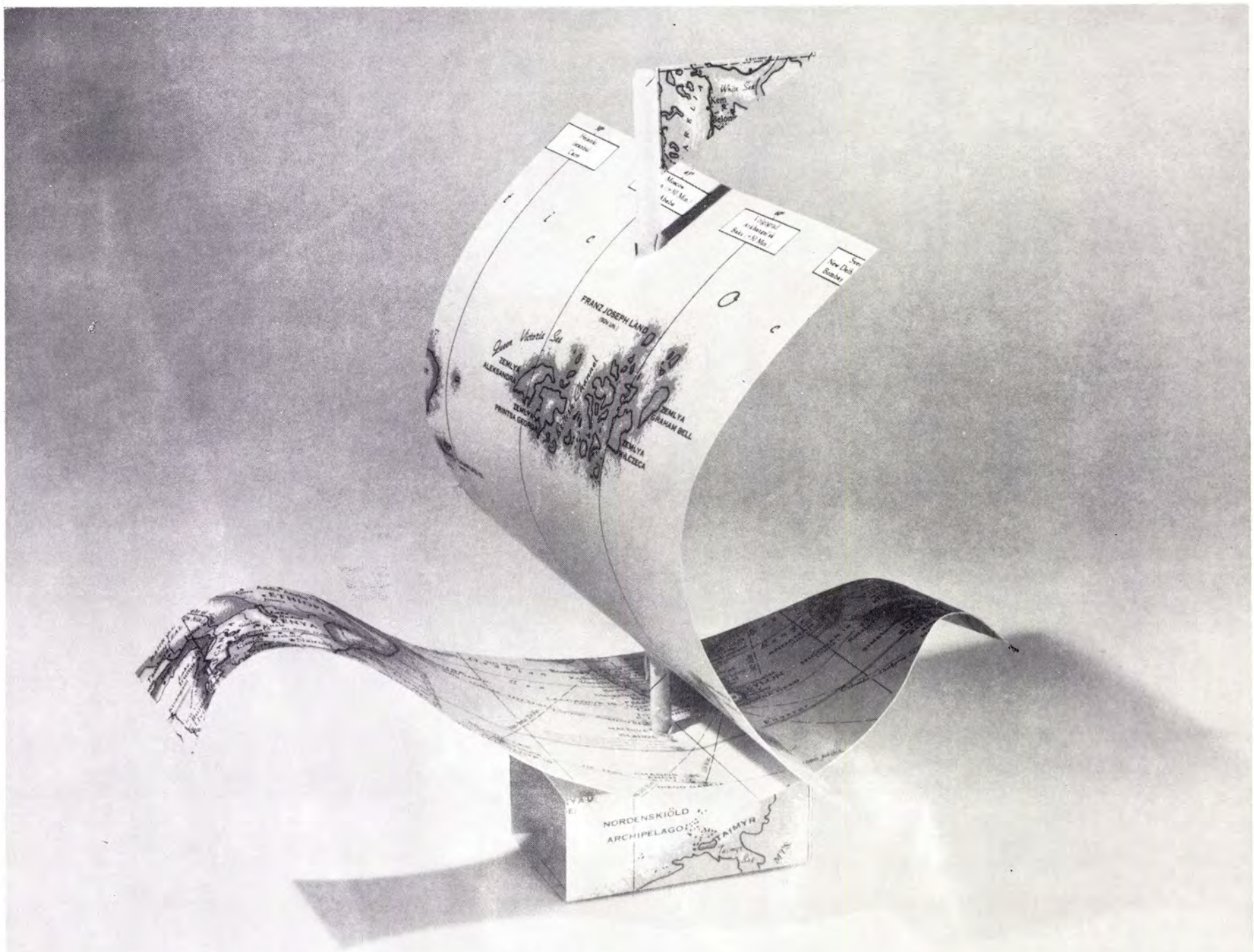

SUMITOMO...
SHIPBUILDER TO THE WORLD

Sumitomo ships ply the sea lanes of the world carrying the cargoes that keep the wheels of industry turning.

For over 70 years now Sumitomo has been building vessels of every type for every purpose. And whether they are mammoth tankers, bulk carriers, combination carriers or special kinds of ships, such as LASH and liquefied gas carriers they are all built with the same attention to detail and the high technical standards that mark all Sumitomo products. And with future requirements of its customers in mind Sumitomo has recently completed the Oppama Shipyard which includes some of the most sophisticated shipbuilding equipment and machinery in the world. In this way Sumitomo is confident that it can offer even better service to its clients.

SUMITOMO
SHIPBUILDING & MACHINERY CO., LTD.

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Telex: J22264 Cable: SUMIJUKI TOKYO

New York Office: Suite 4949, One World Trade Center, New York, N.Y. 10048, U.S.A.
Telex: 232699, 422145 Cable: SUMIJUKI NEWYORK

London Office: 35, New Broad Street, London, EC2M 1NH, England
Telex: 886450 Cable: SUMIJUKI LONDON EC2M 1NH

Two Speakers Address Pacific NW SNAME Annual Student Meeting

The annual student meeting of the Pacific Northwest Section of The Society of Naval Architects and Marine Engineers, recently held at the Windjammer Restaurant in Seattle, Wash., was a huge success. Sixty-one regulars and 61 students jammed the room to hear Dr. **J.R. Paulling** of the University of California, and **Godik Gyldenge** of Industrial Underwater Services, Inc., the speakers for the day.

Dr. **Paulling** is professor of naval architecture and department chairman at Berkeley. His talk was termed "Studies of Ships Capsizing in Heavy Seas." Dr. **Paulling's** report was based on tests conducted using radio-controlled self-propelled models. As part of his presentation, a film was run showing the capsizing in "heavy seas" of a large containership model in San Francisco Bay. Discussers were **Lawrence Glosten** of L.R. Glosten and Associates, and **Cecil Shaver** of Nickum & Spaulding Associates, Inc.

This study was funded by the United States Coast Guard, Office of Research and Development, with Coast Guard personnel assisting in the experiments. The results have greatly aided in the development of understanding of the mechanism of capsizing and have defined areas on which to focus future work.

In the second session of the day, Mr. **Gyldenge** introduced Controlled Dynamics Corp.'s Sequential Sea Mesh Hull Cleaning. This method employs a low-level explosive mesh-like structure hanging down parallel to the vessel's underwater body. Shock waves produced by the electrochemical disintegration of the mesh produces water pressure waves, sweeping the marine fouling from the hull without damage to the paint system. This type of hull cleaning introduces considerable savings over the conventional drydocking. It is fast, economical and should produce significant savings in vessel fuel consumption due to the reduction in drag caused by marine growth.

Dr. **Albert A. Pence,** senior physicist at the Applied Physics Laboratory of the University of Washington, assisted Mr. **Gyldenge** in his presentation by explaining to the group some of the more scientific aspects of the method.

Walter Tilley Named To New Post At Port Of Orange, Texas

Walter S. Tilley

Orange County Navigation and Port District, Port of Orange, Texas, has announced the appointment of **Walter S. Tilley** to the newly created position of director operations and trade development.

Mr. **Tilley** was previously associated with several international chemical firms, and has an extensive background and education in transportation and trade.

Radiomarine Corp. Appoints Wisser As Sales Manager

The appointment of **Bernard Wisser** as sales manager of Radiomarine Corporation was announced by **C. Webber Parrish,** vice president and general manager.

Mr. **Wisser** joined Radiomarine in 1972 as sales engineer, and was made assistant sales manager in December of the same year. Before joining Radiomarine, he was a project engineer for Monmouth Industries, Inc.

Radiomarine Corporation, a subsidiary of Electronic Assistance Corporation, Red Bank, N.J., is one of the nation's older suppliers of marine navigation and communications equipment.

MMS Names Mitchell To Newly Created Post

Michael W. Mitchell

The appointment of **Michael W. Mitchell** as manager of communications systems for Marine Management Systems, Inc. (MMS) was announced by **Eugene D. Story,** company president.

In this newly created position, Mr. **Mitchell** will supervise a major project involving a Government contract recently awarded to the firm. MMS, based in Stamford, Conn. designs and implements management control systems exclusively for the international marine transportation industry.

For the last 15 years, Mr. **Mitchell** has been primarily involved in directing the development of advanced communication and navigation systems for global transportation applications. He was formerly program director of maritime communications and navigation for AII Systems, Moorestown, N. J.; staff systems manager at RCA; manager of the systems technology group at the G.E. Space Technology Center, the chief of the mechanical engineering section of the Air Force Cambridge Research Center.

Mr. **Mitchell,** a licensed professional engineer, belongs to the American Institute of Aeronautics and Astronautics and the Institute of Navigation.

He is a graduate engineer from the Newark College of Engineering, and holds a master's degree in engineering from Columbia University.

Dravo Corp. Promotes Chidester And Stewart

Dravo Corporation, Pittsburgh, Pa., has announced two promotions in its public relations and advertising department.

Robert J. Chidester has been named manager, corporate advertising and services. **William P. Stewart** becomes manager, public relations.

Mr. **Chidester** has served Dravo since 1963 in editorial and communications capacities, including manager, public relations, since 1967. He is a graduate of Westminster College in journalism.

Mr. **Stewart,** who joined Dravo last year, is a former public relations manager for the Power Tool Division, Rockwell Manufacturing Company, and was employed as director of public information for the Ann Arbor (Mich.) Public Schools. He is a graduate of Duquesne University.

Koehler-Dayton Appoints Lightner, Buza

Koehler-Dayton, Inc., Division of Litton Industries, New Britain, Conn., leaders in waste management systems for the transportation industry, has announced the appointments of **Byron L. Lightner** as marketing manager, and **Robert J. Buza** as commercial marine sales manager.

Prior to his present position, Mr. **Lightner** was product sales manager, responsible for the company's aircraft and recreational marine product lines. He holds a B.S. degree in chemical engineering from Lehigh University.

Mr. **Buza,** a graduate of the University of Illinois, was formerly chief applications manager for the company's complete line of sanitation systems.

Shipbroker Opens Office In New York

The opening of his own company has been announced by **Christopher S.B. Field.** The new firm, Tankship Brokerage Corp., will be located at 11 East 44th Street, New York, N.Y. 10017. Mr. **Field** was previously associated with Fairfield Maxwell Ltd., and Ocean Brokers Inc.

AAPA Names Schultz Executive Director

The board of directors of The American Association of Port Authorities has named **Richard L. Schultz** of Cleveland, Ohio, as the executive director of the 62-year-old association. The appointment was announced by association president **Charles S. Devoy,** executive director and general manager of the Port of Galveston, Texas.

Effective July 1, Mr. **Schultz,** who is executive director of the Cleveland-Cuyahoga County Port Authority, will replace **Paul A. Amundsen,** who has served the association since 1945. The board appointed Mr. **Amundsen** as technical services consultant, a newly created post which will enable him to concentrate on special projects. The association's membership is made up of a virtually unanimous representation of the public seaport agencies of the Western Hemisphere.

Mr. **Schultz** becomes the third man to lead AAPA affairs in the association's long history. Mr. **Amundsen's** predecessor, **Tiley S. McChesney** of New Orleans, La., served as secretary-treasurer of the association for a quarter of a century.

Mr. **Schultz** is a 1952 graduate of the Wharton School, University of Pennsylvania, where he majored in transportation. He has served at Cleveland since February 1969, and headed the Port of Brownsville as port director and general manager from April 1965 to February 1969. He was second in command at the port for a 10-year period preceding that. Mr. **Schultz** entered the port business with the Port Authority of New York and New Jersey in 1953, serving more than two years as promotion agent for the marine terminals department. His earlier experience included five years of sea service, and he still holds a valid master's license. He thus brings to his AAPA post experience with public port organizations from three coastlines and a background in marine transportation.

GE Names Rotondi Export Sales Engineer Turbine/Gear Products

Roger H. Rotondi

Roger H. Rotondi of Swampscott, Mass., has been appointed to the post of export sales engineer for the Marine Turbine and Gear Products Department of General Electric Company, according to **Robert H. Kiefer,** the department's manager of export marine sales.

In his new position, Mr. **Rotondi** is responsible for the sale of steam turbine and gear propulsion machinery to overseas customers. In this capacity, he coordinates his efforts with GE's International Sales Division headquarters, overseas field sales personnel, and manufacturing associates on a worldwide basis. General Electric Company is a leading supplier of marine steam turbines and gears for ship propulsion applications.

Prior to his appointment, Mr. **Rotondi** was on the engineering staff of the Medium Steam Turbine Generator Products Department in Lynn, Mass., and was formerly associated with the U.S. Navy's nuclear propulsion program at GE's Knolls Atomic Power Laboratory in Schenectady, N.Y.

Mr. **Rotondi** earned a Bachelor of Naval Science degree at the United States Naval Academy, and holds master's degrees in mechanical engineering and business administration from Cornell and Fordham Universities, respectively. He has also served as a program chairman for the American Society of Mechanical Engineers.

General Steamship Promotes R.D. Ryan

General Steamship Corporation, Ltd., has announced the appointment of **Robert D. Ryan** as manager-southern district.

Mr. **Ryan** joined General Steamship Corporation in 1939 and has previously served as traffic manager-southern district and assistant manager-southern district.

Mr. **Ryan** is a graduate of the University of Southern California. He is a past president of the Junior Foreign Trade Association (now the International Trade Club), a past president of the Los Angeles Transportation Club, and is presently secretary-treasurer and a director of the Los Angeles Steamship Association. He is also a member of the University Club of Los Angeles, and the Los Angeles Area Chamber of Commerce.

National River Academy Announces Expansion Of Board Of Directors

The board of directors of the National River Academy of the United States of America was expanded from 21 to 28 members at the Academy's Annual Membership Meeting held at the Academy in Helena, Ark., on March 21, 1974. The following new directors took office at the Annual Board Meeting, also held on that date: Regular—**Ray A. Eckstein,** president, Wisconsin Barge Line, Inc.; **Thomas Marshall,** president, Ohio Barge Line, Inc.; **William C. McNeal,** vice president, Oil Transport Company, Inc.; **M.E. Midgley,** president, Nilo Barge Line; **William B. Patton Jr.,** vice president, William B. Patton Towing Co.; Associate—**T.F. Ellis Jr.,** president, Ellis Towing & Transportation Co.; **Walter N. Todd,** president, The Waterways Company, and Affiliate—Dr. **Barton A. Westerlund** of the University of Arkansas.

Floyd A. Mechling, president, Union Mechling Corporation, Pittsburgh, Pa.; **John M. Donnelly,** president, Ingram Barge Co., New Orleans, La., and **B.D. (Doug) Brandon,** Arkansas State Representative (currently running for the position of Lieutenant Governor for the state of Arkansas), were reelected to their offices of chairman, vice chairman, and secretary-treasurer, respectively.

Mr. **Mechling** welcomed all Academy members and guests present, and annual reports were heard from Mr. **Donnelly,** chairman of the finance committee, and Capt. **Pierre R. Becker,** USN (ret.), Academy superintendent.

Joe DePaola, manager, Simulator Operation Support, American Airlines, Dallas, Texas, and newly hired consultant for the Academy's proposed River Pilot Simulator, was introduced to the group. Mr. **DePaola** is presently developing technical specifications for the development of the simulator.

Sixteen new memberships with the Academy were approved, thus making a total of 32 memberships acquired in the past year.

Other members not listed above serving the board, are: Regular—**Lea Brent,** vice president, Brent Towing Co., Inc.; **Gale H. Chapman Sr.,** senior vice president, Upper Mississippi Towing Corp.; **William B. Fouts,** president, Mid-America Transportation Co.; Capt. **Noble L. Gordon,** president, Mid-South Towing; **James O. Gundlach,** vice president, Canal Barge Co., Inc.; **Howard G. King,** president, Arrow Transportation Co.; **James E. Walden,** president, Helena Marine Service, Inc.; Capt. **Jack D. Wofford,** vice president of operations, American Commercial Barge Lines; **William J. Wolter,** president, Waterfront Services Co.; Associate—**William H. Barton Jr.,** president, Nashville Bridge Co.; **William L. Hankins,** manager, western district, The Cordage Group; **Sheldon G. Held,** marine consultant, Hartford Insurance Group; **Noble C. Parsonage,** executive vice president, Pott Industries, Inc.; **H.N. Spencer Jr.** publisher, The Waterways Journal; **L.E. Thompson,** executive vice president, Pine Bluff Warehouse Co.; Affiliate—**George A. Hale,** president, Marine Inspection Engineers, Inc., and **Francis L. Thompson,** chairman of the First National Bank of Phillips County.

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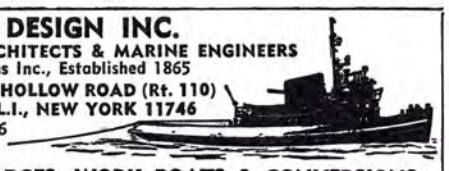

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Union Mechling Names Adrian And Cibella

Union Mechling Corporation, a subsidiary of Dravo Corporation, has announced the appointments of **Barrie B. Adrian** as manager of barge maintenance, and **Richard S. Cibella** as industrial relations manager.

Formerly industrial relations manager for Union Mechling, Mr. **Adrian** joined a predecessor company, Union Barge Line Corp., in 1957 as an operating engineer.

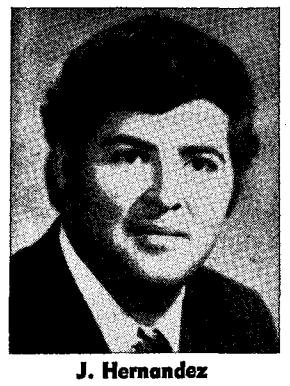
Mr. **Adrian,** a graduate of the U.S. Merchant Marine Academy in marine engineering, is a member of The Propeller Club of Pittsburgh and is a trustee and secretary of Great Lakes and Rivers Maritime Pension Fund.

Mr. **Cibella,** formerly manager of employment practices for Dravo, joined the company in 1969.

A graduate of Alderson Broaddus College, Philippi, W. Va., he is a former employee of Liberty Mutual Insurance Company.

Union Mechling offers a variety of water transportation, terminal and related services throughout the inland and intracoastal waterways. The firm is equipped to handle many types of cargo, including packaged, dry and liquid bulk.

Waukesha Motor Co. Names Hernandez Rep In Mexico/Caribbean



J. Hernandez

J. Hernandez has joined the sales force of Waukesha Motor Company in the capacity of regional representative in the Mexico/Caribbean area. His activities will be based in Mexico City, and he will be responsible for marketing activities in Central America as well as Mexico and the Caribbean area.

The announcement was made by **P.C. Trombley,** field sales director-international, for the Waukesha, Wis.-based manufacturer of heavy duty engines and power systems equipment.

Since 1969, Mr. **Hernandez** has been with the California-based Western Customer Service Division of Worthington Corporation. Previously, he served as a marine engineer after graduating from the U.S. Merchant Marine Academy at Kings Point, N.Y., in 1966. He holds a B.S. degree in marine engineering.

Motzfeldt To Manage New Barber Lines Company In Singapore

Barber Lines, the world's largest semicontainer operators, has announced the opening of its own company in Singapore.

Singapore and the Southeast region of Asia are areas with steady growth for Barber Lines, and continued growth is expected for these areas in the years to come.

Barber Lines Singapore Private Ltd., the name of the new company, will have an important task in strengthening the Lines' services offered to exporters and importers in Singapore and Malaysia. Today, Barber Lines have about 150 calls per year in Singapore, which is one of the most important ports in their liner network.

Barber Lines have appointed **Peter U. Motzfeldt** as managing director of the new company. Mr. **Motzfeldt** has had 11 years of experience in shipping in the Far East, mainly from Hong Kong and Japan.

J.C. Wuttke Opens Ship Chartering Firm

Juergen C. Wuttke has opened his own ship charter and brokerage firm called J.C.W. Chartering, Inc., located in 17 Battery Place, New York, N.Y. 10004. He was formerly associated with the Chester, Blackburn & Roder shipping organization.

Moore McCormack Pays Dividend

James R. Barker, chairman and chief executive officer of Moore McCormack Resources, Inc. (listed NYSE, Pacific), Stamford, Conn., has announced that the board of directors had declared a regular quarterly cash dividend of 10 cents per common share, payable May 6 to shareholders of record April 22.

Mr. **Barker,** noting that the move marked the first dividend payment in six years, said the board decision "reflects both the strong improvement in the financial condition of Moore McCormack and the need to retain capital for the company's $200-million long-term expansion program now under way.

"That program," Mr. **Barker** said, "is expected to increase significantly our earning power beginning in 1976." He added that "Moore McCormack's dividend policy will be subject to review. Future changes in dividend policy," Mr. **Barker** declared, "will be promptly and fully explained."

Heath/Liquid Appoints Seventeen New Distributors

Victor California has been appointed distributors of Heath/Liquid flame cutting equipment. Victor California is a division of Victor Equipment Company, Denton, Texas.

Heath Engineering Company is headquartered in Ft. Collins, Colo. The company has made a variety of flame cutting equipment used by steel fabricators, and in numerous steel and aluminum cutting operations in industrial plants, since 1944. Liquid Carbonic Corporation, headquartered in Chicago, Ill., has the exclusive distribution rights for the Heath equipment.

The new distributors are located in 17 California cities: San Francisco, Berkeley, Santa Clara, Salinas, Santa Rosa, Woodland, Sacramento, Yuba City, Stockton, Fresno, El Monte, Los Angeles, San Diego, Ventura, Pacoima, Ontario, and Gardena.

Stolt-Nielsen Chartering Expands In New Areas, Changes Firm Name

Stolt-Nielsen Chartering, Inc. of Greenwich, Conn., has changed its name to Stolt-Nielsen Inc., it was announced by **Carroll N. Bjornson,** president. The change was prompted by the expanded activity of the firm into new areas, including ship management, offshore oil activity, tank terminals, and other marine-related activity not covered by the term "chartering."

Stolt-Nielsen Inc. continues to operate the 44 Stolt tankers engaged in the worldwide ocean transportation of chemicals, animal and vegetable oils, and other specialty liquid products in bulk. The firm recently took over an additional 12,000 square feet of space in One Greenwich Plaza to accommodate its expanding organization.

ABS Active In Classing All Types

The American Bureau of Shipping continues to be active in classing container carriers and barge-carrying vessels. Recently classed by ABS were the Sea-Land Resource, the Delta Sud, the President Pierce, and the President Johnson.

The Sea-Land Resource, owned by Reynolds Leasing Corporation and built by De Rotterdamsche Droogdok Mig. N.V., is a container carrier with a design speed of 33 knots, able to carry 896 thirty-five-foot containers and 200 seventy-foot containers. The Delta Sud, a barge and container carrier owned by Delta Steamship Lines, Inc. and built by Avondale Shipyards, Inc., is able to operate with both 74 sixty-one-foot cargo barges and 288 twenty-foot containers. The President Pierce and President Johnson are general cargo and container carriers which are sister ships owned by the United California Bank and built by Ingalls Shipbuilding Division of Litton Systems, Inc. Each of these two vessels is designed to operate with 736 twenty-foot containers, 58 twenty-foot containers and 196 forty-foot containers or other combinations thereof. All of these vessels are of United States registry.

In connection with the LASH program, ABS has recently classed 44 barges owned by the Waterman Steamship Corporation, which were built by the Equitable Equipment Company, Inc.

The bureau also continues to be active in the classification of offshore mobile drilling units, having recently classed three of these units —the Diamond M. Century, the Penrod 70, and the Key West. The Diamond M. Century, a column-stabilized unit owned by Banker's Trust Company and built by Alabama Drydock and Shipbuilding Company, is of United States registry. Penrod 70, owned by Penrod Drilling Company and built by Hijos De J. Barreras, S.A., is a column-stabilized unit of Panamanian registry. The Key West, a self-elevating unit owned by the Key International Drilling Company, Ltd. and built by Marathon LeTourneau Company, is of Liberian registry.

Construction activity in very large crude carriers maintains a strong pace, and the American Bureau of Shipping has recently classed five such vessels—the Amoco Singapore of 228,401 dwt, the Splendid Diamond of 220,895 dwt, the Chevron Feluy of 264,191 dwt, the Esso Osaka of 278,683 dwt, and the Conoco Canada at 272,426 dwt. All of these tankers are of Liberian registry.

OMS Ltd. Applies For Financial Aid To Build Nine Vessels

The Maritime Administration has received a Title XI application from OMS Ltd. Partnership No. I, 3701 Kirby, Houston, Texas, for aid in financing the construction of nine ocean / tug / supply vessels. Two of the vessels, estimated to cost $1.8 million each, would be 175 feet long, and the other six, estimated to cost $3.2 million each, would measure 210 feet in length. Eight of the vessels would be built by American Marine Corp.; negotiations are still under way for the ninth.

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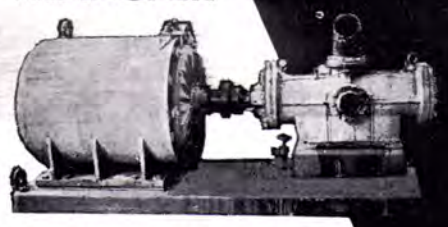

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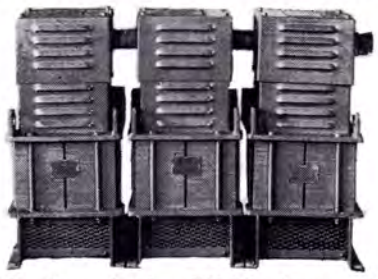
TRANSFORMERS



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A partial listing of our stock from EX-NAVY and MARITIME VESSELS

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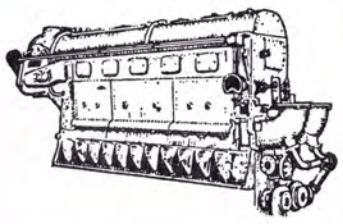
SEE OUR 2-PAGE SPREAD IN ALTERNATE ISSUES OF M.R.

MARINE DIESEL ENGINES

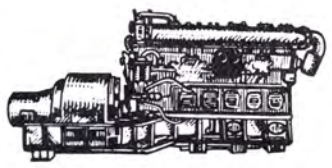


MATCHED PAIR . . . FAIRBANKS-MORSE Model 38D8-⅛ — 1 Port; 1 Starboard. Used condition, 1800 HP, 800 RPM, 2 cycle, 8½″ bore, 10″ stroke, Air Start.. Complete with Westinghouse Reduction Gears, 2.216:1 ratio —with Hydraulic Coupling.

MARINE DIESEL GENERATORS

4—COOPER - BESSEMER, Marine . . . Model FSN 6, 6 cylinders, 375 HP, 900 RPM with General Electric generators, 250 KW 440/3/60.

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.

2—1500 KW, GENERAL ELECTRIC Turbines: Type FN4-FN30, Steam 525 PSIG. 8145 RPM, with G.E. Generators, 1500 KW, 450/3/60.

4—1250 KW, GENERAL ELECTRIC Turbines: Type FSN, 525 PSI, 7938 RPM. Generators: 1250 KW, 450/3/60, 3600 RPM, Type ABT2.

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—WORTHINGTON, 225 PSI, 397°F, 6510 RPM, with Westinghouse Generator, 150 KW, 120 DC, 1250 Amperes.

1—GENERAL ELECTRIC, with G.E. Generator, 350 KW, 440/3/60.

1—GENERAL ELECTRIC, 525 PSI, with G.E. Generator, 250 KW, 440/3/60.

4—ALLIS-CHALMERS, 440 PSI, 740°F, with Allis-Chalmers Generators 300 KW, 240/240 DC.

ALLIS-CHALMERS, 440 PSI, 740°F, 300 KW, 120/240/DC.

6—WESTINGHOUSE, 200 PSI, with Westinghouse Generators, 60 KW, 120 D.C.

JOSHUA HENDY, 300 PSI, 550°F, with Westinghouse Generator, 300 KW, 120/240 DC.

WORTHINGTON, Form S4, 440 PSI, 740°F to a Westinghouse Generator, 250 KW, 440/3/60, and to a 90 KW, 120 DC.

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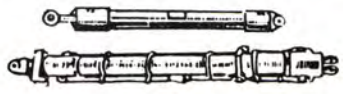

Bore	Overall Stroke	Rod Diameter	Retracted Length	Action
10″	12″	3.75″	45½″	double
10″	26″	3.75″	58½″	double
2″	8″	1½″	20″	double
2.5″	15″	1.12″	25½″	double
3″	8″	1.37″	15½″	double
6″	8Ft.	4″	144″	double

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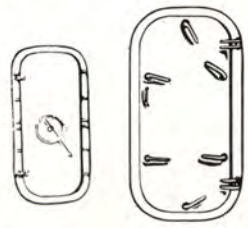

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26″x48″-4 Dogs—**$60.00 ea.**
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26″x66″-Q.A. Type—**$175.00 ea.**

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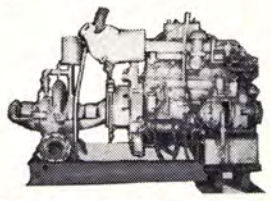
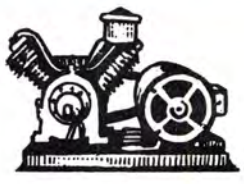


2—BUDA, Model 6-LD-468, Diesel Engines, 6 cylinders, 100 BHP, Marine, Gardner-Denver, centrifugal Pumps, Bronze, horizontally split case, 1000 GPM, 280′ head, 6″ suction and 5″ discharge.



AIR COMPRESSORS

1—GARDNER-DENVER, 150 CFM, 125 PSI, Class WB, Size 7x5¾x5, 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.

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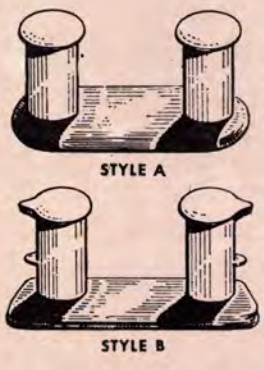
2—WORTHINGTON, 20 CFH, 3000 PSI, 4 stage, 585 RPM, with Worthington Steam Turbine, 47 HP, 5502 RPM.

DOUBLE BITS



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1⅛″ Size	2¼″ Size
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2 1/16″ Size	

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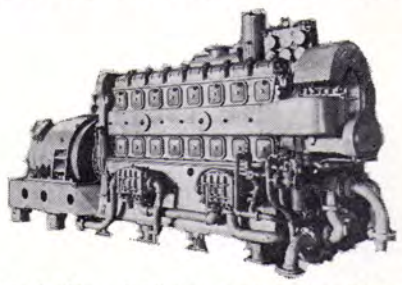
G.M. 8-268A
200 KW A.C.
DIESEL GENERATOR SETS



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

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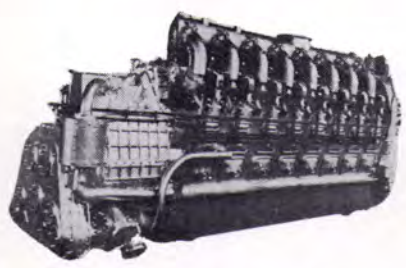
G.M. 16-278A
1700 H.P.
DIESEL ENGINES



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ROTARY DISPLACEMENT
DELAVAL IMO 8"
DEEP WELL PUMPS
suitable for oil or water
840 GPM at 50 PSI
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Pump RPM 1450. Equipped with right angle drive transmission suitable for any diesel or gas engine running at 1450 RPM. Right angle drive ratio 1:1. Suction lift flooded—50 HP required. Viscosity range SSU-130-500. These pumps are suitable and specially designed for submerged operation in oil or water. Pump case, inlet nozzle & thrust washer are bronze. Total hgt from center of drive shaft to base 9'9". Hgt from deck mounting plate to center of drive shaft 36½". From deck mounting plate to bottom suction 6'8½". Pump is self-lubricating. Suitable for oil barges & all deep well uses. Can be readily adapted for fire pump use. Further details on request.

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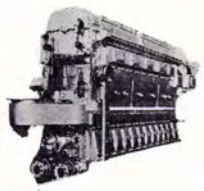
38D8-1/8
OP DIESEL



1800 HP @ 800 RPM—2-cycle—8½ x 10—air starting. Complete with operating gauge board. Very clean condition.

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CAPACITY: Each drum stows 1800' of 1¼" wire. Each drum independently 30,000 lbs. on 2nd layer at from 10 to 50 feet per minute. Both drums simultaneously 15,000 lbs. each. Drums equipped with clutch shift levers. 24" Winch heads for 8" circumference manila rope. Static load 52,000 lbs. applied at mid-length. Base 10' 6" wide with 2 outboard winch heads 20¼" each. Drum diameter 22½"—flange 50"—28" between flanges. Equipped with level wind spooling devices and compressor hand brake. MOTOR: 75 HP—under deck with horizontal drive through worm gear. Drip-proof—fully protected. Mfg by Allis-Chalmers—type EB-127-DC—compound wound—125/250 volts—254 amps—reversible—575/1150 RPM. CONTROLLER: Allis-Chalmers drum type—with 1 off position and 5 heave in positions and five payout conditions in opposite directions. Control cabinet also located below deck. Worm gear reduction 62T at 1½ CP worm wheel 31:1 reduction. Drum shaft beveled bull gear 61T. Drive shaft beveled pinion gear 14T—ratio 4.857:1.

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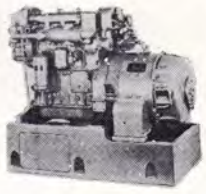
DIESEL GENERATOR SETS



30 KW GM 3-71 DIESEL SET

GENERATOR: Delco 30 KW—120 Volts DC—250 amps—1200 RPM—Type I-3563. ENGINE: GM 3-71—45 HP—electric starting—shock mounted. In Navy crate. New Navy rebuilt. **$4500**

60 KW GM 6-71 DELCO DIESEL SET

GM 6-71 engine with Delco 120 volt DC 500 amp generator with stab. shunt.

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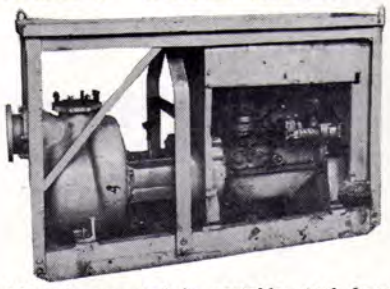
PORTABLE 6" CARVER SALVAGE PUMPS



Reconditioned—mounted in portable steel frame. 1750 RPM—1100 GPM @ 100' head; 1500 GPM @ 70' head; 1800 GPM @ 50' head; 2100 GPM @ 20' head. Leroi gas engine—model D-201P3—4 x 4—1750 RPM—hand crank—wt. 600 lbs. **$995**

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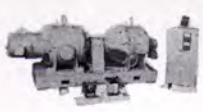
M.G. SETS

UNUSED—10 KW—120/1/60 M.G. SET



INPUT: Motor 25 HP — 120 VDC — 156 amps — 1800 RPM —flange-coupled to output generator.

OUTPUT: 10 KW generator — 120 volts 60 cycle single phase —108 amps — 0.80 PF — with direct-connected 125 volt 8 amp exciter. Motor starter by Cutler-Hammer. AC generator has voltmeter and ammeter. Bassler voltage regulator.

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Complete with motor, starter and pump
FOR FUEL OR LUBE OIL

DIESEL LUBE OIL: 225 GPM —viscosity 180-220 SSU @ 130°F. DIESEL OIL: 225 GPM —viscosity 45 SSU @ 100°F. MODELS: Lube Oil M-85-34-5-23BM-44; Fuel Oil M-85-35-5-8CA-13. SPECIFICATIONS: Bowl speed 17,000 RPM—1" oil inlet & outlet. 2 HP verticle GE motor—440/3/60/3400 — complete with starter. Plans available.

$1850

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DIESEL STARTING

Two stage—water cooled—single acting verticle type—10 CFM—600 lbs. Type 30—Class T. Ingersoll-Rand Compressor—4x1½ x3½ @ 630 RPM. Motor 7½ HP—440/3/60 — 1750 RPM — complete with starter—intercoolers and aftercoolers.

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FALK IN-LINE MARINE REVERSE REDUCTION GEAR

SUITABLE TO 1600 HP WITH MODIFICATIONS

700 HP @ 750/246 RPM—30" clutch drum—ratio 3.05:1—equal to new. Can be used with up to 1600 HP by modifying with larger clutch drums & tires.

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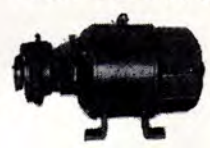
539-1900 (301) 355-5050

UNUSED ALLIS-CHALMERS FIRE & GENERAL SERVICE PUMPS



200 GPM — 180' head — 2½"x2"—bronze—flange connections. MOTOR: 20 HP—115 volts DC—2400 RPM—153 amps.

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore Md. 21202
539-1900 (301) 355-5050

BUYERS DIRECTORY

AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
BEARINGS
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wis. 53186
BERTH FACILITIES
Pouch Terminal Inc., Edgewater Street, Staten Island, N.Y. 10305
BOILERS
Babcock & Wilcox Co., 161 E. 42nd Street, New York, N.Y. 10017
Combustion Engineering, Inc., Windsor, Connecticut 06095
BOW THRUSTERS
Murray & Tregurtha, Inc., 2 Hancock St., Quincy, Mass. 02171
BUNKERING SERVICE
Gulf Oil Trading Co., 1290 Ave. of the Americas, N.Y., N.Y. 10019
CARGO HANDLING EQUIPMENT
A. L. Hansen Mfg. Co., 2155 No. Delaney, Gurnie, Illinois 60031
MacGregor International Organization, 49 Gray's Inn Road, London W.C.I., England
CLUTCHES, GEARS & BRAKES
Eaton Corporation, Industrial Drives Div., Airflex Plant, 9919 Clinton Rd., Cleveland, Ohio 44111
Wichita Clutch Co., Inc., Wichita Falls, Texas 76307
COATINGS—Protective
Ameron Corrosion Control Div., Brea, Calif. 92621
Carboline Co., 350 Hanley Industrial Court, St. Louis, Mo. 63144
The Farboil Company, 8200 Fischer Road, Baltimore, Md. 21222
International Paint Co., Inc., 21 West Street, New York, N.Y. 10006
Patterson-Sargent, P.O. Box 494, New Brunswick, N. J.
Philadelphia Resins Corp., 20 Commerce Dr., Montgomery, Pa. 18936
CONTAINERS—CONTAINER HANDLING SYSTEMS
Ameron Corrosion Control Div., Brea, Calif. 92621
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
CONTAINER LASHINGS & COMPONENTS
Washington Chain & Supply Co., P.O. Box 3645, Seattle, Wash. 98124
CONTROL SYSTEMS
Frederick Cowan & Co., Inc., 120 Terminal Drive, Plainview, L.I. New York 11803
Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
WABCO Fluid Power Division, 1953 Mercer Road, Lexington, Kentucky 40505
CORROSION CONTROL
Ameron Corrosion Control Div., Brea, Calif. 92621
Carboline Co., 350 Hanley Industrial Court, St. Louis, Mo. 63144
CRANES—HOISTS—DERRICKS—WHIRLEYS
AB Hagglund & Soner, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
CRANE LOAD INDICATORS
Trans-Sonics, Inc., P.O. Box 326, Lexington, Mass. 02173
DECK COVERS (METAL)
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Mechanical Marine Co., 900 Fairmount Ave., Elizabeth, N.J. 07027
DECK MACHINERY
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
A G. Weser, Seebeckwerft, 2850 Bremerhaven 1, Germany
DIESEL ACCESSORIES
A.G. Schoonmaker Co., Inc., P.O. Box 757, Sausalito, Calif. 94965
DIESEL ENGINES
Alco Engines Division, White Industrial Power, Inc., 100 Orchard St., Auburn, N.Y. 13021
Bruce GM Diesel, Inc., 180 Route #17 S. at Interstate 80, Lodi, N.J. 07644
Colt Industries Inc., Power Systems Div., Beloit, Wisc. 53511
De Laval Turbine Inc., Engine & Compressor Div., 550 85th Ave., Oakland, Calif. 94621
Electro-Motive Division General Motors, La Grange, Illinois 60525
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany.
H.O. Penn Machinery Co., Inc., 1561 Stewart Ave., Westbury, N.Y. 11590
Waukesha Motor Co., 1000 W. St. Paul Ave., Waukesha, Wis. 53186
DOCK BUILDERS
GHH Sterkrade Ferrostaal Overseas Corp., 17 Battery Place, New York, N.Y. 10004
DOORS—Watertight—Bulkhead
Overbeke-Kain Co., 20905 Aurora Rd., Cleveland, Ohio 44146
ELECTRICAL EQUIPMENT
AMP Special Industries, P.O. Box 1776, Paoli, Pa. 19301
Arnessen Electric Co., Inc., 335 Bond St., Brooklyn, N.Y.
ASEA Marine, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
Brown and Ross of New Jersey Incorporated, 370 Paterson Plank Road, Carlstadt, N.J. 07072
Merrin Electric, 162 Chambers St., New York, N.Y. 10007
Oceanic Electrical Mfg. Co., Inc., 159 Perry Street, N.Y. 10014
Thrige-Titan, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201
ELECTROPLATING
Sifco Metachemical Div/Sifco Industries, Inc., 5708 Schaaf Road, Independence, Ohio 44131
EVAPORATORS
Bethlehem Steel Corp., Shipbuilding, 25 B'way, N.Y., N.Y. 10004
Riley-Beaird, Inc., Maxim Evaporator Profit Center, P.O. Box 1115, Shreveport, Louisiana 71130
FAIRLEADS
Crosby Group, Box 3128, Tulsa, Okla. 74101
FENDERING SYSTEMS—Dock & Vessel
Hughes Bros., Inc., 17 Battery Place, New York, N.Y. 10004
Uniroyal, Inc., 1230 Avenue of the Americas, New York, N.Y. 10020
FITTINGS & HARDWARE
AMP Special Industries, P.O. Box 1776, Paoli, Pa. 19301
Esco Corporation, Wire Rope Rigging Div., 2141 N.W. 25th St., Portland, Oregon 97210
Robyon Backing Ring Co., 675 Garden St., Elizabeth, N.J. 07207
GANGWAYS
Rampmaster Inc., 1226 N.W. 23rd Ave., Fort Lauderdale, Fla. 33311
HULL CLEANING
Butterworth Systems, Inc., P.O. Box 9, Bayonne, N.J. 07002
HULL INSPECTION SYSTEMS
Hydro Products (A Dillingham Co.), P.O. Box 2528, San Diego, Calif. 92112
INSULATION—Marine
Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
LADDERS
Duo-Safety Ladder Co., 513 West 9th Ave., P.O. Box 497, Oshkosh, Wisc. 54901
LIGHTS—Emergency, Search & Navigation
Phoenix Products Co., Inc., 4751 North 27th St., Milwaukee, Wisc. 53209
Snelson Oilfield Lighting Co., P.O. Box 1284, Fort Worth, Texas 76101
LNG SHIP DESIGN AND LICENSING
PDM/GAZ Transport, 919 Third Ave., New York, N.Y. 10022
LNG TANKAGE
Gazocean U.S.A. Inc., 125 High St., Boston, Mass. 02110
LGA—Liquid Gas Anlagen Union GmbH, c/o Ferrostaal Overseas Corp., 17 Battery Place, New York, N.Y. 10004
Pittsburgh-Des Moines Steel Co., Neville Island, Pittsburgh, Pa. 15225
LININGS
Ameron Corrosion Control Div., Brea, Calif. 92621
Carboline Co., 350 Hanley Industrial Court, St. Louis, Mo. 63144
MARINE BLOCKS & RIGGING
Crosby Group, Box 3128, Tulsa, Okla. 74101
MARINE DRIVES—GEARS
Philadelphia Gear Corp., Schuylkill Expressway, King of Prussia, Pa. 19406
MARINE EQUIPMENT
Beaver Tool & Machine Co., 525 S.E. 29th St., Oklahoma City, Okla. 73109
Comet Marine Supply Corp., 157 Perry St., New York, N.Y. 10014
ITT Henze Service, P.O. Box 1745, Mobile, Ala. 36610
Kearfott Marine Products, 780 South 3rd Ave., Mt. Vernon, N.Y. 10550
Nicolai Joffe Corp., P.O. Box 2445, 445 Littlefield Ave., So. San Francisco, Calif. 94080
Merrin Electric, 162 Chambers St., New York, N.Y. 10007
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wis. 53186
MARINE INERTING SYSTEM
Smit Nymegen Corp. (Smit Ovens Nymegen), 400-1 Totten Pond Road, Waltham, Mass. 02154
MARINE INSURANCE
Adams & Porter, 1819 St. James Place, Houston, Texas 77027
Midland Insurance Co., One State St. Plaza, New York, N.Y. 10004
R.B. Jones Corp., 301 West 11th St., Kansas City, Mo. 64105
UK P&I Club (Bermuda): Thos. R. Miller & Son, Mercury House, Front St., Hamilton, Bermuda (P.O. Box 665)
MARINE PROPULSION
Combustion Engineering, Inc., Windsor, Connecticut 06095
Delaval Turbine Inc., Turbine Div., Trenton, N.J. 08602
Jacuzzi Bros., Inc., 11511 New Benton Highway, Little Rock, Ark. 72204
Murray & Tregurtha, Inc., 2 Hancock St., Quincy, Mass. 02171
Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014
Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
Turbo Power & Marine Systems, Subsidiary of United Aircraft Corp., 1690 New Britain Ave., Farmington, Conn. 06032
MARINE SURVEYORS
Schmahl and Schmahl, Inc., 1209 S.E. Third Ave., Fort Lauderdale, Fla. 33316
MARITIME FINANCING—Leasing
General Electric Credit Corp., 4 Corporate Drive, White Plains, N.Y. 10604
Qualpeco Services, Inc., 750 Third Ave., New York, N.Y. 10017
Rhode Island Hospital Trust National Bank, 15 Westminster Street, Providence, R.I. 02903
NAVAL ARCHITECTS AND MARINE ENGINEERS
American Standards Testing Bureau, Inc., 40 Water Street, New York, N.Y. 10004
Amirikian Engineering Co., 1401 Wilson Blvd., Arlington, Va. 22209
J. L. Bludworth, 608 No. Clear Creek Drive, Friendswood, Texas 77546
Breit Engrg. Inc., 441 Gravier St., New Orleans, La. 70130
James G. Bronson Associates, 166 Altamont Ave., Tarrytown, N.Y. 10591
Childs Engineering Corp., Box 333, Medfield, Mass. 02052
C.D.I. Marine Co., Suite 151, 5400 Diplomat Circle, Orlando, Fla. 32810
Coast Engineering Co., 711 W. 21st St., Norfolk, Va. 23517
Crandall Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, Mass. 02026
Francis B. Crocco, Inc., Box 1411, San Juan, Puerto Rico
C.R. Cushing & Co., Inc., One World Trade Center, New York, N.Y. 10048
Arthur D. Darden, Inc., 1040 International Trade Mart, New Orleans, La. 70130
Design Associates, Inc., 3308 Tulane Ave., New Orleans, La. 70119
Designers & Planners, Inc., 114 Fifth Ave., New York, N.Y. 10011
M. Mack Earle, 103 Mellor Ave., Baltimore, Md. 21228
Parker C. Emerson & Associates, 17935 Cardinal Drive, Lake Oswego, Oregon 97034
Christopher J. Foster, 14 Vanderventer Ave., Port Washington, N.Y. 11050
Friede and Goldman, Inc., 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
Morris Guralnick, Associates, Inc., 583 Market St., San Francisco, Calif. 94105
J. J. Henry Co., Inc., 90 West St., New York, 10006
Hydranautics, 6338 Lindmar Dr., P.O. Box 1068, Goleta, Calif. 93017
C.T. Ilariucci & Associates, Tourism Pier #3, San Juan, P.R. 00902
Jantzen Engineering Co., 15 Charles Plaza, Baltimore, Md. 21201
James S. Krogen, 2500 S. Dixie Hwy., Miami, Fla. 33133
Littleton Research and Engrg. Corp., 95 Russell St., Littleton, Mass. 01460
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
Marine Design Associates, P.O. Box 2674, Palm Beach, Florida
Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225
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
Nickum & Spaulding Associates, Inc., 71 Columbia St., Seattle, Wash. 98104
Ocean-Oil International Engrg. Corp., P.O. Box 6173, New Orleans, La. 70114
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida 33156
S.L. Petchul, Inc., 8-D So. New River Drive East, Ft. Lauderdale, Fla. 33301
Potter & McArthur, Inc., 50 Hunt Street, Watertown, Mass. 02172
M. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013 and 657 Mission St., San Francisco, Calif.
Seaworthy Engine Systems, Pond Road, Canton, Conn. 06019
George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007
Southern Engineering Associates, P.O. Box 748, Ocean Springs, Miss. 39564
T. W. Spaetgens, 156 West 8th Ave., Vancouver 10, Canada
R. A. Stearn, Inc., 100 Iowa St., Sturgeon Bay, Wisc. 54235
Richard R. Taubler, 50 Court St., Brooklyn, N.Y. 11201
H. M. Tiedemann & Co., Inc., 74 Trinity Pl., New York, N.Y. 10006
Tremayne, Jeffrey and Associates, Inc., 951 Government St., Suite 216, Mobile Ala. 36604
Whitman, Requardt & Associates, 1304 St. Paul St., Baltimore, Md. 21202
Xplo Corporation, 229 Fifth St., P.O. Box 492, Gretna, La. 70053
NAVIGATION & COMMUNICATIONS EQUIPMENT
American Hydromath Co., 55 Brixton Rd., Garden City, N.Y. 11530
Benmar Division, Computer Equipment Corp., 3000 W. Warner Avenue, Santa Ana, Calif. 92704
Communication Associates, Inc., 200 McKay Road, Huntington Station, N.Y. 11746
Edo Corporation, 13-10 111th Street, College Point, N.Y. 11356
Edo Western Corporation, 2645 South 2nd West, Salt Lake City, Utah 84115
Electro-Nav, Inc., 1201 Corbin St., Elizabeth Marine Terminal, Elizabeth, N.J. 07201
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
ITT Decca Marine, Inc., 386 Park Ave. South, New York, N.Y. 10016
ITT Mackay Marine, 2912 Wake Forest Road, Raleigh, N.C. 27611
Lorain Electronics Corp., 2307 Leavitt Road, Lorain, Ohio 44052
Magnavox Navigation Systems, 2829 Maricopa St., Torrance, Cal. 90503
Raytheon Marine Co., 676 Island Pond Road, Manchester, N.H. 03103
Raytheon Co., Submarine Signal Div., P.O. Box 360, Portsmouth, R.I. 02871

Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
Standard Communications Corp., 639 N. Marine Ave., Wilmington, Calif. 90744
Tracor, Inc., 6500 Tracor Lane, Austin, Texas 78721

OILS—Marine—Additives
Exxon Company, U.S.A., P.O. Box 2180, Houston, Texas 77001
Exxon International Company, 1251 Avenue of the Americas, New York, N.Y. 10020
Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002

PAINT—Marine—Protective Coatings
Ameron Corrosion Control Div., Brea, Calif. 92621
Carboline Co., 350 Hanley Industrial Court, St. Louis, Mo. 63144
International Paint Co., 21 West St., New York, N.Y. 10006
Patterson-Sargent, P.O. Box 494, New Brunswick, N. J.
Transocean Marine Paint Association, P.O. Box 456, Delftseplain 37, Rotterdam, Holland

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

PIPE—Cargo Oil
Kubota, Ltd., 22, Funade-cho 2-chome, Naniwa-Ku, Osaka, Japan

PLASTICS—Marine Applications
Ameron Corrosion Control Div., Brea, Calif. 92621
Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231
Philadelphia Resins Co., 20 Commerce Dr., Montgomeryville, Pa. 18936

PORTS
Port of Galveston, P.O. Box 328, Galveston, Texas
Jacksonville Port Authority, 2701 Tallyrand Ave., Jacksonville, Fla.

PROPELLERS: NEW AND RECONDITIONED
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Coolidge Propellers, 1601 Fairview Ave. East, Seattle, Wash. 98102
Escher Wyss Gmbh, P.O. Box 798, Ravensburg, Germany
Federal Propellers, 1501 Buchanan Ave. S.W., Grand Rapids, Mich. 49502

PUMPS
Coffin Turbo Pump, FMC Corp/Pump Division, 326 So. Dean St., Englewood, N.J. 07631
Colt Industries, Inc., Fairbanks Morse Pump & Electric Div., 3601 Kansas Ave., Kansas City, Kansas 66110
Crisafulli Pump Co., Box 1051, Glendive, Montana 59330
Delaval Turbine Inc., IMO Pump Division, P.O. Box 321, Trenton, N.J. 08602
Houttuin-Pompen N. V. Sophialaan 4, Utrecht, Holland
Jacuzzi Bros., Inc., 11511 New Benton Highway, Little Rock, Arkansas 72204
Johnston Pump Company, 1775 East Allen Ave., Glendora, Calif. 91740

REFRIGERATION—Refrigerant Valves
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Foster Refrigerator Corp., Mill & North Second Streets, Hudson, N.Y. 12534

REGENERATORS—Fuel Savings
Harrison Radiator Division, General Motors Corp., 200 Upper Mt. Road, Lockport, New York 14094

ROPE—Manila—Nylon—Hawsers—Wire
American Mfg. Co., Inc., Noble & West Sts., Brooklyn, N.Y. 11222
Columbian Rope Company, 309 Genesee Street, Auburn, N.Y. 13022
Du Pont Co., Room 31H1, Wilmington, Delaware 19898
Jackson Rope Corp., 9th & Oley, Reading, Pa. 19604
Wall Rope Works, Inc., Beverly, N. J. 08010

RUBBER BEARINGS
Johnson Rubber Co. (Marine Div.), 111 Vine Street, Middlefield, Ohio 44062

RUDDER ANGLE INDICATORS
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.

SANDBLASTING EQUIPMENT
Pauli & Griffin Co., 285 Lawrence Avenue, South San Farncisco, Calif. 94080

SCAFFOLDING EQUIPMENT
Patent Scaffolding Co., 2125 Center Ave., Fort Lee, N.J. 07024
Western Gear Corp./Sky Climber Inc., 17311 S. Main St., Gardena, Calif. 90248

SEALS
Syntron Co., Parts & Material Handling Div., FMC Corp., Homer City, Pa. 15748

SEAWATER TREATMENT
Engelhard Industries, 430 Mountain Avenue, Murray Hill, N.J. 07974

SHAFT REVOLUTION INDICATOR EQUIP.
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913

SHIPBREAKING—Salvage
American Ship Dismantlers, Inc., Division of Schnitzer Industries, 3300 N.W. Yeon Avenue, Portland, Ore. 97210
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

SHIP BROKERS
Agemar, P.O. Box 1465, Maracaibo, Venezuela
Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
Mowbray's Tug and Barge Sales Corp., 21 West St., N.Y., N.Y. 10006
Oaksmith Boat Sales, Inc., Fisherman's Terminal, Seattle, Wash. 98119

SHIPBUILDING STEEL
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., 25 Broadway, New York, N.Y. 10004

SHIPBUILDING—Repairs, Maintenance, Drydocking
Albina Engine & Machine Works, 2100 N. Albina Ave., Portland, Oregon 97208
Astilleros Espanoles, S.A. Zurbano, 70, Madrid 10, Spain
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Beliard, Crighton & Cie, P.O. Box 2074, Route des Docks, 59, Dunkirk, France
Beliard Murdoch S. A., Kattendijkdok Westkaai 21, Antwerp, Belgium
Bell Aerospace Company, Div. of Textron, P.O. Box 1, Buffalo, N.Y. 14240
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
Bludworth Shipyard, Inc., Box 5426, Cypress St., Brady Island, Houston, Texas 77012
Carrington Slipways Pty. Ltd., Tomago, N.S.W. 2322, Australia
C.M.R. (Compagnie Marseillaise de Reparations), 274 Chemin du Littoral, 13 Marseille (15E) France
Conrad Industries, P.O. Box 790, Morgan City, La. 70380
Curacao Drydock, Inc., P.O. Box 153, Willemstad, Curacao, N.A.
Dillingham Shipyard, Pier 41, P.O. Box 3288, Honolulu, Hawaii 96801
Dravo Corporation, Neville Island, Pittsburgh 25, Pa.
Empresa Nacional Bazon, 65 Castellana, Madrid 1, Spain
Equipment Systems, Inc., A Microdot Co., P.O. Box 95, Port Deposit, Md. 21904
Equitable Equipment Co., Inc., P.O. Box 8001, New Orleans, La. 70122
Fincantieri Yard, Via Sardegna, 40, Rome, Italy
General Dynamics, Electric Boat Division, 99M Eastern Point Road, Groton, Conn. 06340
General Dynamics, Quincy Division, Quincy, Mass. 02169
Halter Marine Services, Inc., Route 6, Box 287H, New Orleans, La. 70126
Havre de Grace, Havre de Grace, Md.
Hillman Barge & Construction Co., Grant Bldg., Pittsburgh 19, Pa.
Hitachi Shipbuilding & Engrg. Co., Ltd., 47 Edobori 1-Chome, Nishi-Ku, Osaka, Japan
Hongkong United Dockyards Ltd., Kowloon Docks, Hong Kong
Jeffboat, Inc., Jeffersonville, Ind. 47130
Kawasaki Dockyard Co., 8 Kaigon-dori, Ikuta-ku, Kobe, Japan
Kelso Marine, Inc., P.O. Box 268, Galveston, Texas 77550
Keppel Shipyard (Private) Ltd., P.O. Box 2169, Singapore
Kockums Mekaniska Verkstads AB, Malmo 1, Sweden
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
Marathon LeTourneau Offshore Pte., Ltd., P.O. Box 83, Taman Jurong Post Office, Singapore 22, Singapore
Marathon Shipbuilding Company, P.O. Box 870, Vicksburg, Miss. 39180
Marathon Shipbuilding Company (U.K.) Ltd., Clydebank Bunbartonshire, G81-1YB, Scotland
Marine & Rail Equipment Division/FMC Corp., 4700 N.W. Front Ave., Portland, Oregon 97208
Matton Shipyard Co., Inc., P.O. Box 428, Cohoes, New York 12047
Mercantile Marine Engineering & Graving Docks Co., N.V., Antwerp, Belgium
Mitsui Shipbuilding & Engrg. Co. Ltd., 6-4, Tsukiji 5-chome, Chuo-ku, Tokyo, Japan
Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655
Murray & Stewart (Marine) (Pty) Ltd., Ocean Road, Table Bay Harbour, P.O. Box 4854, Cape Town, South Africa
National Steel & Shipbuilding Corp., San Diego, Calif. 92112
Newport Ship Yard, Inc., 379 Thames St., Newport, R.I. 02840.
Northwest Marine Iron Works., P.O. Box 3109, Swan Island, Portland, Oregon 97208
Odense Steel Shipyard Ltd., P.O. Box 176, DK-5100 Odense, Denmark
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
St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111
Sasebo Heavy Industries Co., Ltd., New Ohtemachi Bldg., Chiyoda-ku, Tokyo, Japan
Savannah Machine & Shipyard Co., P.O. Box 787, Savannah, Ga. 31402
Sembawang Shipyard (Pte) Ltd., P.O. Box 3, Sembawang, P.O. Singapore, 27
Service Machine & Shipbuilding Corp., Box 1578, Morgan City, La. 70380
Slocum Iron Works, Inc., P.O. Box 2506, 1752 Telegraph Road, Mobile, Ala. 36601
Sumitomo Shipbuilding & Machy. Co., Ltd. 2-1 Ohtemachi 2-chome, Chiyoda-ku, Tokyo, Japan
Terrin Shipyards, Societe Provencale des Ateliers Terrin, 287, Chemin DeLa Madrague, 13345 Marseille—Cedex 3, France
Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
Tracor/Mas, Inc., P.O. Box 13107, Port Everglades, Fla. 33316
Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087
Vancouver Shipyards Co., Ltd., 50 Pemberton Ave., North Vancouver, B. C., Canada

SHIP MODEL BASIN
Hydronautics, Incorporated, Laurel, Maryland 20810

SHIP MODELS
Yankee Shipwrights, P.O. Box 35251, Minneapolis, Minn. 55435

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

SHOCK CORD
Wm. B. Bliss, Jr. & Co., Inc., 381 Park Avenue So., New York, N.Y. 10016

STEAM GENERATING EQUIPMENT
Babcock & Wilcox Co., 161 East 42nd Street, New York, N.Y. 10017
Combustion Engineering, Inc., Windsor, Connecticut 06095

STEERING SYSTEMS
Wm. E. Hough Co., 1125 P N.W. 45th St.. Seattle, Wash. 98107

SWITCHBOARDS
Hose McCann Telephone Co., Inc., 524 West 23 St., N.Y., N.Y. 10011

TOWING—Vessel Chartering, Lighterage, Salvage, etc.
Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002
Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202
Henry Gillen's Sons Lighterage, West End Ave., Oyster Bay, N.Y. 11771
James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004
McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
McDonough Marine Service, P.O. Box 26206, New Orleans, La.
Moran Towing & Transportation Co., Inc., One World Trade Center, Suite 5335, New York, N.Y. 10048
Puerto Rico Lighterage Co., P.O. Box 1072, San Juan, P.R. 00902
Suderman & Young Towing Co., 329 World Trade Center, Houston, Texas 77002
Turecamo Coastal and Harbor Towing Corp., 1752 Shore Parkway, Brooklyn, N.Y. 11214

VALVES AND FITTINGS—Hydraulic—Safety Flanges
Dover Corp. / Norris Division, P.O. Box 1739, Tulsa, Okla. 74101.
Fabri-Valve Co., 2100 N. Albina Ave., Portland, Oregon 97208
Hubeva Marine Plastics-Lining, 435 Hamilton Ave., Brooklyn, N.Y. 11231
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Mechanical Marine Co., 900 Fairmount Ave., Elizabeth, N.J. 07027

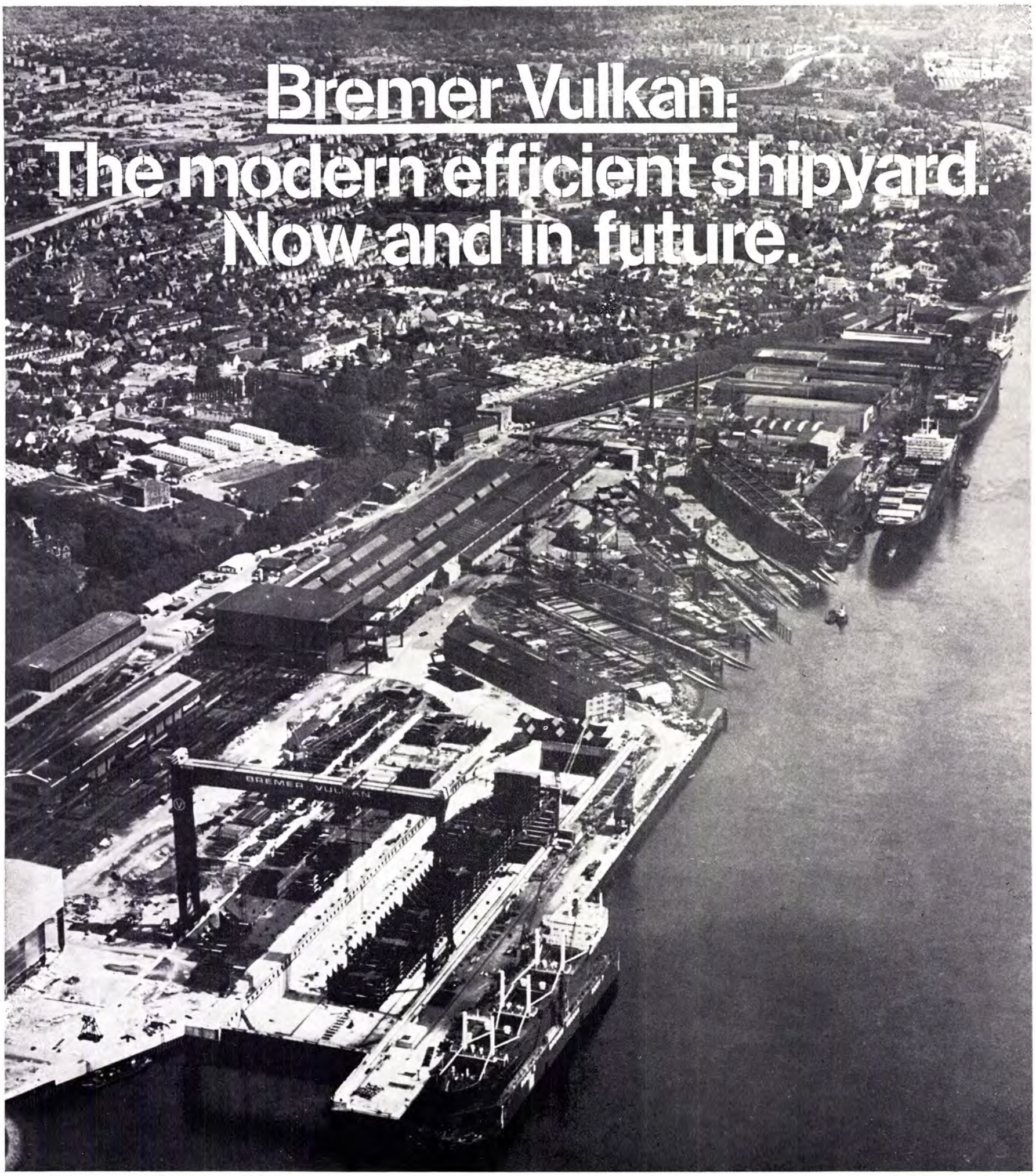
WATER POLLUTION CONTROL
Colt Industries, Water & Waste Management Operation, Beloit, Wisc. 53511
Keene Corporation, Fluid Handling Div., Cookeville, Tenn. 38501
Koehler-Dayton, Inc., P.O. Box 309, New Britain, Conn. 06050

WEATHER ROUTING
Weather Routing Inc., 1415 Boston Post Road, Larchmont, N.Y. 10583

WELDING EQUIPMENT
Unitor Ships Service, Sorligaten 8, P.O. Box 2814 K, Oslo 5, Norway

WIRE ROPE
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., Bethlehem, Pa. 18016

ZINC
Smith & McCrorken, 153 Franklin St., New York, N.Y. 10013



BREMER VULKAN
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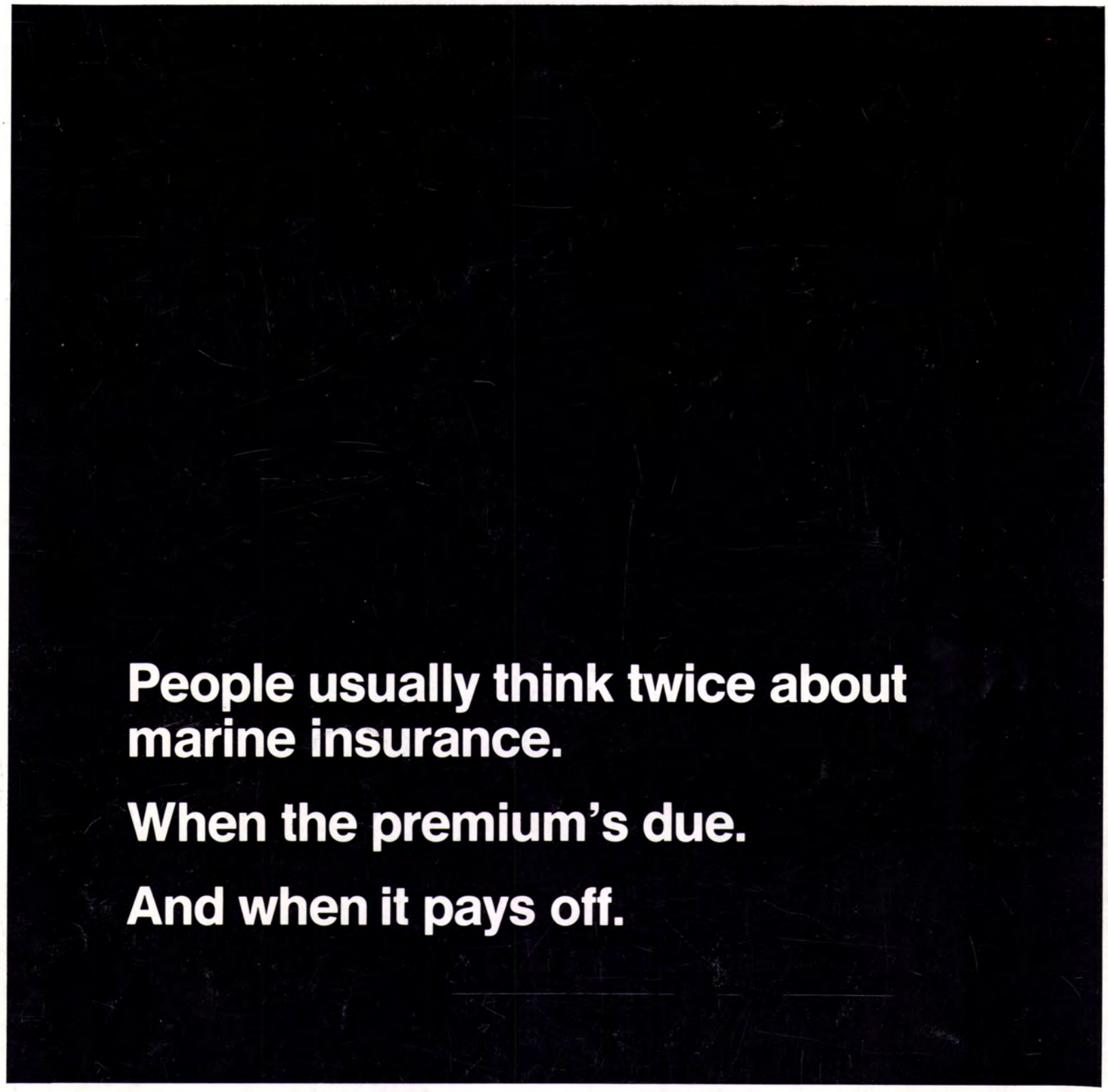

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