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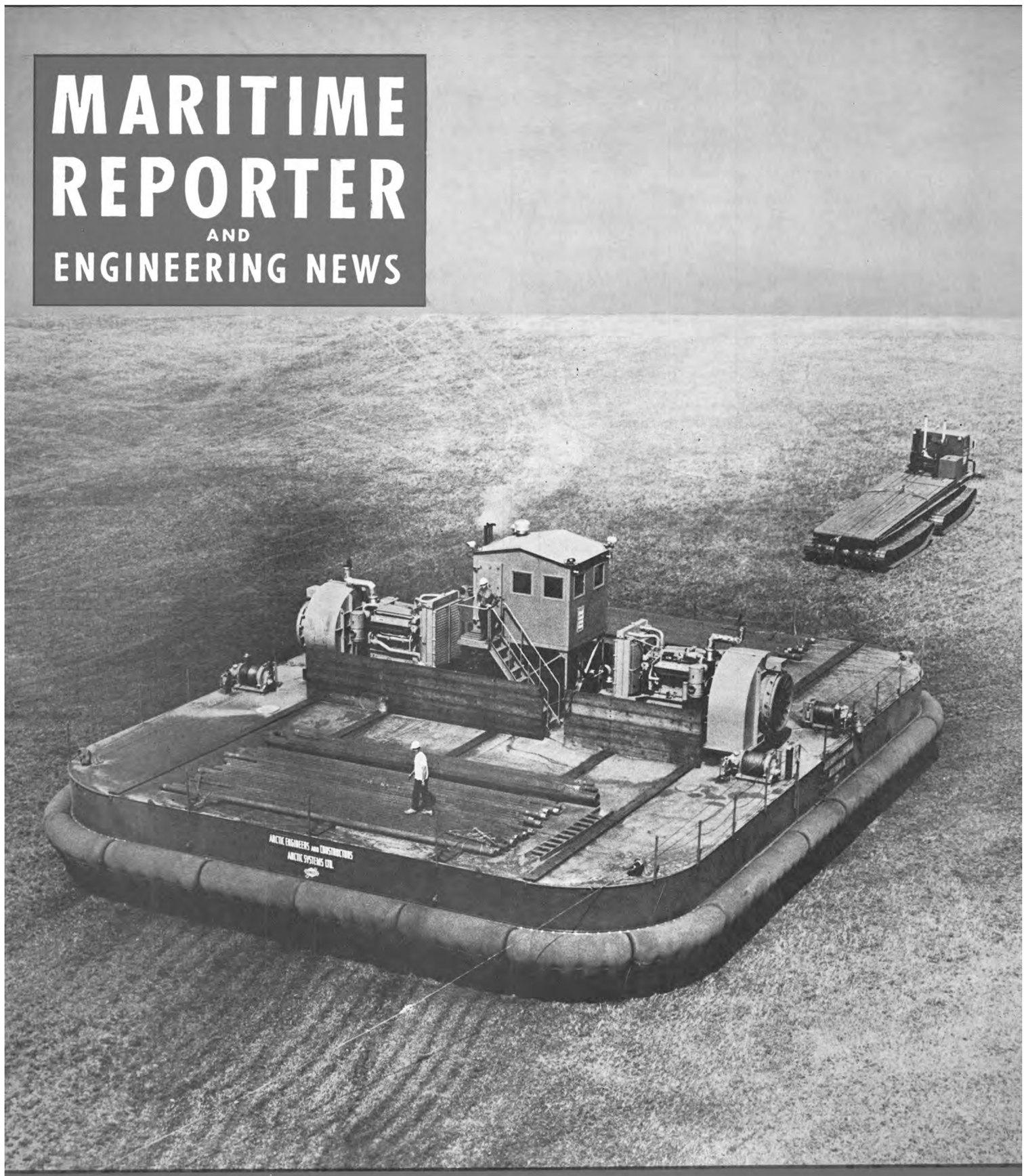

Heaviest Air Cushion Vehicle Ever Constructed Travels Over Land, Offshore Ice And Open Water For Use In Year-Round Arctic Oil Exploration

(SEE PAGE 7)

SNAME Spring Meeting

(SEE PAGE 10)

JULY 15, 1971

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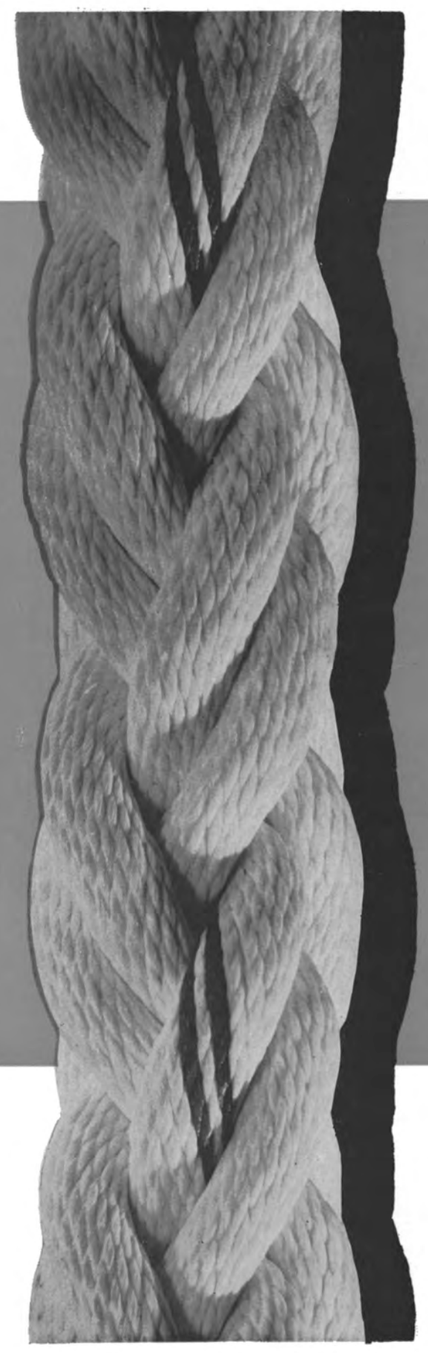

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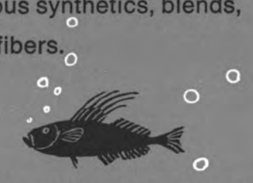

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Esso Increases Order To Six 250,000-Dwt Tankers From Weser

A contract has been signed between Esso Tankers, Inc., an affiliate of Standard Oil Company (New Jersey), and A.G. Weser Shipyard for the construction of a 250,000-dwt tanker. The tanker will be built at the A.G. Weser Shipyard in Bremen, Germany, for delivery early in 1975.

The vessel's characteristics are: length, about 1,141 feet; breadth, 170 feet; draft, 65 feet 5 inches, and the operating speed will be 16 knots. The ship will be propelled by a 31,550-shp steam turbine and will be used in Esso's fleet in international tanker service. It is the sixth vessel in the 250,000-dwt class now being built for Esso Tankers at the Weser yard in Bremen.

Edison Steamship Asks For Title XI Insurance On 26,200-Dwt Vessel

Application to the Maritime Administration for Title XI mortgage and loan insurance in connection with the construction of one self-unloading bulk carrier for operation on the Great Lakes has been made by Edison Steamship Co., a subsidiary of American Steamship Co., Buffalo, N.Y. The American Ship Building Co., Cleveland, Ohio, was recently awarded the contract to build the 26,200-dwt, 680-foot vessel.

Levingston To Build Tug And Barge Unit For Gulfcoast Transit

Levingston Shipbuilding Co., Orange, Texas, will build an oceangoing tug and barge unit for Gulfcoast Transit Co., Tampa, Fla.

The barge, measuring 540 feet by 85 feet by 45 feet, will be constructed at the Orange yard. Gulfport Shipbuilding Corp., Port Arthur, Texas, a subsidiary of Levingston, will build the tug.

Towboat Mortgage For Wisconsin Barge Lines Approved In Principle

An application filed by Wisconsin Barge Lines, Cassville, Wisc., for Title XI mortgage and loan insurance to aid in the construction of a river towboat has been approved in principle by the Maritime Administration.

St. Louis Ship, Division of Pott Industries, Inc., will build the 166-foot vessel which is estimated to cost $1.8 million. The amount of the mortgage is calculated at $1.3 million.

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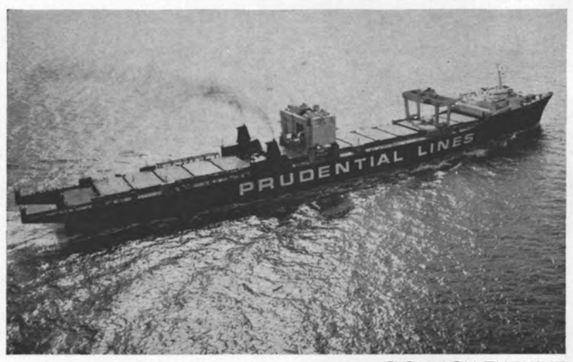

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Large, New Air Cushion Transporter To Spur Year-Round Arctic Exploration

ACT-100 is an all-steel barge-type hull with a flexible containment skirt around its perimeter. Here air-lifted, the hull rises four feet off the ground.

The oil industry's struggle to conquer the Arctic got a big lift recently when a unique platform raised its 250 gross tons off the ground on a cushion of air and was towed over rolling terrain at Edmonton, Alberta, Canada.

This was the first public demonstration of the heaviest air cushion vehicle ever built. The unit, known as the ACT-100, will serve year-round as an Arctic transporter, hauling 100-ton payloads across tundra, muskeg or marsh, without unduly disturbing delicate terrain. It will also traverse firm offshore ice and open water.

The unit's developers, Arctic Engineers and Constructors of Houston and its affiliate company, Arctic Systems Ltd. of Calgary, said the transporter will spur Arctic exploration, which has been severely hampered because conventional land transportation is generally limited to wintertime. The ACT-100 can traverse water, firm ice or any relatively level terrain, permitting year-round operation.

Development and testing of the air cushion transporter is funded jointly by Sun Oil Company, the Canadian Government, Arctic Systems Ltd., and Arctic Engineers and Constructors.

Arctic Engineers and Constructors is a joint venture of Global Marine Inc., offshore drilling and natural resources company; and Raymond International Inc., worldwide integrated engineering, manufacturing and heavy construction firm.

Sun Oil Company, which has an active Arctic exploration program, sees the air cushion system as a way of drilling offshore wells while surrounded by Arctic ice, a procedure not previously attempted. After further testing of the 100-ton capacity transporter, Sun expects to support development of subsequent phases of the system. These include construction of a much larger unit that incorporates a complete self-contained drilling system, with ice-melting capability that will allow the unit to achieve and hold position while drilling, despite gradual movement of the ice layer.

"We are very pleased about the results of these tests of the transporter," said **O.D. Blankenship,** general manager of Arctic Engineers and Constructors.

Mr. **Blankenship** also noted this is the first time air cushion technology has been applied to a unit of this weight. Previously, the heaviest air cushion vehicles were 180-ton ferries, which currently ply the English Channel.

"This type of transporter is unique, however, because it is not self-propelled, thereby eliminating the most expensive and sophisticated portions of conventional air cushion vehicles," said Mr. **Blankenship.** He pointed out that it does not require an aircraft-type hull or highly trained personnel for operation and maintenance. In addition, all mechanical equipment on the unit is standard oil field machinery, thoroughly proved in Arctic operation.

The 100-ton capacity unit is an all-steel barge-type hull with a flexible air containment skirt around its perimeter. Mounted on the deck is a large air supply system incorporating two 85,000-cfm fans. This system forces air under the hull, inflates the skirt and lifts the unit. Because the skirt forms a partial seal with the ground, the vehicle floats on a cushion of air.

The 57-foot by 75-foot hull is 6½-feet high. When air-lifted, the hull rides about four feet off the ground, allowing it to pass over rocks, ridges and other obstacles. The skirt of rubber-coated nylon is segmented to flow around obstacles so that air pressure will always be maintained.

"The transporter is designed for use on relatively level terrain, and land-fast ice areas such as offshore the northern Alaskan coast, the Mackenzie River Delta and areas around the Canadian Arctic islands," Mr. **Blankenship** said.

He said discussions are under way with several prospective customers for use of the unit beginning later this year. The transporter was fabricated in three sections to facilitate its disassembly, barge shipment on the Mackenzie River to the Arctic, and final reassembly.

The air cushion transporter has many applications, according to its developers, because its large deck can carry a variety of supplies and mount a wide range of drilling and construction equipment. Arctic Engineers and Constructors sees the unit also serving as a habitat for a crew of 60 men, a construction work platform, or oil field service and maintenance equipment carrier. It can move equipment and structures while fully assembled, eliminating the need for time-consuming assembly and disassembly at the site.

Skirt design was provided by Air Cushion Equipment Ltd., Southampton, England, who have had extensive experience in the development of air cushion vehicles. The air cushion transporter was fabricated by Dominion Bridge Co. Ltd. in Edmonton, Alberta, Canada.

Canadian Government support for the program is handled through the Program for the Advancement of Industrial Technology (PAIT) under the Department of Industry, Trade and Commerce.

Arctic exploration activities for Sun Oil Company are handled by the company's Dallas-based Key Areas Region, managed by **Fred E. Buchanon.**

Sun Shipbuilding Tanker Finance Plan

The Sun Shipbuilding and Dry Dock Co. announced a plan to offer $35.6 million United States Government insured merchant marine bonds for the purpose of paying Sun Shipbuilding for a part of the purchase price of two 80,000-dwt tankers now being constructed by Sun. The offering, being issued through an underwriting group managed by the First Boston Corp., consists of two series of bonds of $17.8 million each, with payment of principal and interest insured by the Federal Government.

The bonds will be issued by the 652 Leasing Co. for the vessel Sohio Intrepid and by the 653 Leasing Co. for the Sohio Resolute. Both leasing companies are wholly-owned subsidiaries of Sun Shipbuilding. The vessels are scheduled for delivery later this year and will be owned by the leasing companies, which will charter them to BP Oil Corp.

ANOTHER LASH CONTRACT: The second $80-plus-million contract for three U.S.-flag LASH ships in a three-week period, and the second contract under the Merchant Marine Act of 1970, was signed recently in the U.S. Maritime Administration offices in Washington, D.C. (see Maritime Reporter/Engineering News issue of July 1, 1971). The ships, designed by Friede & Goldman, Inc., naval architects of New Orleans, La., will be built by Avondale Shipyards at New Orleans for Waterman Steamship Corporation, with delivery between December 1973, and May 1974. The new contract increased Avondale Shipyards' total LASH ship orders to 17, all that have been built or ordered in the United States. Principals at the $84-million contract signing shown above are (seated, from left) **Edward P. Walsh,** Waterman president; **A.E. Gibson,** Assistant Secretary of Commerce for Maritime Affairs, and **Henry Zac Carter,** president of Avondale Shipyards. Standing (from left) are **Fred Melius Jr.,** president of United States Freight, Waterman's parent company; **G. Russell Moir,** U.S. Freight chairman, and **Jerome L. Goldman,** president of LASH Systems, Inc. and inventor of LASH.

Todd President Foresees Return Of U.S. Seapower

A new era of American seapower is in prospect as the Government recognizes the necessity to revitalize United States naval and merchant marine strength, **J.T. Gilbride,** president of Todd Shipyards Corporation, told shareholders on June 16 at the company's 55th annual meeting held at the Chase Manhattan Bank building, New York, N.Y.

"I feel there is a growing commitment both within and without the halls of Congress to build and maintain a Navy and merchant marine that will further the United States' needs."

Mr. **Gilbride,** who is a member of President **Nixon's** Commission on American Shipbuilding, based his "optimism for the long term" on the fact that, "the Nixon doctrine calls for less United States presence on the ground in foreign countries, while it will continue to support our international commitments. This seeming paradox admits to few solutions. This can only be interpreted to mean that a new era of American seapower is in prospect."

"Otherwise," Mr. **Gilbride** said, "the U.S. might well be forced to withdraw into neoisolationism, a posture unacceptable to most leaders and citizens of our Republic, if the Republic is to survive as a world power."

J.T. Gilbride

The Todd executive also reported that several orders had been received since the end of the fiscal year, including a $4-million contract by the Brooklyn Division to construct deckhouses for two 225,000-ton supertankers being built by Seatrain Lines, Inc., in the old Brooklyn Navy Yard, and a contract for $18 million for two 440-foot double-ended ferries to be built in the Seattle Division for the state of Washington. He also announced the receipt of a letter of intent, worth approximately $28 million, for the conversion of three additional Mariner type vessels to containerships for American President Lines and one for American Mail Line, work to be done at both Seattle and Los Angeles.

Mr. **Gilbride, John D. Reilly Jr.,** vice president, and **William B. Rand,** consultant, were all reelected to three-year terms as directors.

Kuwait Global Tankers New Oil Tanker Firm To Open Five Offices

The formation of a new international oil tanker firm, with headquarters in Kuwait, has been announced. Named Kuwait Global Tankers, the firm intends to acquire a fleet of tankers in the 100,000 ton and above class. **Elmo E. Ferrari** of San Francisco is the chief executive officer of the firm.

The new oil tanker company is 51 percent owned by members of the ruling Al Sabah family of Kuwait, with Sheikh **Mishal Al Sabah** as chairman of the board. Besides its office in Kuwait, the firm will have a principal office in San Francisco and additional offices in New York, London and Japan.

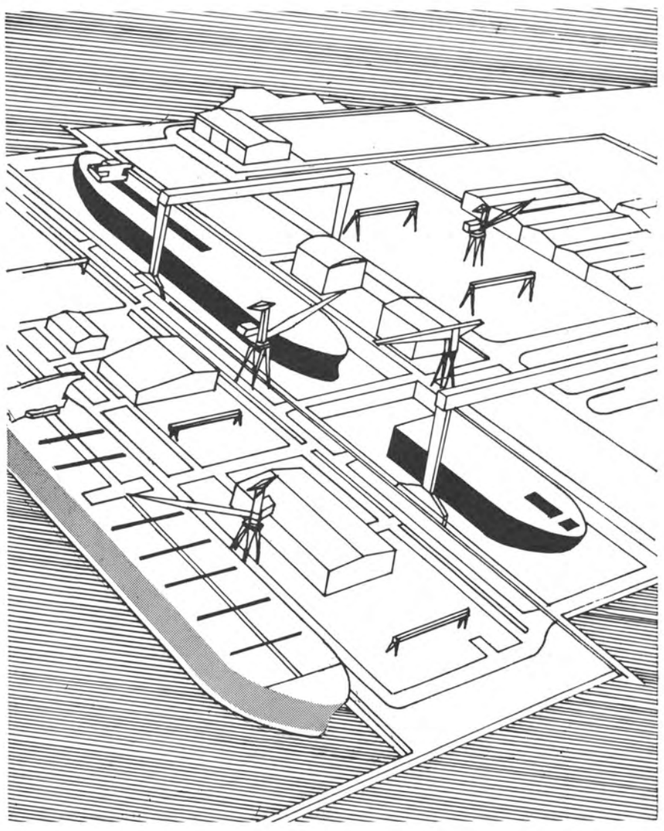
Pacific Far East Line To New Quarters

Pacific Far East Line, cargo and passenger steamship line, has moved into new company quarters.

PFEL's new address is: Pacific Far East Line, Inc., One Embarcadero Center, San Francisco, Calif. 94111.

Pacific Far East Line will occupy the entire 30th and 31st floors of One Embarcadero Center, a 45-story building bounded by Sacramento Street on the south, Battery Street on the west, Clay Street north, and Front Street on the east.

SUMITOMO'S 500,000 dwt dock ready for service late this year



Work is proceeding rapidly on Sumitomo's DUAL ENTRANCE SYSTEM DOCK now being built at Oppama, on the shores of Tokyo Bay. The dock will be in service by December and the keel of the first ship will be laid in January 1972.

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Oceanics Hawaii

Outstanding Technical Papers And International Vacation Resort Combine To Make This Meeting Memorable

Taking an active part in the 1971 Spring Meeting of The Society of Naval Architects and Marine Engineers were, left to right: **Ian M. Smith,** chairman of Spring Meeting steering committee; author **E. Allmendinger,** University of New Hampshire; author **Manley St. Denis,** University of Hawaii and chairman of the papers committee; **Daniel D. Strohmeier,** president of the Society and presiding officer at the meeting; Capt. **Kenneth E. Wilson,** USN, Pearl Harbor Naval Shipyard and Hawaii Section chairman; presiding officer **John P. Comstock,** and authors **M. Ochi** and **R.M. Vuolo,** Naval Ship Research and Development Center, Washington, D.C.

The Hawaii Section extended its Aloha and cordial hospitality to the members of The Society of Naval Architects and Marine Engineers at the 1971 Spring Meeting which was held at the Princess Kaiulani Hotel, Honolulu, Hawaii. The Hawaii Section selected as the theme of the meeting "Oceanics Hawaii."

The interesting technical program was based on ocean research. The complete abstracts of the technical papers appeared in the May 1, 1971 issue of Maritime Reporter/Engineering News.

In addition to the technical sessions, which occupied one full day and the mornings of the second and third days, there was a technical field trip. This feature of the program was a trip to the Oceanics Institute and a view of a live demonstration of their "Man in the Sea" project and other technical aspects of modern marine experiments being conducted in Hawaii. The ladies joined in with the men on this trip and toured the adjacent Sea Life Park.

As was to be expected of a meeting in this locale, the sightseeing tours and social activities were as important as the technical sessions. On the evening prior to the start of the formal meetings, the registrants and their ladies gathered in the Robert Louis Stevenson Room of the Princess Kaiulani Hotel for a get acquainted "no host" Early Bird Aloha Reception.

On the first day of the meetings, a luncheon was held for the registrants in the Cleghorn Room of the hotel. Dr. **John P. Craven,** dean of marine programs at the University of Hawaii and the State of Hawaii's executive director for marine affairs, gave a very interesting talk entitled "The Naval Architect and the Design of Cities on the Sea."

Daniel D. Strohmeier, president of The Society of Naval Architects and Marine Engineers, gave an informal report on the Society at the opening of the technical program.

Climaxing the first day activities was the president's reception, hosted by **Daniel D. Strohmeier,** president of The Society of Naval Architects and Marine Engineers.

The closing event of the 1971 Spring Meeting was a traditional Hawaiian Luau (banquet). It was held on the terrace overlooking Waikiki beach at the Royal Hawaiian Hotel. This event was most enjoyable and, as the sun sets over Waikiki, a majestic finale for the meetings.

The Hawaii Section was a gracious host and had arranged for many sightseeing trips and other activities for both the registrants and their ladies. The Honolulu sightseeing trips included a Polynesian Cultural Center tour, a City/Mount Tantalus tour, a twilight dinner sail on a catamaran, and a cruise around Pearl Harbor.

Organizers of the Annual Spring Meeting pictured above at the Early Bird Reception, left to right: **Charles Weidknecht,** McGuire Enterprizes; **Miss Marilyn Monk,** tour coordinator; **Robert G. Mende,** secretary of the Society; **Mrs. Mende, Mrs. Smith,** and **Ian M. Smith,** chairman of the Spring Meeting steering committee.

The Section also arranged for deep-sea fishing charters, golfing, glass-bottom-boat cruises, night-club tours and tea-house parties. Trips to the neighboring islands were arranged so that those attending could visit the islands of Kauai, Maui, and Hawaii after the meetings were completed. Many of those attending the meetings took advantage of these special post-meeting trips which took from one to five days.

While the members were busy attending the technical meetings on the first day, the ladies took a bus tour for a delightful morning at Paradise Park, a lush tropical bird aviary unique to the Islands. This was followed by a visit to Manoa Valley, once the playground of the Aliis (Hawaiian royalty). Interspersed in this trip was a lunch in the Polynesian Dining Room. During the luncheon there was a fashion show of Hawaiian and Polynesian attire.

As an added bonus to the Spring Meeting, the Hawaii Section had arranged an "Orient Shipbuilding Tour" which members could take. It was planned to follow the Spring Meeting and consisted of a 10-day tour of Japan. It emphasized comprehensive inspection trips to Ishikawajima and Mitsubishi shipyards in Yokohama and Mitsubishi and Kawasaki shipyards in Kobe. Included in this trip was an exceptional sightseeing schedule.

The Hawaii Section and its steering committee for the 1971 Spring Meeting did a splendid job planning this meeting. **Ian M. Smith** served as chairman of the steering committee. Assisting him were: papers committee—**Manley St. Denis,** chairman, and **Guy W. Slaughter**; finance committee—**Frederick C. Munchmeyer,** chairman, and **Sueo Hayashida**; technical sessions committee—**E. Alvey Wright**; hotel arrangements committee—**Ken Yee**; budget committee—**Roy W. Aherns** and **Michael D. Farmer**; transportation and field trips committee—**J. Grant O'Donnell**; social committee—**Theodore M. Otero**; publicity committee—**Dale . T Trenhaile**; printing and publications committee—**Harry C. Lewis**; liaison committee—**Hugh W. Kaiser**; registration committee—**Clinton W. Kreitner,** and the "at large" committee—**Herman Hastrup.**

Dr. **John P. Craven,** dean of marine programs at the University of Hawaii and Hawaii's executive director for marine affairs, spoke at the luncheon on the first day of the meetings.

TECHNICAL PAPERS

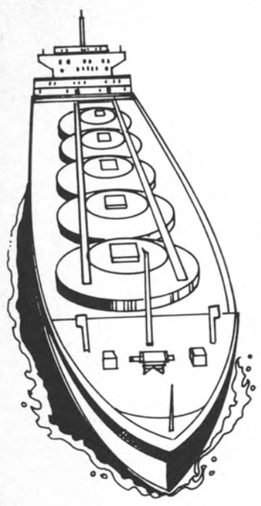
Twelve technical papers were presented during the Spring Meeting. The following gives a summary of these papers:

Paper No. 1—"Problems of Ocean Platforms" by **M. St. Denis** and **E. Allmendinger.** That ocean platforms are subject to greater perils is borne out by the higher insurance rates that they are assessed. Part of the reason lies in the insufficient experience with this type of design.

Paper No. 2—"Seakeeping Characteristics of a Multi-Unit Ocean Platform" by **M.K. Ochi** and **R.M. Vuolo.** This paper presents results of a study that theoretically predicts seakeeping characteristics of a floating multi-ocean platform.

Paper No. 3—"The Design and Operation of a Prototype Deep-Ocean Mining Ship" by **R. Kaufman** and **J.P. Latimer.** The emergence of manganese nodules as a potential ore to supply world needs of important base metals has lead to the rapid development of the technology to mine this resource.

(Continued on page 12)



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SNAME Spring Meeting

(Continued from page 10)

Paper No. 4—"Fishing Vessel Development" by **D.J. Doust.** The paper describes the development of fishing vessels over the past 15 years, including the transition from side to stern trawling. Various designs evolved during this period are discussed.

Paper No. 5—"The Construction assistance Vehicle (CAV), An Underwater Pickup Truck" by **S. Halpern** and **S.A. Black.** The construction assistance vehicle is a free-flooding, electro-hydraulically powered "wet" submersible. It is an experimental craft designed to provide free-swimming scuba divers with an "underwater pickup truck" capable of delivering up to 2,000 pounds of wet-weight cargo.

Paper No. 6. — "An Underwater Buoyancy Transport Vehicle (BTV)" by **N.B. Estabrook** and **A.T. Strickland.** This paper describes the development of the Buoyancy Transport Vehicle, a diver-operated undersea vehicle capable of lifting and transporting loads up to 1,000 pounds at ocean depths to 850 feet. This underwater "fork-lift" was designed and built to alleviate many of the difficulties experienced by working divers.

Paper No. 7—"Propulsion and Maneuvering Systems for Deep Submersibles" by **R.W. Peach** and **F.C. Munchmeyer.** This paper relates to propulsion, maneuvering, trimming and ballasting systems for deep submersibles. It describes the purpose of these systems and the characteristics of those used on a range of submersibles.

Paper No. 8—"Analysis of Jet Propulsion for Deep Submergence Vessels: Ideal Fluid Analysis and Boundary-Layer Control" by **T.P. Torda** and **D.W. Kos.** Analytical work is presented on flow control by suction and blowing as it applies to submerged vessels. Drag reduction and increase of overall efficiency are aims of the analytical work.

Paper No. 9—"Lightweight Syntactic Foam as Buoyancy Material for a 20,000-Foot Deep-Sea Vehicle" by **H. Bernstein** and **M. Krenzke.** Present investigations of syntactic foam (hollow glass microspheres dispersed in a resin matrix) are the result of extensive tradeoff studies of candidate buoyancy systems for a small manned vehicle capable of operating to ocean depths of 20,000 feet. Successful completion of this development will improve the performance of deep-sea vehicles.

Paper No. 10—"Rapid Analysis of Marine Structures" by **P.Y. Chang** and **W.D. Pilkey.** The line-solution technique for the static, stability, and dynamic analysis of an array of marine structures is described. This approach differs from the classical techniques of stiffness and flexibility in the efficiency of the method used in eliminating unknowns.

Paper No. 11—"The Design of Thick-Walled Unstiffened Cylinders Subjected to Uniform External Pressure" by **S.R. Heller Jr.** The available technical literature dealing with the biaxial and triaxial stress in closed, unstiffened cylinder under uniform pressure is evaluated. Also included are sets of curves to ease the numerical work of design.

Paper No. 12—"Structural Analysis of Deep Submergence Pressure Hulls" by **L.N. Gifford Jr.** and **R.F. Jones Jr.** This paper discusses the application of the finite-element method of structural analysis to the analysis of present and future deep submersible vehicles. Examples are given of the automated graphical display of computed results.

Presenting Paper No. 7 were, left to right: authors **F.C. Munchmeyer,** University of Hawaii, and **R.W. Peach,** Westinghouse Ocean Research and Engineering Center; presiding officer **A.W. Stout Jr.,** general manager, Houston Division, Todd Shipyards Corporation; discussor Capt. **R.T. Miller,** USN (ret.), Westinghouse Ocean Research and Engineering Center, and assistant presiding officer Dr. **L.H. Seidl,** University of Hawaii.

Presenting Paper No. 4 were, left to right: discussor Capt. **R.T. Miller,** presiding officer **Lester Rosenblatt,** president, M. Rosenblatt & Son, Inc. who read the paper, and assisting presiding officer **G.W. Slaughter,** Pearl Harbor Naval Shipyard.

Presenting Paper No. 8 were, left to right: discussor **George W. Palmer,** American Bureau of Shipping; author **D.W. Kos,** ITT Research Institute, Chicago, Ill., and Prof. **Richard B. Couch,** presiding officer, Dept. of Naval Architecture, U. of Mich.

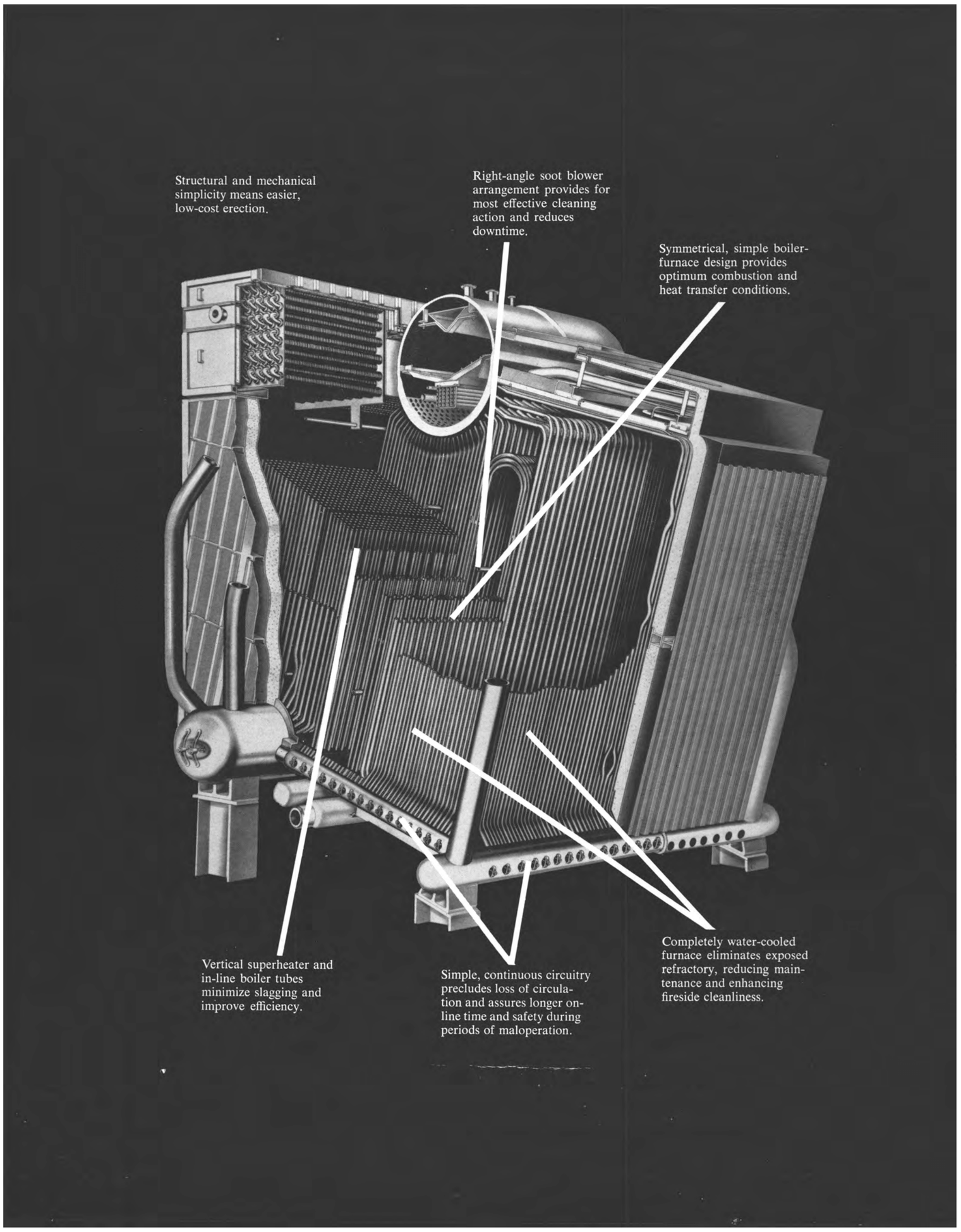
Presenting Paper No. 12 were, left to right: presiding officer **Monroe D. Macpherson,** Esso International Inc.; author **R.F. Jones Jr.,** Structural Materials Branch, Naval Ship Research and Development Center, and assisting presiding officer **Frank H. Porter,** chief nuclear engineer, Nuclear Power, Div. Pearl Harbor Naval Shipyard.

Presenting Paper No. 10 were, left to right: author **P.Y. Chang,** director, Special Products, COM/CODE Corporation; presiding officer **R.T. Young,** chairman and president, American Bureau of Shipping, and assisting presiding chairman **J.G. O'Donnell,** superintending engineer, Matson Navigation Company.

Presenting Paper No. 11 were, left to right: presiding officer **E. Scott Dillon,** chief, Office of Ship Construction, Maritime Administration; author **S.R. Heller Jr.,** professor of mechanical engineering, The Catholic University of America, and Rear Adm. **T.J. Fabik,** USCG (ret.), assisting presiding officer.

Presenting Paper No. 3 were, left to right: chairman Spring Meeting technical sessions and assisting presiding officer Rear Adm. **E.A. Wright,** USN (ret.), deputy director, State of Hawaii Department of Transportation; authors **J.P. Latimer** and **R. Kaufman,** Deepsea Ventures, Inc., and presiding officer **Richard Broad,** Newport News Shipbuilding and Dry Dock Company.

Presenting Paper No. 9, entitled "Lightweight Syntactic Foam as Buoyancy Material for a 20,000-Ft. Deepsea Vehicle," were, left to right: authors **M. Krenzke,** Naval Ship Research and Development Center, and **H. Bernstein,** Naval Ship Systems Command; presiding officer **William J. Dorman,** manager, New York Office, J.J. Henry Co., Inc., and assisting presiding officer Capt. **Harry A. Simms,** USN (ret.).


Structural and mechanical simplicity means easier, low-cost erection.
Right-angle soot blower arrangement provides for most effective cleaning action and reduces downtime.
Symmetrical, simple boiler-furnace design provides optimum combustion and heat transfer conditions.
Vertical superheater and in-line boiler tubes minimize slagging and improve efficiency.
Simple, continuous circuitry precludes loss of circulation and assures longer on-line time and safety during periods of maloperation.
Completely water-cooled furnace eliminates exposed refractory, reducing maintenance and enhancing fireside cleanliness.

MarAd Signs Contracts For Two OBOs, One LASH And Three Mariner Conversions

The Maritime Administration has placed two OBO (ore/bulk/oil) carriers, one LASH (lighter-aboard-ship) vessel, and three conversions to containerships under contract near the close of the first fiscal year of ship construction and conversions under the new long-range program to rebuild the merchant fleet.

Originally, it was hoped to put the equivalent of 19 new ships under contract.

The total so far is 12 new ships and 11 conversions.

The first bulk subsidy recipient was Aries-Marine Shipping Co., Lake Success, N.Y., which negotiated a $60-million construction contract for two 80,500-deadweight-ton oil/bulk/ore carriers with National Steel and Shipbuilding Co., San Diego, Calif.

Aries is also to be paid operating subsidy under a new special formula for bulk operations authorized by the 1970 Merchant Marine Act.

Plans were that Aries, which was also granted a waiver allowing affiliates to continue to operate 13 foreign-flag ships, would time charter the two 892-foot 6-inch, 16.5-knot ships to Gold Eagle Liberia Limited for worldwide operations.

The operating subsidy formula, brand new with Aries, the first to which it will apply, will pay full subsidy the first two years only if at least 30 percent of its cargo annually is U.S. exports and imports.

The contract for the LASH ship for Central Gulf Steamship Company, at a cost of $27.5 million, was awarded to Avondale Shipyards. Avondale now has won all 18 contracts for these new-type vessels.

The conversion contract was signed by American President Lines, which already has five of its Mariners under contract for conversion to containerships, to convert three others to partial containerships for $20.2 million by Todd Shipyards. A 105-foot midbody was to be inserted in the three to give each capacity for 698 of the 20-foot equivalent containers, plus another 220,000 cubic feet of breakbulk space.

Seatrain's Container Division Appoints Gohlke And Haggerty

William O. Gohlke

John J. Haggerty

Seatrain Lines Container Division has announced the appointment of **William O. Gohlke** to senior vice president of corporate marketing and **John J. Haggerty** to vice president of marketing, United States. **Arthur C. Novacek,** president of Seatrain Lines Container Division, stated that: "We have been maintaining a pace of rapid expansion which means that we must continue as a marketing oriented company. Therefore, we need exceptional talent to give our marketing effort the required direction and impetus."

Mr. **Gohlke,** a Seatrain executive for 12 years, was formerly president and general manager of Seatrain Lines Puerto Rico, where he introduced Seatrain Lines' container program into the island. Heading up a unique corporate marketing group which is tailored to provide a complete marketing service to a select number of important clients in the United States, Puerto Rico and Europe, he is considered as one of the most knowledgeable marketing executives in intermodal transportation.

Mr. **Haggerty,** whose new responsibilities will include all field marketing in the United States as well as Seatrain's unusual customer service activities, was formerly general traffic manager of Grace-Prudential Lines, with heavy experience in all aspects of marketing and traffic.

LOCKHEED DELIVERY: Lockheed Shipbuilding recently delivered the destroyer escort Reasoner (DE-1063) to Puget Sound Naval Shipyard in Bremerton, Wash. Prospective commanding officer of the 4,100-ton destroyer escort is Comdr. **F.A. Velazquez-Suarez.** Keel for the ship was laid at Lockheed's Harbor Island shipyard January 6, 1969, and it was launched August 1, 1970. The Reasoner is 438 feet long, has a beam of 47 feet, travels at speeds in excess of 25 knots, and carries a complement of 19 officers and 226 men. Primary mission of this class of ship is antisubmarine warfare. The Reasoner is the second of five destroyer escorts Lockheed is building in Seattle. The first, the USS Rathburne (DE-1057), was delivered to the Navy May 8, 1970.

Jacksonville Shipyards, Inc. Announces Two Appointments

Thomas Saggau

Rudolph Murray

The appointment of a new industrial relations manager and a new equal employment opportunity officer at Jacksonville Shipyards, Inc., Jacksonville, Fla., has been announced by **Arnold P. McIlwain,** president.

Thomas Saggau, previously employed with the parent Fruehauf organization, will assume the industrial relations post. He has had varied experience in all phases of industrial relations and personnel work since joining up with Fruehauf in 1965. Mr. **Saggau** is a native of Iowa and was graduated with distinction from the University of Notre Dame.

Rudolph Murray has joined the management staff of Jacksonville Shipyards, Inc. as equal employment opportunity officer, giving increased emphasis at the shipyard to the Federally-sponsored Affirmative Action Program. The program at the yard has been revised and strengthened to eliminate all shortcomings of an earlier program.

Mr. **Murray** is a native of Jacksonville and was graduated from Tuskegee Institute High School. He also attended college at Tuskegee Institute. His association with the shipyard began in 1968 in the welding department, following a four-year tour in the Air Force.

Both appointees will report directly to **J.J. Sugrue,** vice president, operations, at the shipyard.

Ameron Corrosion Control Div. Promotes Wise And Baillie

John Wise, who has been serving as general manager of Amercoat of Canada Limited, has been elevated by Ameron Corrosion Control Division, Brea, Calif., to the new post of business manager, Bondstrand Reinforced Plastics Products. Mr. **Wise** assumes responsibilities for marketing, product engineering, research and development and technical service on all FRP products. He reports directly to the Division president, **William Rossiter.**

Succeeding Mr. **Wise** in Canada is **James B. Baillie.** Associated with Amercoat since 1964, Mr. **Baillie** has previously served as both plant superintendent and plant manager at the plant in Burlington, Ontario.

Brown & Root, Inc. Publishes Brochure

Brown & Root, Inc. has just released a general brochure describing the full scope of the engineering and construction company's capabilities. The 32-page book is illustrated with color photographs of both past and present projects. It covers the general scope of services and such specific fields as marine installations, power plants, pulp and paper mills, refineries and chemical plants, steel mills, dams, bridges, ports, tunnels, and military installations. A detailed list of services and types of projects is included.

A copy of the brochure may be obtained by writing on a corporate letterhead to Brown & Root, Inc., P.O. Box 3, Houston, Texas 77001.

Sea-Land Receives Contract From MSC

Award of a container agreement to Sea-Land Service, Inc., which could result in the payment of approximately $56.2 million per year between July 1, 1971 and June 30, 1973 was announced by Vice Adm. **Arthur R. Gralla,** Commander of the U.S. Navy's Military Sealift Command.

The agreement provides for movement of military cargo between the United States Pacific Coast and the Republic of Vietnam. The agreement, which is based on anticipated movement of an estimated 1.3 million measurement tons of dry and refrigerated cargo per year, can be terminated after 60 days' notice by the Military Sealift Command should military shipping needs be less than projected.

NKK To Install LPG Tanks In Jumboized Esso Tanker

The 15,430 deadweight ton tanker Esso Adventure will be increased in size to 17,270-dwt by Nippon Kokan (NKK), Japan's only integrated shipbuilder-steelmaker. **Hiroo Ikematsu,** NKK New York shipbuilding department manager, said the contract had been awarded by Esso Asia Services, Inc. of Singapore to jumboize the vessel owned by Esso Transport Co., Inc.

Principal features of the conversion will be increasing the vessel's length by about 40 feet and installing two 7,000-cubic-foot LPG tanks. These will be manufactured by NKK's Heavy Industries Division. The project, at Asano Dockyard near Tokyo, is scheduled for completion the end of this month.

J.J. Henry Co. Moves Production Divisions To Philadelphia Suburbs

NEW HEADQUARTERS for the Philadelphia office of the J.J. Henry Co., located in an industrial park in suburban Moorestown, N.J., is a one-story air-conditioned building.

At an open house for editors of public news media and technical publications, the J.J. Henry Co., Inc., naval architects and marine engineers, announced the move of its Production and Scientific Divisions from Philadelphia to West Park Drive in the Mt. Laurel Industrial Park in Moorestown, N.J. For over 15 years these divisions had been occupying part of two floors in a large building at 401 North Broad Street in Philadelphia. Now, they are located in a modern one-story building leased in its entirety by the company.

The open house was held in the offices of the Design Division of the firm at 90 West Street, New York City. **James J. Henry,** president, feeling that the normal working press was not fully acquainted with the scientific and engineering efforts required to build a ship, demonstrated with pictures, short talks by department supervisors and visual aids the extensive detail required to design a modern ship.

In a brief introductory talk with the editors, Mr. **Henry** said, "The Production Division does the detailed engineering and designing for vessels and projects conceived and carried through the contract development stages by our Design Division in New York City."

"It is the oldest production division operated by an independent firm of naval architects in this country," he added. "Its success is attested to by the fact that its best customers are commercial and naval shipyards who operate production divisions of their own."

The J.J. Henry Co., Inc., one of the world's foremost naval architectural firms, has earned the reputation of a designer of "Special Ships for Special Purposes" since its founding in 1947 in New York. The Production Division was established in 1952 and the Scientific Division shortly thereafter.

"During their nearly 20 years of operation, the divisions have furnished United States and foreign shipowners and shipyards with detailed engineering and design services and with plans and technical/purchase specifications for the construction, conversion and repair of virtually every type of merchant, naval and specialized vessel," Mr. **Henry** said, adding:

"Many of the vessels scheduled for delivery in the months ahead will make as important contributions to the commerce and defense of the United States as did the icebreaker Glacier, the dredge Goethals and the Great Lakes ore carrier Thomas F. Patton—all products of the firm's drawing boards."

The pictures and plans shown to the editors and described in detail by the firm's engineers included:

1. Seabee Class barge-carriers being built for Lykes Bros. Steamship Company by General Dynamics Corporation. The stern-loading Dr. Lykes, scheduled for delivery in January, and her sisterships will be the first vessels designed to load barges with their own hydraulic elevators.

2. Largest (942 feet long, 42,700-tons displacement) and fastest (33 knots) freighters in the world being constructed abroad for Sea-Land Service, Inc. Each of the twin-screw containerships will develop 120,000 shp and will carry 888 thirty-five-foot and 198 forty-foot containers. The first ship is scheduled for delivery in January 1972.

3. Navy's new type rescue vessels (ASR 21 and 22), for deep submersible submarines. The ASR has a catamaran hull and is equipped to conduct rescue operations down to at least 3,500 feet.

4. The prototype of a fleet of 125,000 cubic meter LNG tankers being constructed for El Paso Natural Gas Company to transport Algerian natural gas to U.S. East Coast ports. The J.J. Henry Company developed the plans and specifications for converting a freighter into the world's first LNG carrier, the Methane Pioneer.

COMPUTER ROOM is well equipped for normal design calculations, such as stability, capacities, weights, strength, shock, and vibration calculations. The firm also leases time on larger computers for special projects.

5. Oceanographic catamaran vessel USNS Hayes (T-AGOR-16), being built for the Navy's Military Sealift Command by Todd Shipyards Corporation. The J.J. Henry Company supplied the detailed plans for construction and the plans and specifications for the installation of scientific equipment and electronic gear.

6. The firm collaborated with Arthur D. Little, Inc., in developing the CASDOS program, a system of computer programs for preparing detailed hull plans for the fabrication and assembly of the structural components of naval ships.

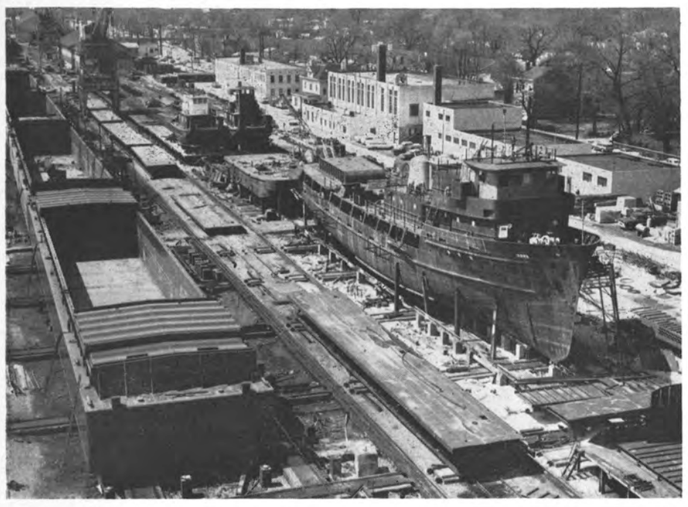
7. The Production Division did the design and engineering for the preparation of a Planned Availability Concept (PAC) for maintenance and repair of nuclear, steam and diesel-powered naval ships. PAC is designed to keep the maximum number of naval vessels in operation at all times.

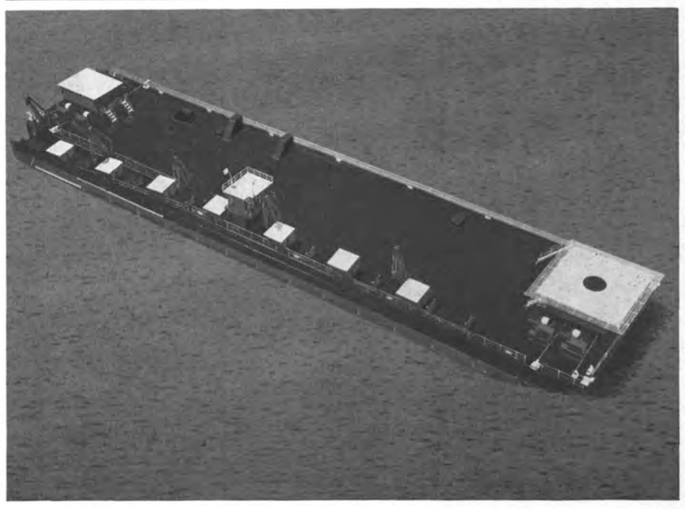
The Production Division has also provided detailed working plans for the conversion of an aircraft carrier into the most modern communications ship in the world, the USS Arlington; for the improved rearming rates program (IRRP) for the carriers Saratoga and America; for updating anti-submarine and warship command and control systems, and for complete "Sub-Safe" certification, the determination of the maximum safe diving depth for nuclear-powered submarines.

The Production Division personnel also have been involved with nuclear power since they did the detailed designing of the NS Savannah, the world's first nuclear-powered merchant ship. More recently, they worked for the Army Corps of Engineers on the conversion of a Liberty ship into the world's first floating nuclear powerplant, now supplying electricity to a Panamanian city.

Following the open house in the firm's New York office, Mr. **Henry** hosted a buffet dinner at the Whitehall Club for the editors and their wives.

PRODUCTION DIVISION drafting room contains 170 drafting boards in one large, well-lighted area. The supervisors and project leaders have separate offices around the perimeter of the drafting room connected to conference rooms.





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Prudential-Grace Forms New Committee —Elects De Smedt

A. Theodore de Smedt

A. Theodore de Smedt has been named president of Prudential-Grace Lines, Inc., in a general realignment of top management of the shipping company.

Mr. **de Smedt,** who has been executive vice president, succeeds **Spyros S. Skouras Jr.,** who has been elected chief executive officer and chairman of a newly-formed executive committee.

Other members of the committee are **Spyros P. Skouras Sr.,** who also continued as chairman of the board of directors, **James J. Connolly,** who remains as executive vice president in charge of finance, and Mr. **de Smedt.**

Mr. **de Smedt** joined Prudential-Grace last January.

Regarding these new appointments, Mr. **Skouras Jr.** stated that the committee was established in order to broaden the administration of the various trade routes and services of Prudential-Grace Lines. The shipping line currently services three continents via its Mediterranean route, as well as South America and the Caribbean via its services out of East and West Coast ports of the United States.

The company has distinguished itself in the shipping community with the pioneering of the LASH (Lighter Aboard Ship) concept. It launched the first U.S. LASH vessel, the SS LASH Italia, in July 1970. Three of these ships are currently in service for the line, with an additional two on order. Other domestic and foreign lines have adopted the LASH system, which facilitates the speed and handling of cargo, by the use of pre-stowed lighters (barges) which are loaded or unloaded from the ship at the rate of one every 15 minutes. According to Mr. **Skouras** and other industry leaders, the use of this new system can cut cargo delivery time by as much as 70 percent, and can be the means of restoring U.S. supremacy to the high seas.

Transmarine Navigation Acquires Interolsen

Transmarine Navigation Corp. has acquired Interolsen Agencies, Inc., it was jointly announced by **John F. O'Leary** and **S.F. Alioto,** presidents of Transmarine and Interolsen respectively. Both companies are based in San Francisco.

According to the announcement, Interolsen will operate as a subsidiary of Transmarine. Mr. **Alioto** will serve as chairman and chief executive of Interolsen and also becomes a vice president and director of Transmarine.

Ship Manoeuvring Simulator Described To SNAME Northern California Section — New Officers Elected At Meeting

Principals of the meeting shown above left to right are: (left-hand photo) **Jack Troyer,** Todd Shipyards Corp., vice chairman of the Section; **Rex McCardell,** T.T. Lunde, Inc., executive committee; **Art Haskell,** Matson Navigation, Section chairman, and **J. Busch Jr.,** H.J. Wickert & Co., secretary-treasurer; (right-hand photo) **William Hickman,** Ocean Machinery, past chairman; **J.P. Hooft,** Netherlands Ship Model Basin, author; Dr. **M.W.C. Oosterveld,** Netherlands Ship Model Basin, and **Fred E. Shumaker,** Chevron Shipping, papers chairman.

A dinner meeting of the Northern California Section of The Society of Naval Architects and Marine Engineers featuring the presentation of a paper and slides describing a "Ship Manoeuvring Simulator," was recently attended by approximately 90 members and guests at the Engineers Club in San Francisco.

The simulator has been developed complete with computers for controlling every significant factor, including weather, tide and current. As the "Link Trainer" is used in the aircraft industry, the purpose of the simulator is to familiarize pilots and deck officers with the unusual phenomena of new and different types of ships, particularly the supertanker. The task is made more difficult in the case of building a nautical simulator, since the visual presentation must include familiar landmarks and have all the complex local data of current and tide reduced to a usable computer program.

J.P. Hooft, one of the authors, was on hand to deliver the paper, as well as respond to the many questions. Additionally at the meeting, incoming Section chairman **Arthur Haskell,** vice president, Matson Navigation, presented retiring chairman **William Hickman,** president, Ocean Machinery Co., with a certificate of acknowledgment and appreciation.

Other officers elected at the meeting were: vice chairman, **Jack H. Troyer,** Todd Shipyards Corp.; secretary-treasurer, **Joe H. Busch Jr.,** H.J. Wickert & Co., and executive committee, **Rex McCardell,** T.T. Lunde, Inc.

Also pictured during the meeting at the Engineers Club left to right are: (left-hand photo) **James A. Stasek,** Kings Point Machinery, public relations committee chairman; **J. Stewart Cameron,** manager of export sales, F.A. Hughes & Co. Ltd., England, and **J. Busch Jr.,** H.J. Wickert & Co., secretary-treasurer; (right-hand photo) **Dave Seymour,** naval architect, executive committee; **Frank Lee Jr.,** M. Guralnick Assoc., executive committee, and **Graham Fraser,** Paceco, past chairman.

National Maritime Research Center Dedicated At U.S. Merchant Marine Academy

Marvin Pitkin, Assistant Administrator for Research and Development, Maritime Administration, U.S. Department of Commerce, speaks at dedication of National Maritime Research Center at Kings Point. (L to R seated) Rear Adm. **Arthur B. Engel,** USCG (ret.), Superintendent, U.S. Merchant Marine Academy; **Andrew E. Gibson,** Assistant Secretary of Commerce for Maritime Affairs, and **James J. Reynolds,** president, American Institute of Merchant Shipping.

The first research center in the United States to be devoted specifically to improving commercial shipping operations was dedicated on June 9 at the U.S. Merchant Marine Academy, Kings Point, N.Y.

Officiating at the ceremony was Assistant Secretary of Commerce for Maritime Affairs **A.E. Gibson,** who heads the Maritime Administration, the Academy's parent agency.

Formally known as the National Maritime Research Center, the new facility will have three major functions: (1) carrying out research programs for the Maritime Administration, concentrating on developments in the areas of man-machine relationships and human engineering; (2) serving as a field test and evaluation unit where proposed improvements developed by MarAd, the industry, or academic institutions can be fully tested under simulated operating conditions before being recommended for installation aboard ships of the American merchant marine; and (3) stimulating the transfer of technical information among the various segments of the industry by sponsoring conferences and seminars.

Much of the center's work, Mr. **Gibson** said, will be performed by the Academy's faculty. He stressed that the availability of this resource was one of the reasons for locating the National Maritime Research Center at the Academy.

"It will have an important beneficial side effect for Kings Point," Mr. **Gibson** noted. "Professors performing research at the center will become familiar with the latest advances in maritime technology, as well as operational problems currently facing the shipping industry. They will carry this expertise and exposure back to their classrooms, thus enriching the education Kings Point midshipmen receive."

Heading up the new center will be Capt. **Lauren S. McCready,** USMS, who formerly was head of the Academy's Department of Engineering. Captain **McCready** will be directly responsible to MarAd's Assistant Administrator for Research and Development, **Marvin Pitkin.**

Capt. Lauren S. McCready

One of the key elements in the new center will be a computer-aided simulator to be used in developing and testing advanced vessel navigation and control equipment under realistic operating conditions.

According to Mr. **Gibson,** the agency's current plans call for the simulator to include a full-scale mock-up of a ship's bridge complete with navigation and control consoles. The response and maneuvering characteristics of the vessel being "navigated," and other operating conditions would be simulated by the computer, and their effects indicated on the consoles. The visual sea-environment, including high-density traffic and geographically constrained passages, would also be displayed.

Precise evaluations of the man-machine interface under varying conditions and with various pieces of equipment will result, he explained.

Mr. **Gibson** pointed out that research in this area is critical to reducing the number of vessel collisions, strandings, and groundings involving merchant ships each year. At the same time, such research will also help eliminate the possibility of major oil spills from disabled tankers, thus removing a potential source of oil pollution.

MarAd is currently evaluating the seven proposals submitted to it for the design and installation of the simulator system, Mr. **Gibson** said. He estimated that the system would be operational in one and one-half to two years.

In addition to the simulator program, the center will initially be responsible for research aimed at analyzing and improving vessel productivity, testing corrosion-resistant marine paints and coatings, and administering MarAd's "ships of opportunity" program, under which merchant vessels at sea are enlisted to test specific items of equipment, engage in oceanographic studies, or gather data for use in the research program.

Walter G. King Joins Patterson-Sargent

Patterson - Sargent/Vita - Var, a Textron Division, North Brunswick, N.J., has announced the appointment of **Walter G. King** as sales representative for the company's Marine Division.

Mr. **King** comes to the company with a broad background in marine and technical coatings through association with Hempel's Marine Paints in California and the Celanese Corporation. He graduated from the University of New Hampshire with a degree in business administration.

Shinichi Ogawa Named President 'K' Line New York

Shinichi Ogawa has been appointed president of "K" Line New York, Inc. Mr. **Ogawa** succeeds **Kenro Ohkawa** who has returned to the company's home office in Tokyo, where he will assume an executive role in the finance department.

Donald J. Oswald Succeeds Hans Hvide At Ocean Industries

Hans J. Hvide has announced his resignation as president of Ocean Industries, Inc., Fort Lauderdale, Fla., to devote his time to his personal business interests and will be available in a consulting capacity to Ocean Industries.

Lowell S. Dillingham, chairman of Dillingham Corporation, the parent company, accepted the resignation with regret and announced that **Donald J. Oswald** will assume the office of president of Ocean Industries, and **Richard C. Schmitz** will become executive vice president.

Mr. **Oswald** is currently the manager of East Coast operations for Dillingham. He has managed construction, manufacturing and distribution activities in the Far East, Hawaii and the West Coast since his graduation from California Institute of Technology in 1951, with a master's degree in civil engineering.

Mr. **Schmitz** has been a vice president of Ocean Industries since its founding in 1968. Before that he was active with the Union Carbide Corp. and directed their activities leading up to the formation of the Ocean Industries complex. He received an M.B.A. degree from Harvard Graduate School of Business Administration in 1954 and a B.S. degree in chemical engineering from Northwestern University in 1952.

Mobil Oil Appoints Edward K. Arndt —R.C. Schnepf Retires

Edward K. Arndt

Mobil Oil Corporation announces the appointment of **Edward K. Arndt** to the post of manager, North American Division, marine sales department. In his new assignment, Mr. **Arndt** is responsible for sales of all Mobil marine products in the North American Division. With Mobil since 1955, Mr. **Arndt** was most recently manager of Mobil's Great Lakes, Rivers and Gulf Marine District. Replacing Mr. **Arndt** is **B.E. Lemieux.**

Mr. **Arndt** is a captain in the United States Naval Reserve and has served in the merchant marine. He holds a B.S. degree from New York State Maritime College and an M.B.A. degree from New York University. He is a member of The Propeller Club, Port of New York.

Richard C. Schnepf

Richard C. Schnepf, former manager of Mobil's NAD marine sales, has elected to retire October 1, 1971. Since joining Mobil in 1929, Mr. **Schnepf** served the company in Norfolk, Baltimore and New York. He is a member of The Society of Naval Architects, The Propeller Club (Port of New York), and of the Downtown Athletic, Maritime Exchange, and Marine Square Clubs.

Braynard Joins South St. Seaport

Frank O. Braynard has joined the South Street Seaport as program director, it has been announced by the museum's board of trustees.

Mr. **Braynard,** most recently with the Maritime Administration, was public relations manager for Moran Towing Co. for nine years. Prior to that, he was public relations director for the American Merchant Marine Institute.

elected president of the group at its seventh biennial conference in Montreal.

Also announced were the elections of **Ben E. Nutter,** executive director of the Port of Oakland, as a director and member of the executive committee of IAPH, and of **Joseph L. Stanton,** executive director of the Maryland Port Authority, to the executive committee of the worldwide maritime organization.

During the IAPH Conference, Mr. **Nutter** delivered a major paper on the relocation of port facilities due to containerization, and served as moderator of a panel discussion on containerization. He is chairman of the IAPH committee on containerization.

Mr. **Nutter** joined the Port of Oakland in 1957 and has served as executive director since 1962. He has overall responsibility for Port marine terminal facilities, Oakland International Airport, a 300-acre Industrial Park, and Jack London Square.

Mr. **Stanton** became the Maryland Port Administrator on July 1, 1971, when the port authority became the Maryland Port Administration of the State Department of Transportation.

With worldwide membership, the International Association of Ports and Harbors safeguards the interests of seaports around the globe.

United States Freight Names Julio Del Valle Asst. Vice President

Julio Del Valle

The appointment of **Julio Del Valle** as assistant vice president of United States Freight Company has been announced by **G. Russell Moir,** chairman and chief executive officer.

Mr. **Del Valle,** assistant to USF president **F.N. Melius Jr.** prior to his new appointment, will be responsible for marine subsidiary activities, primarily Coordinated Caribbean Transport, Inc. and Universal Alco, Ltd., both based in Miami, Fla. C.C.T. operates a roll-on/roll-off service between Miami and Central America. Universal Alco performs a roll-on/roll-off cargo service for M/V Freeport I, which operates between Miami and Freeport and Nassau in the Bahamas.

Mr. **Del Valle** joined USF in 1966 as vice president and general manager of C.C.T. His first assignment was to design and supervise construction of the Mar Caribe, which entered Central American service December 1968. He was named assistant to the president of USF at New York headquarters in 1969. In addition to his new corporate title, Mr. **Del Valle** remains executive vice president of both Freeport Cruise Lines and its subsidiary, Bahama Cruise Lines, which handle passenger services for Freeport I, of which USF is a principal owner.

Born and educated in Havana, Cuba, Mr. **Del Valle** was employed as manager of agency traffic in New York by Garcia & Diaz, Inc. from 1951 until he joined C.C.T. in Miami in 1966.

Elected Officers And Committee Members Announced By IAPH

Ir. **J. den Toom** has been elected first vice president of the International Association of Ports and Harbors, and **Howe Yoon Chong** has been elected second vice president. Mr. **den Toom** is managing director of the Port of Amsterdam, and Mr. **Chong** is general manager of the Port of Singapore Authority.

Austin J. Tobin, executive director of the Port of New York Authority, and **Victor G. Swanson,** chairman of the Melbourne Harbour Trust Commission and immediate past president of the association, were elected honorary members. **A. Lyle King,** the Port of New York Authority's director of marine terminals, had been

Worthington Names E.C. Forbes Chairman —Adm. Mumma Retires

Edward C. Forbes has been elected chairman and chief executive officer of Worthington Corporation, a wholly-owned subsidiary of Studebaker-Worthington, Inc., it was announced by **Leslie T. Welsh,** president. Mr. **Forbes** succeeds Adm. **Albert G. Mumma,** who retires as chairman of Worthington after 12 years of dedicated service. **Patrick L. McManus** will continue as president of Worthington Corporation.

Mr. **Forbes,** who will continue as an officer of Studebaker-Worthington, Inc., was born in Bangalore, India. He received a B.S. degree in electrical engineering from Auburn University in 1938, and was graduated from the Air Force Aeronautical Institute in 1945 with a B.S. degree in aeronautical engineering. Mr. **Forbes** rose to the rank of major in the U.S. Air Force during World War II, and later pursued a diversified international career in the General Electric Company in Argentina, Portugal, France and the United States. He joined Worthington in 1963 as vice president, corporate planning, and was elected vice president, group executive, in 1964. Mr. **Forbes** later fulfilled the position of chairman and chief executive officer of Alco Products, Inc., Schenectady, N.Y., and chairman of MLW-Worthington Limited, Montreal, Canada. He became an officer of Studebaker-Worthington, Inc. in 1969.

Edward C. Forbes

Mr. **Forbes's** responsibility extends to Worthington's divisions and subsidiaries — producers of pumps, compressors, engines, locomotives, heat transfer equipment and water meters at more than 22 locations in 15 countries throughout the world—and associated companies involved in leasing, computer services and other forms of manufacturing.

Admiral **Mumma,** who will continue as a senior consultant and director of Worthington, made substantial contributions to the growth and success of the company during his tenure. He joined Worthington in 1959 as vice president, engineering, and was elected vice president and group executive in 1961, a director in 1962, executive vice president in 1964, and president and chairman of the board in 1967.

A 1926 graduate of the U.S. Naval Academy, Admiral **Mumma** enjoyed a distinguished military career before joining Worthington. He was head of the Technical Intelligence Division and engineer on the staff of the Commander, Naval Forces, Europe, during the last two years of World War II, then served successively as head of Machinery Design, Bureau of Ships; Commanding Officer, David Taylor Model Basin; and Shipyard Commander, Mare Island Naval Shipyard. He was appointed Chief of Bureau of Ships in 1955, and retired in 1959 as rear admiral. Most recently, he was named by President **Nixon** as chairman of the Commission of American Shipbuilding, whose activity is requiring an increasing amount of his time.

Prudential-Grace Lines Appoint Thomas Healey

Thomas W. Healey has been appointed traffic manager, Mediterranean container services, for Prudential-Grace Lines, Inc., it was announced by **L.A. Renehan,** vice president. In his new position, Mr. **Healey** will be in charge of all eastbound and westbound container traffic.

Prior to joining Prudential-Grace Lines, Mr. **Healey** held several traffic positions with American Export Isbrandtsen Lines, Inc., including a recent assignment as manager of the line's Mediterranean container service.

KNOWN 'ROUND THE WORLD

THE BOSTON METALS CO.

313 E. BALTIMORE ST. • BALTIMORE 2, MD.

Main Office: LExington 9-1900 • Marine Dept.: ELgin 5-5050

TURBO GENERATOR SETS

1 

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 operates 615 PSI—850°TT.

2 

WESTINGHOUSE 60 KW 120 VDC M-20-EH

120 VDC—1800 RPM. TURBINE: M-20-EH—20 lbs—dry & saturated—25" vacuum. 7283 RPM. GEAR: 7283/1800. GENERATOR: 60 KW—120 VDC—500 amps—SK—stab. shunt wound.

3 

300 KW WORTHINGTON-MOORE CROCKER-WHEELER UNITS

AP2 Ex-Medina Victory units. Worthington-Moore turbine—440 lbs—740°TT—28½" vac.—type S4—5-stage—6097 RPM—serial 7547 & 7548. GEAR: 14x7—6097/1200. GENERATOR: Crocker-Wheeler 300 KW 120/240 DC—1250 amps—type 102-H—compound—973643—999759—armature flange 8¼"—bolt circle 7"—12 holes. Also new armature in stock (weighs 1840 lbs). Also have 2 units—generator 102 HP—300 KW—120/240—stab. shunt—1200 RPM.

4 

VICTORY 300 KW WESTINGHOUSE TURBO GENERATOR SET

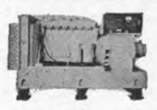
440# — 740°F — 5930 RPM — 2A-9794-15-16-17—coupling non-recessed on steam end of pinion—5¾". GENERATOR: Westinghouse 300 KW—120/240 DC—1250 amps—1200 RPM—C.B. 208.4.

5 

1000 KW G.E. TURBO GENERATOR—READY TO GO—WITH A.B.S.

TURBINE: Type FSN—eight stage—9268 RPM—525 lbs—825°TT or 590 PSI & 0° superheat. Turbine serial No. 53729. GEAR: Serial 54804—9268/3600. GENERATOR: Serial 5596572—1000 KW—450 volt 3-phase 60 cycle—3600 RPM—0.8 PF—type ATB—2-pole—complete with air cooler. EXCITER: EDF—10.2 KW—120 volts—4-pole—3600 RPM—direct connected. UNIT JUST COMPLETELY OVERHAULED & IN EXCELLENT CONDITION—READY TO INSTALL.

DIESEL GENERATOR SETS

6 

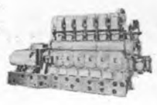
G.M. 6-71 DIESEL GENERATOR SET

60 KW — 440/3/60 — 1200 RPM—with switchgear.

7 

350 KW 120/240 VDC DIESEL GENERATOR SET

Ingersoll-Rand—heavy duty type S engine—8 cyl.—505 HP—10½ x 12. GENERATOR: G.E. 350 KW—120/240—600 RPM—switchgear. Good condition—as removed from Grace Line ships.

8 

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.

$12,500.

9 

UNUSED 500 KW 120/240 VDC BALDWIN/ALLIS CHALMERS DIESEL GENERATOR SET

ENGINE: Baldwin-DeLaverne 725 HP—12¾"x15½"—8 cyl.—500 RPM—air starting. Dry weight 54050 lbs. GENERATOR: Allis-Chalmers 500 KW—120/240 VDC—500 RPM—550 RPM overspeed. 60°C rise—class B insulation—3-wire—25% unbalance—2083 amps—stab. shunt—open—drip-proof—self-ventilated—8-poles.

10 

UNUSED 100KW SUPERIOR DIESEL GENERATOR SET

GENERATOR: 120/240 VDC—417 amps—stab. shunt—1200 RPM. DIESEL: Superior GBD-8—8 cyl.—5½x7.

11 

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.

TURBINE ROTORS

MAIN PROPULSION

12 

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.

13 ***SPECIAL!***

COMPLETE TURBINE OR ROTORS

8500 HP G.E. C-3 Victory—Sun C-4's.

L.P.—Serial 77943 H.P. Serial 77942
G.E.I. 16263

14 **NEW L.P. BLADE RINGS**
for large 8500 H.P. Victory
Joshua Hendy Westinghouse

15 **NEW 8500 H.P. G.E. TURBINES**

Large Victory or C-3

H.P. #72271 L.P. 72272

10 BOXES SPARE PARTS, TOOLS & FITTINGS. WITH MANEUVERING VALVES.

ALSO AVAILABLE

16 **U.S.M.C. RECONDITIONED SET**
H.P. & L.P.

With 13 boxes spare parts. H.P. 77994—L.P. 77987—with maneuvering valves.

17 **8500 H.P. G.E. — C-3 OR VICTORY**
H.P.—8-stage—6159 RPM—serial 62043
L.P.—8-stage—3509 RPM—serial 62042
G.E.I. 16263

18 **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

19 **VICTORY SHIP AP2 H.P. & L.P. TURBINES NEW — UNUSED — 6000 HP 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

AUX. GEN. ROTORS

20 **250 KW & 300 KW ALLIS-CHALMERS ROTORS**

Typical serial No. 3067—will interchange with most 250 KW & 300 KW Allis-Chalmers as installed on Victory's and Moore C2-C3 vessels.

21 **300 KW 5965 RPM JOSHUA HENDY**
Turbine—3H-69 Gear—52269
Turbine—3H-52 Gear—52252
Turbine—3H-62 Gear—52262

T-2 ROTORS, STATORS COOLERS, ETC.

22 **ELLIOTT 10-STAGE MAIN PROPULSION TURBINE ROTOR**

#28702—Ex-Texas Trader—will interchange with large G.E. 1st Row—1 1/8" to shroud—1 3/16" O.A.H. 2nd Row—1 7/16" to shroud—1 9/16" O.A.H.

23 

LARGE G.E. MAIN PROPULSION SCHENECTADY TURBINE ROTOR

Turbine serial 77418—reconditioned with certificate. Just out of Beth shop 1970.

24 **AUXILIARY GENERATOR ROTORS**

DORV—325M—T-2 Tanker Aux. Generator.

25 

WESTINGHOUSE MAIN PROPULSION REVOLVING FIELD

Ex-Ohio Sun—A.B.S.—ready to go. Serial 25R10

26 

WESTINGHOUSE MAIN GENERATOR STATOR

A.B.S.—ready to go—certificate 70BA5297 — May 19, 1970—Rewound.

27 

G.E. MAIN GENERATOR STATOR

A.B.S.—ready to go—mfg. by Elliott for G.E.—over G.E. design.

28 

WESTINGHOUSE MAIN GENERATOR AIR COOLER

Reconditioned with A.B.S.

29 **UNUSED G.E. MAIN GENERATOR AIR COOLER**

PUMPS

30 

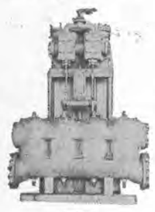
VICTORY AP2 MAIN CIRCULATOR

Ingersoll-Rand — 18 VCM—20" x 18"—10,500—10 lbs. MOTOR: 75 HP—Allis-Chalmers—230 VDC—670 RPM. Spare unused armature. Motor frame F.B.V.—162.

31 

UNUSED 10x9x12 VERTICAL SIMPLEX FUEL OIL TRANSFER PUMPS

Furnished on some T-2 Tankers, 160 GPM Bunker C —viscosity 70 to 700 SSF 122°F @ 100 lbs. discharge pressure. WP steam 150 lbs.—exhaust 10 lbs. 1¼" steam inlet—1½" exhaust. 4" Pump suction—3½" discharge.

32 

WORTHINGTON 16"x14"x18" VERTICAL DUPLEX STRIPPING PUMP

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

33 

NEW BLACKMER FUEL OIL TRANSFER PUMP

Rotary—50 GPM—50 lbs.—2"—5 HP—440/3/60—with starter & spares.

34 

UNUSED BLACKMER VERTICAL ROTARY PUMP

4"—100 GPM—100 PSI—15 HP — 440/3/60 — gear head.

35 

R-2418 WATEROUS CARGO PUMP

Bronze—14"—top discharge—capacity 2500 GPM—20 PSI. Bilge service—oil service—2400 GPM—75 PSI. Reduction gear. ENGINE: Cummins JN-130M—6 cylinder—4⅛ x 5—130 HP—air starting.

36

UNUSED BOILER FEED PUMP

Worthington Triplex—36.5 GPM—590 PSI—variable stroke—2¾ x 5—P_2—S_2—R_2 vessels. 40 HP—230 VDC—1800/2400 RPM.

37 

UNUSED WARREN BRONZE PUMP

1175 GPM—11.1 lbs.—8" x 8". MOTOR: Reliance 10 HP—115 VDC—850—RPM—76 amps.

38 

NEW WORTHINGTON VERTICAL SUBMERSIBLE BILGE PUMP

For emergency use on passenger ships, etc. PUMP: JAS—264 GPM—171' head—two 6" inlets—one 5" outlet. Motor: 40 HP—230 VDC—149 amps.

39 

NEW—UNUSED BRONZE VERTICAL LST BALLAST PUMP

1500 GPM—56' head or 25 lbs. — 8" suction — 6" discharge. MOTOR: Century 30 HP—230 VDC—110 amps—1750 RPM — 40°T rise — stab. shunt—BB drip proof —controls available.

40 

EXCELSIOR MOLASSES PUMP—SIZE 5½"

6" Suction and discharge—210 GPM—45 PSI—125 RPM. MOTOR: 10 HP—230 VDC—Frame 67—with gear.

41 

UNUSED SIZE 4 BUFFALO 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" x 4"—built for USN DD destroyers.

42 

COFFIN MODEL F BOILER FEED PUMP—VICTORY OR T2

Control valve 1¼"—Form V1—constant pressure regulator — type C—150 HP—200 GPM at 575 lbs discharge pressure. 7200 RPM —440 PSI—500°TT.

43 

BRONZE 14x14x12 CARGO STRIPPING PUMPS

700 GPM @ 100 lbs. Ex-T2 Tanker pump. Also available in steel.

WINCHES AND WINDLASSES

44 

VICTORY UNIT WINCHES

50 HP—230 VDC—U-1, U-2, U-4, U-5—reconditioned.

45 

MODEL U-6 DOUBLE DRUM WINCHES WITH GYPSIES

50 HP—230 VDC—reconditioned.

46 

HYDE NO. 7 WINDLASS

1¾" Chain—Wildcat centers 3'3"—Handles 3000 lb. anchors. MOTOR: 8.7/35 HP—440/3/60—1800/450 RPM.

47 

NEW—UNUSED LINK BELT WINDLASS

1⅝" and 7000 lb. anchors. 56" Centers—50 HP—230 VDC—spares.

48 

IDEAL WINDLASS—UNUSED

1-5/16" Chain—36" Centers—15 HP—115 VDC—1750 RPM—6000 lb. line pull.

49 

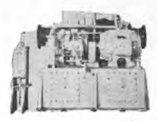
UNUSED 70 HP McKIERNAN-TERRY WINDLASSES

2¾" 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.

50 

LCT-6 JAEGER GASOLINE DRIVEN WINCH

With torque converter & free declutchable drum, 31,000 lbs. @ 6 FPM or 3000 lbs. & 350 FPM. DRUM: 20"x23¾"x37½". GYPSY: 15"x13". Twin Disc torque converter—6 cyl. Hercules gas engine model WXLC-3. Total weight approx. 4500 lbs.—serial 81843.

51 

4 SINGLE DRUM ELECTRIC HYDRAULIC WINCHES

From Navy Research Ship Liberty AGTR-5. Like new. Mfg. by Lakeshore Engineering Co. Gypsy heads can be operated separately from drum. 7400 lbs. @ 220 FPM; 624 ft. of ¾" rope in 5 layers. Total weight of winch, motor & pump 7221 lbs. OAW 84¼"; OAL 88"; OAH 58". With remote control stands.

MISCELLANEOUS

52 

VICTORY AP2—WESTINGHOUSE MAIN PROPULSION GEAR

6000 SHP—Serial 4A-1620—Medina Victory.

53 

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

20" Ex. inlet—⅝" Cu-Ni tubes—with or without air ejector.

54 

1 PAIR OF 300 HP UNION DIESEL ENGINES

Port and starboard—model 06—300 HP at 350 RPM —4 cycle—direct reversible—11 x 15—overhauled 1966—in good condition. Just in from Navy.

55 

MODEL O-2-D M&T RECONDITIONED UNITS

Hydraulic starting, steering, raising & lowering tailfin. Navy reconditioned 1965—fully checked out by us. Will demonstrate running. Wt. about 9500 lbs. PROPELLOR: 48"x24"—3-blade.

56 

HYDE 30" DOCK CAPSTAN

10" x 10"—reversible—W.P. 125 lbs—2½" steam—3" exhaust.

57 

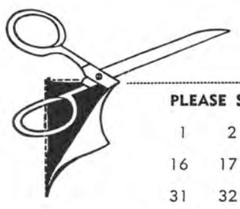
DOUBLE INPUT—SINGLE OUTPUT DIESEL REDUCTION GEARS

Farrell-Birmingham—3200 SHP. Reduction gear: 1.81:1—handles two 1600 HP diesels @ 720 RPM. With hydraulic couplings & Fawick clutch. Port and starboard.

58 

INGERSOLL-RAND MODEL 40 AIR COMPRESSOR

Two stage—135 CFM—7" x 6¼" x 5"—110 lbs.—870 RPM—inner cooler. MOTOR: Allis-Chalmers 40 HP — 230 VDC — 145 amps — 1750 RPM — Model EB121.



PLEASE SEND INFORMATION ON THE FOLLOWING: (Please circle items) 7/15/71

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46	47	48	49	50	51	52	53	54	55	56	57	58		

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

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

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

Claud A. Lapsley Forms Own Company In Pompano Beach, Fla.

Claud A. Lapsley, who recently resigned as vice president of Fearnley & Eger, Inc., has announced the formation of his own company, Lapsley Associates, Inc., located in Pompano Beach, Fla. The firm will act in the capacity of marine transportation consultants.

Mr. **Lapsley** has served in various capacities at sea and has had extensive experience in operations and chartering of liner vessels, tankers, bulk carriers and specialized liquid chemical carriers with various shipping firms in New York.

The new company's address is P.O. Box 2121, Pompano Beach, Fla. 33061.

Pacific Northwest Section Honors Harold Hanson

Reminiscing over previous annual meetings at Bremerton, shown left to right, are: **Dan Bartlett,** Westinghouse-California; **Ken Wheeler,** Sections committee chairman; **Joe Dyer,** retired; **John Cauduro,** chairman, Columbia River Area; **Pete Sias,** chairman, Pacific Northwest Section; Rear Adm. **William F. Petrovic,** Commander, Puget Sound Naval Shipyard; **Harold Hanson,** honored member and chairman, public relations; **William Watkins,** retired; **Carl Newstrom,** PSNS, and **Earl Lagergen,** PSNS.

A tribute to **Harold Hanson,** well-known naval architect, brought many old friends and associates together for the Pacific Northwest Section of The Society of Naval Architects and Marine Engineers annual meeting at Bremerton, Wash., on May 13, 1971.

Mr. **Hanson,** who "claims" he will retire this year, was one of the original founders of the Pacific Northwest Section, which is celebrating its 25th anniversary this year.

Rear Adm. **William F. Petrovic** welcomed everyone to Puget Sound Naval Shipyard and hosted a movie entitled "Lest We Forget," which dealt with aircraft carrier operations, including replenishment at sea, and also scenes from the USS Enterprise and the USS Forrestal fires.

During the business meeting, new officers were installed with **Lou D. Chirillo** taking over the chairmanship from **Pete Sias.** Several awards were made to outgoing officers and committee members.

The highlight of the evening was a review of Mr. **Hanson's** life as a naval architect, and many slides of his designs were shown. His many friends reviewed technical papers that he had presented in the past and listened to a report on his recent trip to New Zealand.

Moore And McCormack Elects P.R. Tregurtha Vice President-Finance

Paul R. Tregurtha

Paul R. Tregurtha has been elected vice president-finance of Moore and McCormack Co., Inc. and its subsidiary Moore-McCormack Lines, Incorporated, according to **James R. Barker,** chairman and president. Mr. **Tregurtha** was also elected a director of Moore-McCormack Lines, who operate a fleet of American-flag vessels serving the East Coast of South America and South and East Africa from the East Coast of the United States.

Mr. **Tregurtha** was formerly vice president and controller of Brown and Sharpe Manufacturing Company in Providence, R.I. He joined Double A Products Company, a subsidiary of Brown and Sharpe, in 1963 after graduating from Harvard Graduate School of Business Administration, where he was a Baker Scholar. Mr. **Tregurtha** received a bachelor's degree in mechanical engineering from Cornell University, Ithaca, N.Y. in 1958, subsequent to which he served in the U.S. Air Force.

Ring To Supervise Oceangoing Fleet For Evans Products

Evans Products Company's international group has announced the creation of a post to supervise the company's fleet of oceangoing vessels.

John F. Ring Jr. of Massapequa, N.Y., has been named director of marine transportation of Evans's international group, according to **Walter C. Jennison,** Santa Ana, Calif., international group executive vice president. Mr. **Ring,** who will be based in Santa Ana, will oversee the operations of the company's fleet of eight 26,800-ton bulk carriers. He will coordinate his activities with Retla Steamship Company, a Long Beach, Calif., based shipping company, which will continue to operate Evans's vessels as its general agent. The international group is the free world's largest importer of lauan and hardwood plywood and prefinished and hardwood panels, and is engaged in a wide range of international trade activities. The international group is part of Evans's building materials group, which had 1970 revenues of $258 million.

Mr. **Ring** comes to Evans with over 10 years of marine experience. He is a member of The Society of Naval Architects and Marine Engineers, U.S. Naval Institute and Society of Maritime Arbitrators. Prior to joining Evans, he served with the Bunge Corp., New York, N.Y., as assistant to corporate vice president and chartering manager.

Evans Products Company is a major manufacturer and distributor of building materials for use in residential and mobile home construction and a manufacturer of pre-cut homes, cargo damage-prevention devices for trucks and railcars, and foundry products.

Luckenbach Appoints General Manager Tampa Operations

Richard D. Leever

Luckenbach Steamship Co., Inc. has announced the appointment of **Richard D. Leever** as general manager for Luckenbach operations in Tampa, Fla. Mr. **Leever** was formerly vice president, operations, for Gulf Florida Terminal Company of Tampa.

In discussing this addition to the executive management staff of Luckenbach, **Edgar F. Luckenbach Jr.** president and chairman, stated that he "considered his company most fortunate to have attracted such an outstanding individual whose years of experience and knowledge of the steamship business will prove invaluable in progressing the present expansion of the company. Mr. **Leever** is relieving Capt. **Kalle Jensen,** who remains vice president, operations, and who will concentrate on the development of new projects in broadening our company's base."

Navy Oceanographer Names Stewart Nelson

Stewart B. Nelson

The Oceanographer of the Navy, Rear Adm. **W.W. Behrens Jr.,** has announced the selection of **Stewart B. Nelson** as the special civilian assistant to the director of the recently established Environmental Quality Division.

The mission of this new division is to provide technical services and support to the Navy's Environmental Protection Program and to coordinate the efforts of appropriate activities under the Oceanographer to enhance support of this program.

Mr. **Nelson** previously served in the Oceanographer's staff as a senior scientific staff assistant, with primary responsibilities for the management of oceanographic facilities. He has recently served, in March 1971, as co-chairman of the Navy's Workshop on R&D Environmental Programs; delivered one of the principal addresses at the International Association of Pollution Control sponsored seminar on "Pollution and the Marine Industry" in New Orleans, La., April 1-3; and been designated as a DOD representative on the marine pollution task force for the UN Conference on the Human Environment.

Mr. **Nelson** serves as a consultant to the National Science Foundation, and is a member of the Marine Technology Society, Institute of Environmental Sciences, Smithsonian Associates, The Society of Naval Architects and Marine Engineers, American Society of Naval Engineers, Steamship Historical Society of America, and the Naval Historical Foundation.

$1.4 Million Contract Awarded To Lockheed To Develop Buoy Hull

A streamlined ocean buoy with a radically different type of hull will be developed by Lockheed Missiles & Space Company under a $1.4 million contract to the National Oceanic and Atmospheric Administration (NOAA), a Commerce Department agency. According to NOAA officials, the new boat-shaped hull shows promise for being a possible hull for the deep-water buoy system planned by NOAA's National Data Buoy Project.

Lockheed will deliver one ocean platform incorporating the new hull to the National Data Buoy Project early in 1972. NOAA will begin testing the new buoy in the Gulf of Mexico in May of that year, supported by the Coast Guard cutter Acushnet. The 21-ton Lockheed buoy is 29-feet long and nearly 10-feet wide. A deep keel extends 20 feet beneath the surface, keeping the platform stable. Horizontal stabilizers at the top rear of the keel minimize pitching action.

James S. Hull, Lockheed project manager, said the advantages of the new buoy hull are greatly reduced drag compared to conventional hulls, increased ease of handling for maintenance crews, and increased chances for survival in severe storms. "Reduced drag permits the use of smaller, lighter mooring lines, which in turn reduce cost and handling problems," Mr. **Hull** explained. "Reduced drag also gives the buoy a better chance to ride out a storm, because there's less strain on the mooring line." Mr. **Hull** said refinements in the design and improvements in the buoy's stability had come from many hours of hydrodynamic testing with models at Lockheed's tow testing facilities in Sunnyvale and San Diego, Calif.

Buoy pictured here, with slight differences in keel, will be delivered to NOAA for ocean testing in May 1972.

Based on the tests, Lockheed Ocean Systems engineers believe the combination of boat hull, deep keel and horizontal stabilizers will create a stable ocean platform in a relatively small package. Increased stability in standard buoy designs usually depends on increasing size and weight, which add to handling and maintenance problems.

Actual construction of the new hull and associated mechanical systems will be done in Seattle, Wash., by Lockheed Shipbuilding and Construction Co., a sister company of the missile and space firm.

Arne Pettersen Joins Asca Marine

Anthony V. Scarlatos, president of Asca Marine, Inc., New York, N.Y., has announced that **Arne Pettersen** has joined its staff.

Mr. **Pettersen** was formerly president of Fearnley & Eger, Inc. in New York for many years, and more recently was resident manager of F.V. Hannum & Co., Inc. He brings to Asca Marine a wide experience in operations and chartering—dry cargo and tankers (including specialized vessels for the carriage of petrochemicals and hydrocarbon gases).

Gulf Boat To Build Tug For Viziar Towing Co.

A 120-foot tugboat to be used in the offshore oil industry is to be built for Viziar Towing Co., Galiano, La., by Gulf Boat Building Corp., Biloxi, Miss. The total cost of the vessel will be $1,253,000 and Gulf Boat's portion will be $542,000. Engines, props and electronic equipment will be furnished by the owner.

A 105-foot crew supply boat is currently being constructed by the yard for Blue Water Transportation, Houston, Texas.

SNAME Southeast Section Holds Annual Meeting —Oceanographic Research Was The Subject

Johnson-Sea-Link Smithsonian submersible. Six-foot diameter acrylic sphere accommodates two men in control compartment. Three-man diving chamber is behind. Craft can maneuver in any direction at depths up to 1,000 feet. A special hydraulic crane handles the vessel on or off support ship Sea Diver.

The annual meeting of the Southeast Section of The Society of Naval Architects and Marine Engineers was held at the Holiday Inn in Vero Beach, Fla., on Friday, May 21, 1971.

Section chairman **Robert W. Hobbs** presided over the business meeting at which the following officers were elected for the coming year: chairman, **Frank C. DeGrim**; vice chairman, **Edward L. Teale Jr.**; secretary-treasurer, **James S. Krogen**; executive committee, **Raymond T. Greene, Robert W. Hobbs, Harold F. Robinson** and **E.B. Williams**; papers committee chairman, **R.J. Hutchinson**; meetings committee chairman, **Paul Muzyka**; Southeast Section representatives on Society committees—membership committee, **Raymond T. Greene**; Sections committee, **Rudolph F. Matzer**, and public relations committee, **Charles S. Smith.**

Oceanographic research was the subject of the technical meeting which had been planned by **E.B. Williams,** member of the Society and member of the executive committee of the Southeast Section. It is significant that oceanographic research was likewise the subject of the first meeting of the Southeast Section in 1965, at which Mr. **Williams** was the organizational chairman.

On Friday afternoon, there was a tour of the Marine Science Center of Florida, located between Vero Beach and Fort Pierce. The tour was conducted by Capt. **A.C. Smith,** USN (ret.), member of the Society and resident program manager for the Smithsonian Institution at the Marine Science Center, which is the focal point of operation for several organizations, including Florida Institute of Technology, Sea Diver Corporation and the Harbor Branch Foundation.

There are close ties relating these organizations with **J. Seward Johnson,** prominent industrialist who has provided generous support in the field of ocean science, and with **Edwin A. Link,** who has turned his inventive talents to the exploration of the sea bed. Mr. **Link,** nationally known inventor of the famous Link Trainer, is also the inventor of the Johnson-Sea-Link, a unique carried-on-board submarine which was built in the shop facilities at the Marine Science Center.

The Johnson-Sea-Link was commissioned by the Smithsonian Institution and placed in operation at the Marine Science Center on January 29, 1971. The new Matthew Fountaine Maury medal for distinguished contributions to ocean science was awarded by the Smithsonian Institution to Mr. **Johnson** and to Mr. **Link** at the commissioning ceremony. Many notable figures from the oceanographic world were present on this occasion.

The Harbor Branch Foundation is presently erecting a Marine Biology Laboratory at the Marine Science Center. The laboratory will be complete with efficiency apartments and technical facilities for scientific investigations.

Mr. **Link's** 100-foot Sea Diver, the support vessel for the Johnson-Sea-Link, was seen at her pier. The Sea Diver's hydraulic crane had cradled the submarine in its onboard stowage position.

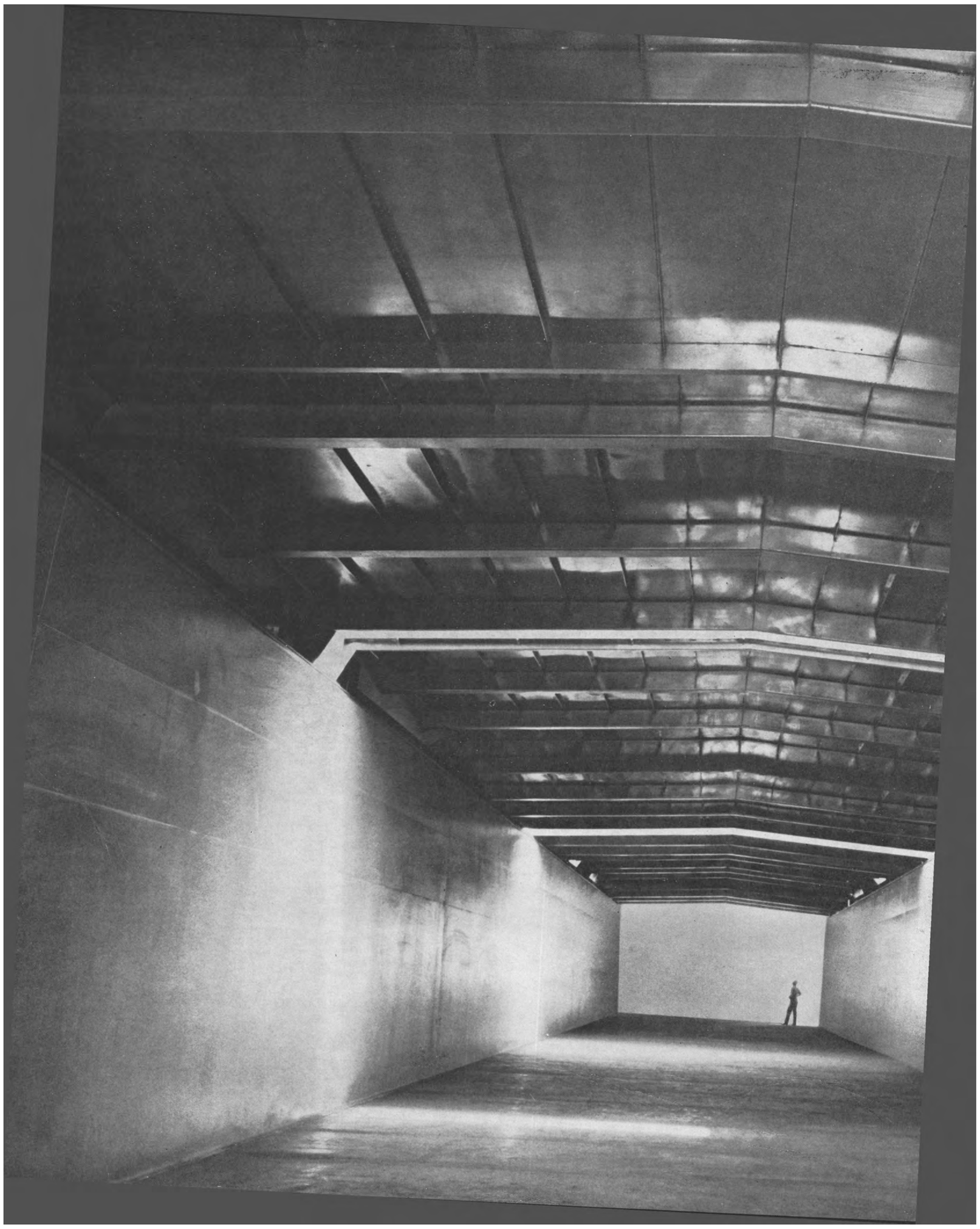
The former 125-foot Coast Guard cutter Yeaton was undergoing extensive reconstruction at the center and will be identified as research vessel Johnson. The Johnson will be unique in that it will support a new acrylic submarine similar to the Sea Link, will carry the new Link Crane, and will support the divers with a below deck decompression chamber to which the new Sea Link can mate. She will have a 5,000-mile cruising radius, a cryogenic helium-oxygen reclamation system, and modern oceanographic laboratories. The naval architectural design work for this conversion is being performed by J.B. Hargrave, Naval Architects, Inc., of West Palm Beach, Fla., under the supervision of **Jean E. Buhler,** member of the Society.

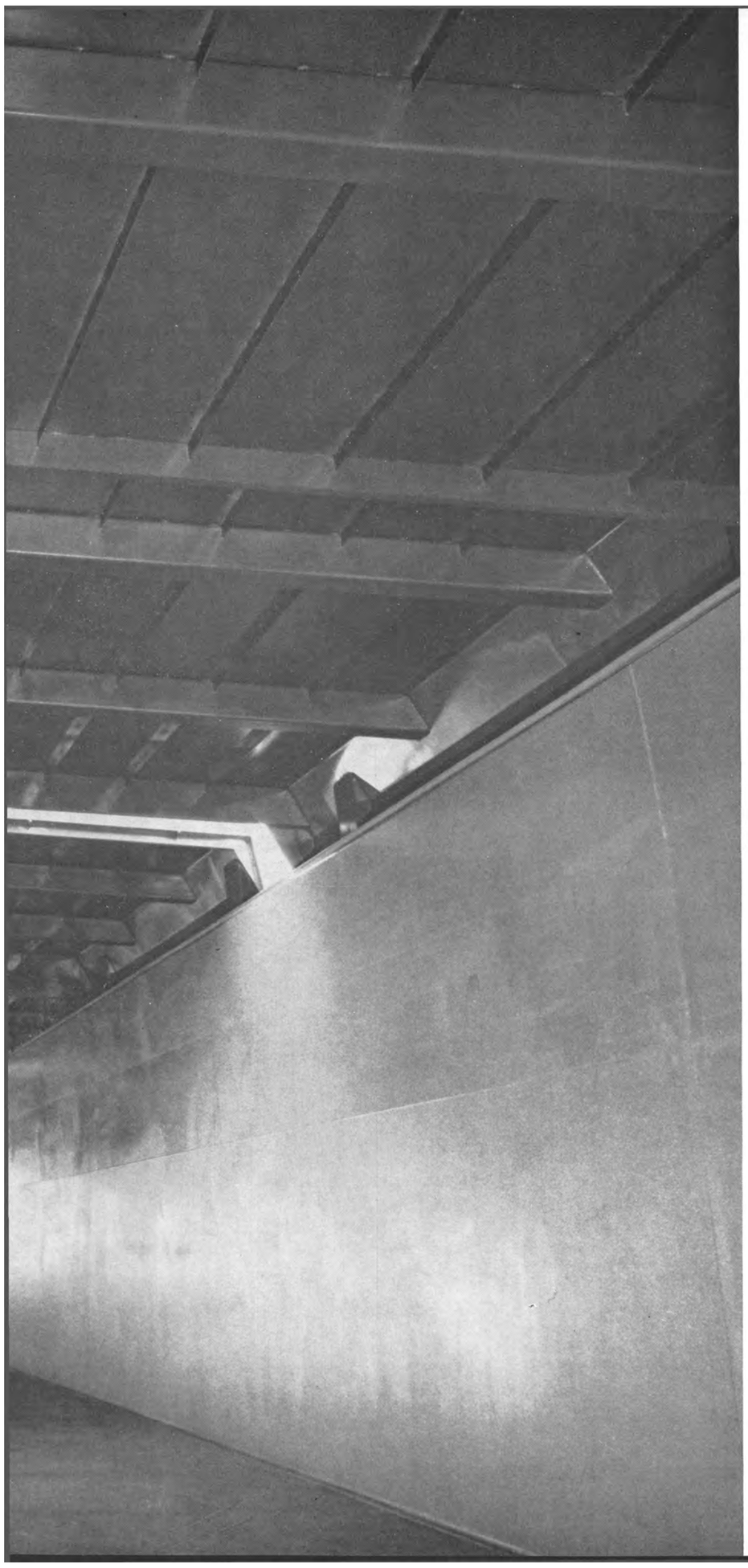
At the conclusion of the tour at the Marine Science Center, The Florida Institute of Technology was host at a reception on board its ketch-rigged, diesel-powered research yacht Huntress. Rear Adm. **Philip D. Gallery,** vice president of F.I.T. for Development Affairs, and **Mrs. Gallery,** presided at the reception. Dr. **Jerome P. Keuper,** president of F.I.T., was unable to be present.

Following the dinner and the business meeting, Mr. **Williams,** emphasizing the importance of oceanography to The Society of Naval Architects and Marine Engineers, introduced Mr. **Link,** who outlined his objective of oceanographic exploration and scientific investigations. Mr. **Williams** then introduced Rear Admiral **Gallery,** who discussed the F.I.T. plans for oceanographic research facilities at the Marine Science Center. Captain **Smith,** the featured speaker, was then introduced.

Captain **Smith** described the features of the submersible Johnson-Sea-Link, which can accommodate two men, pilot and observer, in its six-foot diameter bubble constructed of acrylic plastic material four inches in thickness, from which they have a panoramic view of the continental shelf. Behind the bubble is an eight-foot-long diving chamber which accommodates three scientists who are able to leave and enter by a lock-in, lock-out hatch and explore the ocean floor at depths up to 1,000 feet. Captain **Smith's** address included a motion picture film showing scientists exploring the ocean floor.

On Saturday morning, following the annual meeting, there was a meeting of the newly elected executive committee of the Southeast Section. Mr. **DeGrim,** the new chairman, presided. Mr. **Buhler,** chairman of the steering committee for the 1973 Spring Meeting of the Society, then presided over a meeting of his committee.





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Royal Viking Line Names Oslo Manager

Royal Viking Line, new Norwegian-flag world cruise line, has named **Sven A. Ekeheien** general manager and director in the Oslo operations headquarters, it was announced by **Warren S. Titus,** president.

Although the global marketing organization of the company is based in San Francisco, all operations of the line's vessels will be handled from the Oslo office, according to Mr. **Titus.**

Mr. **Ekeheien,** whose appointment is effective July 15, will be returning to Oslo after 10 years of experience in the shipping industry and international business field in Canada and the United States. In his new post, he will direct all operations of the Royal Viking ships.

Born in Oslo in 1931, Mr. **Ekeheien** received his law degree from the University of Oslo and his M.B.A. degree from the University of Minnesota. After serving as a management consultant in Oslo, he went to Montreal in 1960 to direct North American operations for the Munck Group, Norwegian marine machinery manufacturers.

For the last four years, Mr. **Ekeheien** has been in New York with Peraco Chartering Corporation, dry cargo chartering firm, where he was responsible for business development and contract work with major integrated shipping projects.

The first RVL ship to be in service will be the 21,500-ton Royal Viking Star, set for commissioning in July 1972. She will be followed in 1973 by two all first-class sister ships. All three vessels will operate in worldwide cruising.

Edward D. Ransom Heads San Francisco Marine Exchange

Edward D. Ransom (left), new president of the Marine Exchange, is congratulated by **Chris Blom** (right), retiring head of the regional shipping service and development agency.

Edward D. Ransom, a leading maritime lawyer, has been elected president of the 122-year-old Marine Exchange of the San Francisco Bay Region.

Mr. **Ransom,** a senior partner in the San Francisco headquartered law firm of Lillick, McHose, Wheat, Adams & Charles, was formerly general counsel of the Federal Maritime Board and Maritime Administration, Washington, D.C. His selection was made at the June 15 board of directors session of the Golden Gate shipping service, navigation and development organization. He succeeds **Chris Blom,** president of Overseas Shipping Co.

Also picked to lead the West's oldest maritime agency were **John R. Page,** 1st vice president (president, General Steamship Corp.); **Kenderton S. Lynch,** 2nd vice president (vice president, Pacific Far East Lines); **Lloyd O. Haefner,** 3rd vice president (vice president, Johnson & Higgins of Calif.), and **William F. Ward,** treasurer (vice president, Bank of America, N.T. & S.A.). Also reelected was **Robert H. Langner,** executive secretary.

The new top Exchange official previously served as a director and first vice president, as well as legal chairman. A World War II Navy lieutenant commander, Mr. **Ransom** is a native of North Dakota and a law graduate of the University of Michigan. In addition to his admiralty law assignments with his firm—which maintains Washington, D.C. and Los Angeles offices—Mr. **Ransom** is a director of the San Francisco Legal Aid Society, served as chairman of the American Bar Association's maritime transportation committee, and on the U.S. Maritime Law Association's executive committee.

Active internationally, the new president has participated in international maritime law conferences as a member of U.S. delegations. He is also a member of San Francisco's World Trade Club.

Bailey Fluidics Automation Center Appoints Thompson

E.R. Thompson Sr.

E.R. Thompson Sr. has been appointed sales and marketing manager at the Bailey Fluidics Automation Center, a unit of Bailey Meter Company. He will plan, coordinate and direct the sale of fluidic products and systems in new markets.

Mr. **Thompson** joined Belfab, a unit of Bailey Meter Company, in 1957 as chief engineer and in 1967, was appointed sales manager. Prior to joining Belfab, he was a project engineer at Pratt & Whitney and was responsible for engineering developments that led to the first liquid hydrogen fuel control system for the U.S. space program.

Mr. **Thompson** holds a B.S. degree in mechanical engineering from Michigan College of Mining and Technology.

The Bailey Fluidics Automation Center manufactures digital fluidic systems and components for machine tool, industrial process and other sequential control applications.

A subsidiary of Babcock & Wilcox, Bailey Meter Company is a leading manufacturer of instrumentation and control and computer systems for power plant, industrial process, and marine automation.

Dixie To Build Two Dredges For Use In 'Moving' Lake

Dixie Dredge Corporation, St. Louis, Mo. and Miami, Fla., has been awarded a contract by Titanium Enterprises, a joint venture of American Cyanamid Company and Union Camp Corporation, Green Cove Springs, Fla., for the manufacture of two heavy-duty 16-inch cutter suction dredges. Delivery of the first unit is scheduled for September 1971, with the second unit to follow in October.

The specially-designed electric dredges will be used by Titanium Enterprises in mining titanium from the company's property at Green Cove Springs. They are designed for concurrent operation, working side by side in a common "moving" lake, pumping to a floating plant. After the mineral is removed, the material will be returned to the lake behind the dredges, continually refilling the lake from the rear as it is advanced at the front. The dredges and plant are planned to operate 24 hours per day, seven days per week, and the projected design life for completion of the project is 25-30 years.

The dredges are designed with electric motors driving the 16-inch main dredge pumps and auxiliary equipment. Power is supplied by floating marine cable from shore. The powerful cutter is a standard Dixie Hydra-Drive unit, driven by low-speed hydraulic motors. Each dredge is equipped with eight individual winches for the special hauling operation and for spud and ladder operation. The four electric hauling winches, two forward and two at the stern, are electronically synchronized. One-man operation for each dredge will be accomplished from an elevated, insulated and air-conditioned control room.

The dredges will be built at the new Dixie Dredge plant in St. Louis. They will be assembled and tested at the plant, then dismantled and transported to the mining site in Florida. Dixie Dredge personnel will then reassemble and launch the two machines and train Titanium Enterprises personnel in their operation. **Robert J. Jantzen** is acting as special marine consultant for Titanium Enterprises on the project and had primary design responsibility for the dredges and attendant marine equipment.

New Orleans Firm Building Tank Terminal In Korean Port

The New Orleans based International Tank Terminals, Ltd., one of the largest independent bulk storage terminal operations in the United States, has begun construction on a public tank terminal in Korea, which will be the first such facility in that country. The modern high-capacity storage and drumming facility is being constructed at the port of Ulsan, a new port city which is the largest petrochemical and industrial district in Korea.

Announcement of the ground breaking and start of construction on the new plant was made in New Orleans by **Thomas B. Coleman,** president of International Tank Terminals-Korea, Ltd. and vice president-treasurer of International Tank Terminals, Ltd., the parent company. The local firm is a partner of ITT-Korea with Pumyang, Ltd., a leading trading corporation of that country. Principals are **E.P. Lee** and **S.P. Lee,** Korean industrial and financial giants. ITT-Korea will maintain executive offices in the Bokchang Building in Seoul.

The new terminal will bring savings of millions of dollars to Korean consumers. It will permit importation of tallow, lards, chemicals, oils and petroleum from bulk tankers rather than in 55-gallon drums and five-gallon tins, which are presently transported and handled at uneconomical rates. ITT-Korea will provide dockage, bulk storage, sampling, drumming and distribution facilities through an ultramodern plant being built on a large tract of ground at the deepwater port. ITT-Korea's dock will accommodate vessels of drafts up to 50 feet and will allow Korea to import much larger quantities of bulk liquids. The ITT-Korea Ulsan plant is being financed in part with United States Aid for International Development funds. Assistance and encouragement of USAID officials were an important factor in the negotiations of the ITT-Korea, Ltd. contract, Mr. **Coleman** said.

James J. Coleman, Jr., Korean Consul for Louisiana, welcomed the start of construction on the Ulsan Terminal. "This joining of experienced Korean business interests and a New Orleans based international terminal company will do a great deal toward bringing closer together our city and state with Korea. The Korean Consulate is proud and delighted to have been part of this substantial project. It is a great step forward in our effort to develop more trade with Korea through the Port of New Orleans."

International Tank Terminals, Ltd. is presently negotiating with the state of Louisiana to construct a superport at the mouth of the Mississippi River.

Electric Boat Division Plans Enclosed Construction Area For Four Submarine Building Ways

A contract to enclose four submarine building ways and improve working conditions in the north yard at Electric Boat Division of General Dynamics, was recently signed at the Groton, Conn., facility.

The contractor, Berlin Construction Co. of Berlin, Conn., is expected to start construction of the enclosure this summer. The project, which is part of a company-funded shipyard improvement plan, will require about one year to complete. The improvement includes a sheet metal roof and sidings for the four Thames River shipbuilding ways similar to the enclosed ways in the south yard. The project will include additional lighting. There will be no interference to submarine construction currently under way in the north yard.

Joseph D. Pierce, general manager of Electric Boat Division, said that "the enclosed construction area will provide a greatly improved working environment for thousands of our production employees. It will improve safety conditions and offer more comfortable year-round habitability in that the employees will no longer be exposed to the elements."

Maritime College Broadens Graduate Program To Include All Forms Of Transportation

A broadening of the graduate study program of the State University of New York Maritime College, under which, while still placing emphasis on the maritime industry, all forms of transportation will be covered, has been announced by Rear Adm. **Edward J. O'Donnell,** USN (ret.), president of the Maritime College. The expansion effort will commence with the 1971-72 academic year.

Hitherto, the Maritime College's graduate study program led to the degree of master of science in marine transportation management. Under the new plan, which takes cognizance of the involvement of all forms of transport in intermodal transportation, the degree will be master of science in transportation management.

Initially, the course additions to the graduate program will include air transportation and airport management, and eventually it is planned to add courses on other modes of transport, such as railroads and trucking.

The graduate courses of the Maritime College are held evenings, in the Seamen's Church Institute, 15 State Street, in Lower Manhattan. This location, virtually in the heart of New York City's business center, has proved to be most convenient.

The program was begun with the Spring Semester of 1969 and has since shown increased attendance and interest from the transportation industry.

Livingston Library Building Dedicated At Webb Institute

Webb Institute president **William A. Brockett** (left) is shown shaking hands with chairman of the board of trustees **John A. Livingston,** whose gift of $250,000 made the library possible.

The newly completed Livingston Library at Webb Institute of Naval Architecture, Glen Cove, N.Y., was dedicated on June 5 in ceremonies climaxed by the unveiling of the memorial plaque. The new library, named in memory of **Elizabeth Livingston,** was made possible by a gift of $250,000 by **John A. Livingston,** her son. Mr. **Livingston,** a resident of Pelham, N.Y., is a graduate of Webb in the class of 1924, and chairman of the board of trustees.

The Livingston Library has a capacity of 50,000 volumes and is located in a magnificent setting on the Webb campus overlooking Long Island Sound. The architects, the Moore and Hutchins Partnership, designed the building to take full advantage of the site and to be integrated in style with existing Webb buildings. The execution meets the design intent in exterior appearance with a modern functional interior.

Webb Institute is an unusual engineering college with a single curriculum leading to the B.S. degree in naval architecture and marine engineering. This degree is offered in only two other institutions in the United States—M.I.T. and Michigan. Students come from all parts of the United States and are all on free tuition scholarships, a school policy since Webb was founded in 1889. As Mr. **Livingston** remarked at the dedication: "It is a real privilege for me to have played a part in providing this beautiful building and in so doing to show my gratitude to the founder, **William Henry Webb,** to whose generosity I and many others owe our college education."

The dedication was an integral part of Alumni Homecoming Day at Webb, attended by a large percentage of the 700 living graduates. At the conclusion of the ceremonies, Rear Adm. **William A. Brockett,** USN (ret.), president of Webb Institute, accepted the building on behalf of the trustees and opened the Livingston Library for general visiting. He also introduced and expressed his appreciation to those present representing the architects Moore and Hutchins, the general contractor Frank L. Marino Corp. of Elmont, N.Y., and the Library Bureau of Sperry Rand Corp. who supplied the library furniture and equipment.

Astilleros Espanoles Licensed To Produce B&W Diesels

Burmeister & Wain Engineering Co. of Copenhagen has signed an agreement with the Spanish shipyard group, Astilleros Espanoles in which the latter will produce B&W diesel engines.

The new agreement supersedes previous agreements between B&W and the Sociedad Espanola de Construccion Naval and Astilleros de Cadiz. The two yards were merged into Astilleros Espanoles along with a third shipbuilding firm, the Eskalunda facility at Bilbao.

Shell Companies Announce $1.2 Billion Tanker Program

Speaking at the recent annual meeting of The "Shell" Transport & Trading Company Limited in London, the chairman, Sir **David Barran,** revealed that orders for new tankers for the Shell fleets, either placed or being actively negotiated, now total 32, involving a capital expenditure for the next five years well in excess of $1.2 billion. Twenty-five of these ships will be the second generation of very large crude carriers (VLCCS), each with a deadweight tonnage of over 250,000 tons.

Orders for the first generation of ships of 200,000 deadweight tons were initially placed in 1965, and these began to come into service in 1967. The new ships are for delivery over a period beginning late in 1972 and stretching through to the end of 1976. Sir **David Barran** pointed out that the capital cost per deadweight ton of the new ships will be at least double that of their predecessors. Shell International Marine currently operates 38 VLCCS, 21 of which are owned and 17 chartered.

The new buildings will add between six and seven million tons to ships owned and in addition, a further six million tons of VLCCS have been chartered to come into operation between now and 1975. Thus, by 1976, at least 13 million tons of VLCC-carrying capacity will have been added to the various Shell fleets.

The disposition of the orders which are already firm is as follows: six to be built by Chantiers de L'Atlantique, St. Nazaire, France; four by Odense Steel Shipyard Limited, Denmark; two by Bremer Vulkan, Bremen, Germany; five by Harland and Wolff Ltd., Belfast, Northern Ireland, and one by Mitsui Shipbuilding Corporation, Japan.

These ships will be used mainly for the supply of oil from producing areas to northwest Europe and to Japan.

Shell International Marine has recently chartered 13 smaller product carrying ships, in the 30,000-deadweight range and, in addition to negotiations for further group-owned VLCCS, it is likely that orders will be placed for a number of product carriers, subject to delivery and price being satisfactory.

Seven of the other ships in the figure of 32 referred to by Sir **David Barran** will be liquefied natural gas carriers intended to service the contract for the export of liquefied natural gas from Brunei to Japan.

These ships will have a capacity of approximately 2,648,670 cubic feet each and are equivalent in size to a 100,000-ton deadweight crude oil carrier. All are being built in France ;four by Chantiers de L'Atlantique, two by Constructions Navales et Industrielles de la Mediterranee, La Seyne Sur Mer, and one by Chantiers Navals de la Ciotat, La Ciotat.

158,000-Bbl Barge Built For Crowley By Gunderson

The largest ocean-rated oil barge ever built on the West Coast was launched on June 18 by Gunderson, Inc., according to **William R. Galbraith,** vice president, sales, for the Portland-based marine and railroad car construction firm. Built for Crowley Launch & Tugboat Company, San Francisco, Calif., the giant barge measures 430 feet by 80 feet by 27 feet, with a capacity of 158,000 barrels or 6½-million gallons of oil.

Approximately 3,000 tons of steel went into the vessel, christened Barge 103 by **Mrs. C. Bruce Ward,** wife of Gunderson, Inc.'s president, in a ceremony at the Portland firm's Front Street facility.

Constructed according to Coast Guard and American Bureau of Shipping regulations, Barge 103, with 19,000 tons displacement, is rated by ABS for full ocean service.

Gunderson, Inc., is a subsidiary of FMC Corporation, San Jose, Calif.

Long Beach Naval Shipyard Hosts Meeting Of SNAME Los Angeles Metropolitan Sect.

Pictured (left to right) are Comdr. **Tom Wilson,** USN (ret.), local Chapter president, Capt. **Richard C. Fay,** USN, Commander, Long Beach Naval Shipyard, and Lt. **R.F. Grace,** USN, Commanding Officer of the USS Grand Rapids (PG 98).

On June 12, the Long Beach Naval Shipyard played host to the Los Angeles Metropolitan Chapter of The Society of Naval Architects and Marine Engineers. After lunch in the Executive Dining Room, a group of 86 members and guests were given a short talk and slide presentation by Capt. **Richard C. Fay** on the mission, size and performance of the shipyard. They then saw movies on the fabrication of the aluminum hull and the fiberglass deckhouse, as well as the performance of the gas turbine propulsion plant of the USS Grand Rapids, and of the ship itself. This was followed by a tour of the shipyard. On this tour, the group was shown the drydocks, the floating crane (DE 171) and the machine shop. The group then visited the USS Grand Rapids (PG 98), which was in drydock. This permitted examination of both inside and outside portions of one of the Navy's new patrol boats.

The tour guides were Capt. **N.O. Larson,** USN, Planning Officer, and **Phil Finkelstein,** chief design engineer, both of the Long Beach Naval Shipyard.

FIRST EUROPEAN-BUILT LASH: Construction of the first two LASH (Lighter Aboard Ship) vessels to be built in Europe is under way at the Cockerill Yard, Hoboken, Belgium. The keel laying for the first ship, shown above, took place on June 7. The ships, designed by Friede & Goldman, Inc., naval architects of New Orleans, La., are being built for Holland-America Line and Hapag-Lloyd Lines. Both will be operated by Combi Line, a newly-formed operating group. Delivery is scheduled for 1972. Both ships are scheduled to operate on a trade route serving U.S. Gulf and East Coast ports, and ports in Northern Europe. Their principal characteristics include overall length of 857 feet, beam of 105 feet, height of 60 feet, deadweight of 43,500 tons, with accommodations for carrying 73 standard LASH lighters and a number of 20-foot and 40-foot containers. Propulsion unit is one 26,000-hp Sulzer diesel engine. A total of 21 LASH ships, aggregating more than a half-billion dollars of shipping, are operating or on order. They will serve ports on five major world trade routes.

Albert J. Kelly Elected President Butterworth System, Inc.

Albert J. Kelly, vice president and director of Butterworth System, Inc., has been elected president of the company. He will succeed **J.J. Sheehy** who is retiring October 1 after nearly 40 years of service with Jersey affiliates in the United States and abroad. Mr. **Sheehy** will serve as chairman of Butterworth until his retirement.

Butterworth, an affiliate of Standard Oil Company (New Jersey), has been serving both marine and shore-based industry with specially designed tank cleaning equipment for over 40 years. Other Butterworth equipment has also gained worldwide acceptance in pollution abatement service in recent years.

Mr. **Kelly** has spent his entire business career in the Jersey organization, starting as a junior engineer in 1943, after graduation from Massachusetts Institute of Technology with a master's degree in chemical engineering. His first post was at the Bayway refinery of Humble Oil & Refining Company, Jersey's principal domestic affiliate. After serving two years in the Navy, he returned to Bayway in 1946 as a senior engineer. In 1953, he moved to Humble's New York office as an economic analyst, and three years later was transferred to the Jersey Transportation Coordination department.

Mr. **Kelly** went abroad in 1960 as Eastern Hemisphere supply manager in London for Esso International Inc., marketing and transportation affiliate of Jersey. In 1963, he returned to the New York office of Esso International, where he remained until 1965, when he was transferred to Tokyo as a director of Esso Standard Sekiyu. Two years later, he returned to New York as manager of Esso Eastern's Supply and Transportation department, serving later as assistant manager for planning in the logistics department. In March of this year, Mr. **Kelly** transferred to Butterworth.

Nippon Kokan (NKK) Elects Hisao Makita

Hisao Makita

Hisao Makita, 61, has been elected president of Nippon Kokan, (NKK) Japan's leading steelmaker-shipbuilder, succeeding **Takeshi Akasaka** who died on June 6.

The company's New York office noted that Mr. **Makita,** who has been associated with the firm in a wide variety of executive positions since March 1934, had since June 1965 been a managing director, and executive vice president since May 1968.

The elections of **Kinzo Matsuo** and **Haruo Sakurai,** former senior managing directors, to executive vice presidents, was also announced. Mr. **Matsuo** directs general planning and budgeting, research, affiliated enterprises, overseas development and financial affairs. Mr. **Sakurai** directs general affairs, auditing, personnel, labor, education and training, and information systems. Other executive vice presidents are **Hiroshi Nakano,** who heads technological development and iron and steel division construction, and **Koichi Toyama,** who directs the heavy industries and shipbuilding division. Mr. **Matsuo** is 59, and Mr. **Sakurai** is 60.

Mr. **Makita** serves as vice chairman of the Japan Iron and Steel Exporters' Association and is active in the Federation of Economic Organizations and the Japan Federation of Employers Associations.

Mr. **Akasaka,** who was 71, had been associated with the company 37 years and had been president since 1963. He was regarded as the driving force that had seen the company grow to become Japan's eighth largest industrial firm, fifth in world steelmakers, and sixth in world steel shipbuilders.

Foster Wheeler Names Arthur L. Christenson

Arthur L. Christenson

Foster Wheeler Corporation has named **Arthur L. Christenson** to be sales manager of the company's Marine Department. In his new position, Mr. **Christenson** reports to **William E. Fogarty,** manager of Foster Wheeler's Marine Department.

Mr. **Christenson** joined Foster Wheeler in 1957 as a marine service engineer. In 1961, an assignment as foreign construction and service representative took him to Denmark for two years. Since his return, Mr. **Christenson** has been responsible for export sales and license administration. A professional member of The Society of Naval Architects and Marine Engineers, Mr. **Christenson** worked for Grace Line and for Moore-McCormack Lines before coming to Foster Wheeler.

Foster Wheeler Corporation is one of the world's largest firms engaged in engineering and building marine boilers, as well as land-based steam generators, fired heaters, and process plants. With general offices in Livingston, N.J., Foster Wheeler has domestic manufacturing plants in Dansville, N.Y. and Mountaintop, Pa., with subsidiaries and licensees in 14 countries. A major factor in the energy field, the firm furnishes design, engineering, and construction management for the shipbuilding, petroleum, petrochemical, and pharmaceutical industries around the globe.

Seaspan Shows Colors —Operations To Move To New Quarters

As a result of an accelerated program to enable the public to identify with the names of the Seaspan International fleet, which was recently born of the integration of the former Island Tug & Barge and Vancouver Tug Boat fleets, Seaspan tugs are now sailing the Pacific Coast routes under new distinctive colors. The new red-and-white color scheme features the unique Seaspan "seahorse" symbol and logo.

The near 60 vessels of the fleet will also bear new names, all prefixed by Seaspan with the exception of the famous salvage vessel Sudbury II. Thus, the Island Warrior will become the Seaspan Warrior and the Le Mars will sail as the Seaspan Explorer.

Seaspan's 230 barges are also changing to the new red, white color schedule. All the barges are being renumbered in accordance with a system which allocates a specific series of numbers for each type of carrier. Specialized units, such as chemical, oil, rail and log barges will also follow the same general color code. The massive fleet repainting program will be coordinated with regular maintenance and will take about 18 months to complete.

Following up on the initial integration planning, all operating divisions will be moving to new quarters, currently being built as an extension to Seaspan's modern operating base in North Vancouver, due for completion in September. It is planned, however, to retain executive offices in downtown Vancouver.

Concurrent with these developments, a new 25-acre land site has been created through dredging immediately adjacent to the present operating facilities, which will provide for expansion of Vancouver Shipyards, a Seaspan subsidiary, and the development of railroad marshaling and barge terminal area, as well as a roll-on/roll-off ramp for coastal cargo operation. Upon completion, the combined Seaspan shore facility will cover over 75 acres of land and water area.

The extensive new program of industrial development in North Vancouver is a further reflection of Seaspan's objective to effectively serve coastal transportation requirements in British Columbia.

Oglebay Norton To Upgrade Three Vessels In Lakes Fleet

Awarding of contracts for major improvements to three vessels in its Great Lakes fleet was announced by Oglebay Norton Company.

The boilers of the steamer Edmund Fitzgerald, a 26,600-gt bulk vessel, and the steamer Ashland, a 16,000-gt bulk vessel, will be converted from coal-fired to oil-fired and fully automated. The work will be done this winter by Fraser Shipyards, Inc., Superior, Wis.

The boilers of the steamer Frank Purnell, a 14,600-gt self-unloader, will also be converted from coal-fired to oil-fired and fully automated. To increase its cargo carrying capacity, the technique of deck strapping recently applied to other Maritime class vessels, will be performed on the Purnell. The work will be done by G & W Industries, Inc., Cleveland, Ohio, this winter.

Oglebay Norton Company, through its Columbia Transportation Division, owns and operates a diversified fleet of 15 vessels (bulk, self-unloaders, crane, crane-conveyors) on the Great Lakes. Major improvements to individual units at this time are in line with the overall upgrading of the fleet and are designed to better meet customer requirements.

Marathon Shipbuilding Co. Formed By Acquisition Of Big River Shipbuilders, Inc.

Marathon Manufacturing Co. has acquired Big River Shipbuilders Inc. of Vicksburg, Miss., for 23,000 shares of Marathon common stock valued at some $680,000. **Wayne D. Harbin,** Marathon president, said that Big River Shipbuilders has a nine-acre facility with a 1,000-foot frontage on the Vicksburg Harbor Canal.

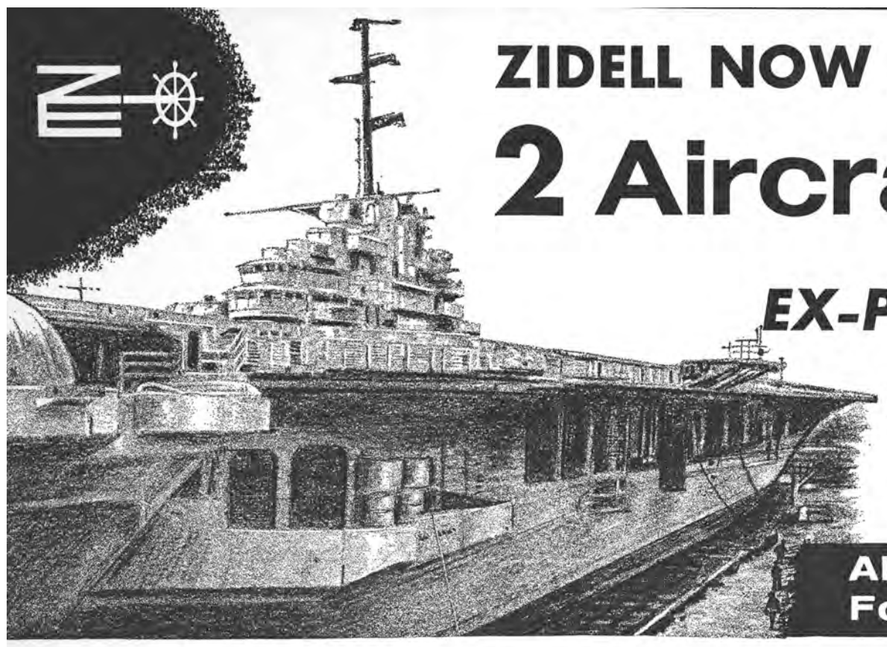
The firm, founded in 1965, builds towboats, offshore supply vessels, barges and workover drilling rigs and also repairs oceangoing vessels, towboats, barges and others. The company will become Marathon Shipbuilding Co.

Mr. **Harbin** said the addition will complement the marine division of Marathon's R.G. LeTourneau Inc. subsidiary, which fabricates and repairs mobile self-elevating offshore drilling platforms at Vicksburg and Singapore.

Marathon recently announced plans for a new four-million dollar plant in Waco, Texas, for Marathon battery and a five-million dollar plant in Durant, Okla., for the heavy equipment division of LeTourneau.

FIRST JAPANESE TANKER WITH WOMEN IN CREW: The Nippon Maru No. 3 shown above, a 156,800-dwt oil/bulk/ore carrier for Nippon Suisan Kaisha, Ltd., was recently completed at the Kure Shipyard of IHI (Ishikawajima-Harima Heavy Industries Co., Ltd.), Japan. The approximate measurements of the new ship are: overall length, 1,001 feet; length between perpendiculars, 951 feet; breadth, 142 feet; depth, 81 feet, and draft, 57 feet. It is equipped with a 26,700-shp IHI turbine developing a service speed of 15.5 knots. Complement is 29 persons, two of whom are women crew members. This is the first time in Japan that women have been employed as crew on board a large tanker. They will serve as stewardesses.

WEBB COMMENCEMENT: The Honorable **Robert L. Leggett,** Congressman from the Fourth District of California, was the principal speaker at the 75th Commencement Exercise of Webb Institute of Naval Architecture, Glen Cove, N.Y. Mr. **Leggett** is a member of the House Armed Services and the House Merchant Marine And Fisheries Committees. Rear Adm. **William A. Brockett,** USN (ret.), president of Webb Institute, presented bachelor of science degrees in naval architecture and marine engineering to the members of the 1971 graduating class, assisted by Dean **Joseph Urban.** Following the academic procession, Admiral **Brockett** introduced **John A. Livingston,** chairman of the board of trustees, for brief remarks to the graduates. **Daniel D. Strohmeier,** president of The Society of Naval Architects and Marine Engineers, presented the honor awards to the 1971 recipients. Following the conferring of degrees, **Philip Sims** spoke for his graduating class. The invocation and benediction were offered by Rabbi **Alton M. Winters** of the North Country Reform Temple in Glen Cove. Shown above at the commencement exercise are (left to right): Admiral **Brockett, Paul G. Vibrans,** winner of three honor awards, Congressman **Leggett,** Mr. **Livingston,** and Mr. **Strohmeier.**



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2 Aircraft Carriers

EX-PHILIPPINE SEA *(Ex-AVT-11)*

BUILT 1945

EX-PRINCETON *(Ex-LPH-5)*

BUILT 1946

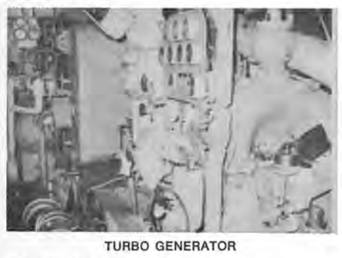
Both Vessels ESSEX CLASS — 888' x 136' — 25,800 tons Light Displacement. Both located at our Tacoma, Wn. Yard

All Machinery and Equipment For *IMMEDIATE SALE!*

TURBINES

8-Turbines, Main Propulsion, High Pressure, Westinghouse, Horizontal Impulse, single flow, 17,700 SHP, 525 PSI, 5524 RPM.

8-Turbines, Main Propulsion, Low Pressure, Astern, Westinghouse, Double Flow, Power Rating Ahead—17,800 SHP, Astern —12,000 SHP, Speed Ahead—4,300 RPM, Astern—3019.



TURBO GENERATOR

TURBO-GENERATORS

6-Turbo-Generators, Ship's Service, G.E., Type: ATB-2, 1563 KVA, 1250 KW, 450 volts, 3600 RPM, G.E. Turbine.

REDUCTION GEARS

8-Reduction Gears, Main Reduction, Westinghouse, Double Reduction, Locked Train, Rated 37,500 HP.

ANCHORS

-4-

30,000 Lb. Stockless

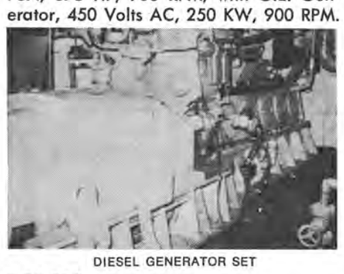
ANCHOR CHAIN

-Approx. 30 Shots-
3⅜" Anchor Chain

Doors, Fans, Chocks and Cleats

DIESEL GENERATOR SETS

8-Diesel Generator Sets, Emergency Ship's Service, Cooper-Bessemer, Model FSN, 375 HP, 900 RPM, with G.E. Generator, 450 Volts AC, 250 KW, 900 RPM.



DIESEL GENERATOR SET

BOILERS

16-Babcock & Wilcox, Double Cased, Express Type, Single Uptake, 634 PSI, 5720 sq. ft. of Heating Surface, 770 cu. ft., 1547 tubes.

CONDENSERS

8-Condensers, Main Steam, Westinghouse, Single Pass, Straight Tube, Cooling Surface—1475 sq. ft., 7213 Tubes.

8-Condensers, Auxiliary Steam, Westinghouse, Cooling Surface—2000 sq. ft., 1578 Tubes.

DISTILLING PLANT

DISTILLING PLANTS

4-Distilling Plants, Main, Griscom Russell, 40,000 GPD, 1905 sq. ft., 1665 Tubes, 3 Stage.

2-Distilling Plants, Auxiliary, Griscom Russell, 12,000 GPD, 246 sq. ft., 302 Tubes, 2 Stage.

PUMPS

8-Centrifugal, Auxiliary Condenser, Salt Water Circulating, Warren, Steam, 2500 GPM, 12 PSI, 875 RPM, Westinghouse Motor, 2-Speed, 440 Volts, 23.4/6 HP.

8-Rotary, Aircraft Handling Elevator, Vickers, 315 GPM, 985 PSI, 900 RPM, G.E. Motor, 150 HP, 440 Volts.

4-Rotary, Fuel Oil Transfer, Quimby Pump Co., 250 GPM, 150 PSI, 690 RPM, Electro Dynamic Motor, 4-Speed, 440 Volts, 48/32/24/16 HP.

4-Steam Reciprocating, Emergency Feed, Warren Steam Pump, Size VSDA 11" x 8" x 18", 180 GPM, 750 PSI.

2-Pump Units, Elevator, Vickers, With G.E. Motors, 440 Volts, 37.5 HP, 865 RPM.

4-Feed Booster, Worthington, 5775 RPM, Type: VA-296.

2-Fuel Oil Transfer, DeLaval, 700 GPM, 1150 RPM, Continental Motors, 100 HP, 440 Volts, 60 Cycles, 3 Phase.

8-Main Feed, Worthington, 642 GPM, 580 PSI, 5000 RPM, Sturtevant Turbine, 348 BPH, 5000 RPM.

4-Main Condenser, Condensate, Ingersoll-Rand, 385 GPM, 1180 RPM, Westinghouse Motors, 440 Volts AC.

4-Auxiliary Circulating, Warren Steam Pump, 2500 GPM, 875 RPM, Westinghouse Motors, 440 Volts.

4-Auxiliary Feed Booster, Worthington, 200 GPM, 750 RPM, Westinghouse Motors, 440 Volts AC.

4-Auxiliary Condensate, Ingersoll-Rand, 65 GPM, 75 PSI, 1765 RPM, Westinghouse Motors, 440 Volts AC, 9.1 HP, 1745 RPM.

8-Lube Oil Pumps, Quimby, 650 GPM, 690 RPM.

2-Lube Oil Pumps, Northern Ord., 50/25 GPM, 485/243 RPM, 4.5/2.1 BHP, Westinghouse Motors, 440 Volts AC, 3 Phase, 60 Cycles, 1760/885 RPM.

MOTOR-GENERATOR SETS

3-M.G. Sets, Westinghouse, 75 KW, 120 Volts DC, 625 Amps, 1765 RPM, Motors, 115 HP, 3 Phase, 60 Cycles, 440 Volts A.C., 134 Amps., 1765 RPM.

3-M.G. Sets, Degausing, Hanson-Van Winkle-Munning Co., 36 KW, Motors, 60 HP, 440 Volts AC, 60 Cycle 1150 RPM.

GENERATOR SET

WINCHES & WINDLASSES

1-Winch, Electric, 1-Drum, 1-Gypsy, 7400 Lbs. @ 220 FPM.

4-Anchor Windlass, Hyde Windlass Co., Electro Hydraulic, 3⅜" Die Lock Chain, 70,400 Lbs. @ 36 FPM, General Electric Motors, 440 Volts AC, 337 Amps., 1175 RPM, 60 Cycles, 3 Phase, 68.8 HP.

COMPRESSOR

1-Compressor, Medium Air, Ingersoll-Rand, 200 CFH, Westinghouse Motors, 55 HP, 440 Volts.

MACHINE TOOLS

3-Reed and Prentice Engine Lathes.
1-Lodge and Shipley Engine Lathe.
1-Morris High Speed Radial Drill.
1-Racine Tool and Machine Motor Driven Hack Saw.

EJECTOR ASSEMBLY

1-Ejector Assembly, Westinghouse, Size C-1, 75 sq. ft.

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Rockefeller Names Two Men To Maritime College Council

The appointment by Governor **Nelson A. Rockefeller** of **Leonard L. Rivkin**, Esq. and **Jacob C. Sklaire**—both Long Islanders—to membership on the Council of the State University of New York Maritime College at Fort Schuyler, Bronx, N.Y., has been announced.

Both men are well-known in their respective fields—Mr. **Sklaire** in the American maritime industry, and Mr. **Rivkin** in Metropolitan New York trial law circles. They are both decorated World War II veterans. Mr. **Sklaire** served in the Navy and Mr. **Rivkin** was with the Army.

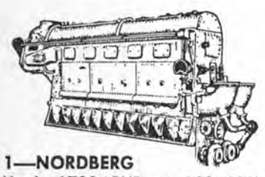
The new additions raised the membership of the Council of the Maritime College to its full nine-man strength. The Council is headed by **William E. Ryan** of Rockville Centre, as chairman pro tem. Also on the present Council, which is the governing body of the college are **Martin W. Kehart**, of Brooklyn; **Alan R. Kruteck**, of Larchmont; **Lewis C. Paine Jr.**, of Staten Island; **Eric Ridder**, of Locust Valley; **Julian K. Roosevelt**, of Oyster Bay, and **Arthur B. Tickle Jr.**, of Brooklyn. Membership on the Council is an unsalaried post and limited to residents of New York State.

ZIDELL EXPLORATIONS, INC.

Contact: Ralph Ingram
3121 S.W. Moody · Portland, Ore. 97201 · Phone 503/228-8691 · Telex 36-701

Marine Equipment VALUES 3 BIG PAGES PACKED FULL!

MARINE DIESEL ENGINES



1—NORDBERG
Used, 1700 BHP at 180 RPM, 2 cycle, Type TSM, Model 32112, 6 cylinders, 21-½" bore, 29" stroke, (Removed from C1-M-AV1 ship).

FAIRBANKS-MORSE, Md. 38D8-1/8
Matched Pair, Port & Starboard
Used condition, 1800 HP, 800 RPM, 2 cycle, 8-⅛" bore, 10" stroke, Air Start. Complete with Westinghouse Reduction Gears, 2.216:1 ratio—with hydraulic coupling.

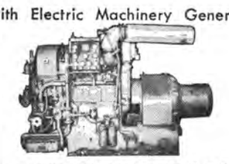
3—COOPER-BESSEMER, Model LS-8-DR
1300 HP, 277 RPM, direct reversing, turbo charged.

MARINE DIESEL GENERATORS

Used, Good — Will Overhaul

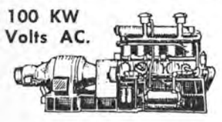
1—DeLavergne, 448 BHP, 400 RPM, 6 cylinders, with Westinghouse Generators, 300 KW, 120/240 DC.
1—DeLavergne, 560 BHP, 514 RPM, 6 cylinder, with Electric Machinery Generators, 375 KW, 450/3/60.

HILL, Type C, 10 KW, 120/240 DC.
HILL, Type B, 12 KW, 120/240 DC.
HILL, 4 Cylinder, 15 KW, 120/240 DC.
SUPERIOR, GA2, 10 KW, 120 DC.
HERCULES, DOOC, 10 KW, 120 DC.
CATERPILLAR, D3400, 15 KW, 120/240 DC.
BUDA, 4 cylinder, 15 KW, 120/240 DC.
HERCULES, DJXC, 25 KW, 120 DC.
CUMMINS, WA255, 30 KW, 120 DC.
P & H, 387C-18, 45/56KVA, 120/208/3/60.
BUDA, 6DH909, 40 KW, 115 volts DC.
GM, 4-71, 50/60 KW, 120/208/3/60.
CUMMINS, HDG, 60 KW, 120 DC.
BUDA, 6DHG691, 60 KW, 120 DC.
CUMMINS, 6 cylinder, 60 KW, 120/240 DC.



GM, 6067, 60 KW, 450/3/60.
BUDA, 6DC844, 75 KW, 125/250 DC.
CATERPILLAR, D17,000, 75 KW, 230 DC.
MURPHY, ME66, 75 KW, 240 DC.
LORIMER, F5SS, 75 KW, 240 DC.
CATERPILLAR, D17000, 85 KW, 220/3/60.
GM, 3-268A, 100 KW, 120/240 DC.
SUPERIOR, GBD8, 100 KW, 120/240 DC.
GM, 3-268A, 100 KW, 440/3/60.
SUPERIOR, 100 KW, 440/3/60.
LORIMER, F5SS, 100 KW, 440/3/60.

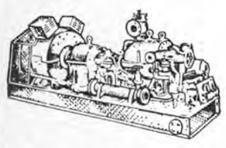
LORIMER 100 KW 450/3/60 Volts AC.

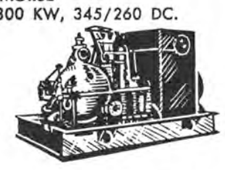


COOPER-BESSEMER
FS6, 250 KW, 440/3/60.
GM, 8-268, 300 KW, 345/260 DC.
GM, 6-278A, 300 KW, 120/240 DC.

FAIRBANKS-MORSE
38E5-1/4, 300 KW, 345/260 DC.

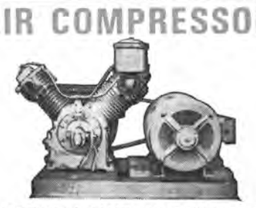
TURBINE GENERATORS





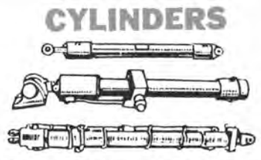
ALLIS-CHALMERS, 440 PSI, 740°F, with Allis-Chalmers Generators, 300 KW, 120/240 DC.
ALLIS-CHALMERS, 440 PSI, 740°F, with Allis-Chalmers Generators, 300 KW, 240/240 DC.
TERRY, Type TM5, 440 PSI, 740°F, with Crocker-Wheeler Generators, 300 KW, 120/240 DC.
DE LAVAL, 450 PSI, 750°F, with Crocker-Wheeler Generators, 300 KW, 120/240 DC.
WORTHINGTON, Form S4, 440 PSI, 740°F, with Crocker-Wheeler Gen., 300 KW, 120/240 DC.
JOSHUA HENDY, 300 PSI, 550°F, with Westinghouse Generator, 300 KW, 120/240 DC.
WORTHINGTON, Form S4, 440 PSI, 740°F, coupled to two Westinghouse Gen., 250 KW, 440/3/60 and a 90 KW, 120 DC.
GENERAL ELECTRIC, Type FN3-FN24, Steam 265#G, with G.E. Generator, 750 KW, 440/3/60.
WORTHINGTON, 225 PSI, 397°F, with Westinghouse Generator, 300 KW, 120/240 DC.
WESTINGHOUSE, 410 PSI, with Westinghouse Generators 200 KW, 450/3/60.
WESTINGHOUSE, 440 PSI, 740°F, with Westinghouse Generators, 300 KW, 240 DC.
GENERAL ELECTRIC, 525/618 PSI, with G.E. Generators, 200 KW, 450/3/60.
WESTINGHOUSE, 590 PSI, 487°F, with Westinghouse Generator, 540 KW, 120/240 DC.
GENERAL ELECTRIC, 410 PSI, with G.E. Generator, 200 KW, 450/3/60.
GENERAL ELECTRIC, 525 PSI, with G.E. Generator, 250 KW, 450/3/60.
GENERAL ELECTRIC, 525/618 PSI, with G.E. Generators, 438 KVA, 450/3/60.
WORTHINGTON, 225 PSI, 397°F, with Westinghouse Generator, 150 KW, 120 DC.
WESTINGHOUSE, 200 PSI, with Westinghouse Generators, 60 KW, 120 DC.

AIR COMPRESSORS



INGERSOLL-RAND, 50 CFM, 150 PSI, 20 HP, 440/3/60.
SULLIVAN, 60 CFM, 110 PSI, 15 HP, 440/3/60.
WORTHINGTON, 60 CFM, 110 PSI, 15 HP, 230 DC.
INGERSOLL-RAND, 50 CFM, 600 PSI, 15 HP, 230 DC.
CHICAGO-PNEUMATIC, 161 CFM, 100 PSI, 40 HP, 230 DC.
WORTHINGTON, 175 CFM, 125 PSI, 50 HP, 440/3/60.
JOY, 100 CFM, 300 PSI, 30 HP, 220/440/3/60.
INGERSOLL-RAND, 150 CFM, 600 PSI, 75 HP, 230 DC.
INGERSOLL-RAND, 60 CFM, 125 PSI, 15 HP, 230 DC.
WORTHINGTON, 142 CFM, 100 PSI, 20 HP, 230 DC.
HARDIE-TYNES, 30 CFH, 3000 PSI, 75 HP, 230 DC.
HARDIE-TYNES, 30 CFH, 3000 PSI, Steam Turbine Drive.
INGERSOLL-RAND, 30 CFH, 3000 PSI, Steam Turbine Drive.
WORTHINGTON, 30 CFH, 3000 PSI, Steam Turbine Drive.
WESTINGHOUSE AIR BRAKE, 246 CFM, 140 PSI, 50 HP, 440/3/60.
GARDNER-DENVER, 850 CFM, 100 PSI, 200 HP, 440/3/60.

HYDRAULIC CYLINDERS



Bore	Overall Stroke	Rod Diameter	retracted length	Action
10"	12"	3.75"	45½"	double
10"	26"	3.75"	58½"	single
2"	8"	1½"	20"	double
2.5"	15"	1.12"	25½"	double
3"	8"	1.37"	15½"	double
6"	8"	4"	144"	double
13"	9'7"	5½"	14'	double

SPERRY GYRO COMPASSES

SPERRY MARK 14, Model 1 Gyro Compasses, used, good, complete with Master Compass, with Binnacle, Amplifier panel, control panel, carbon pile voltage regulator, motor generator set, alarm panel, and repeaters with mounts.

AXIAL FLOW FANS

Rebuilt Guaranteed LaDel, STURTEVANT etc.

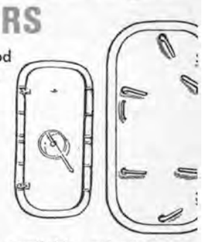
In 440 AC, in 115 DC, and in 230 DC, and i nsizes 1 HP through 20 HP Completely reconditioned.

EXAMPLE LISTING:

Size A¼	Size A3	Size A8
Size A½	Size A4	Size A10
Size A1	Size A5	Size A12
Size A2	Size A6	Size A16

Steel Watertight DOORS

Used, Good Condition, Trimmed Frames.



Many sizes available, priced reasonable. Some Typical Prices shown below. Please Inquire for other sizes

26"x48"-4 Dogs-**$60.00 ea.**
26"x57"-6 Dogs-**$80.00 ea.**
26"x60"-4 Dogs, 6 Dogs-**$86.00 ea.**
26"x66"-6 Dogs, 8 Dogs-**$100.00 ea.**
26"x66"-Q.A. Type-**$175.00 ea.**

REDUCTION GEAR

DE LAVAL Reduction Gear from S/S Texas a C3M ship, Type Double Reduction, 8500 HP size, HP Pinion 5015 RPM, LP Pinion 3461 RPM, low speed gear, 85 RPM.

WESTINGHOUSE Reduction Gear from S/S Montrose, an AP3 ship, size 8500 HP, Gear RPM 85, HP Pinion 5238 RPM, LP Pinion 4422 RPM.

FARREL-BIRMINGHAM, as orig. used on two 1375 HP electric motors in submarine, 2 pinions, single output gear, pinion RPM 1302, Gear RPM 280; ratio 4.65:1.

WESTINGHOUSE, as orig. used on two 1362 HP electric motors in submarine, 2 pinions, single gear.

FALK Reduction Gears—Port & Starboard, Interchangeable with T-2 Tanker Gears, Falk No. 148-300. Also interchangeable with Falk Gears on AO51 Class Tankers (14 ships). Also on AO97 to AO100 Tankers.

PROPELLER SHAFT

From C3M Vessel
From C3-S1-A3 Vessel,
C2-S-B1 Vessel (Moore Built,
AP2 & AP3 Victory
and Liberty Ships

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CAPSTAN WINDLASSES

Model CWP-3, Vertical 24" Planetary Capstan Windlasses, Single Wildcat — using 1¼" Anchor Chain, Single Gypsy with 20 HP motor, 230 volts DC, complete with Contactor Panel, Master Switch, and Resistors.

3—HESSE-ERSTED VERTICAL, Single Wildcat—for 1⅜" Anchor Chain, single gypsy, with 35 HP General Electric Motor, 230 Volts DC, complete with Controller equipment.

HYDE, VERTICAL, Single Wildcat, for 1⅛" Anchor Chain, single gypsy, with 20/5 HP Motor, 440/3/60.

ANCHOR WINDLASSES

1—LIDGERWOOD horizontal Anchor Windlass, double wildcat—for 2 1/16" Chain, double gypsy, with 50 motors, 230 volts, DC, complete with controls.

1—HORIZONTAL, of German Mfg., double wildcat—for use with 3" anchor chain, double gypsy with 230 VDC motor, complete with electrical control equipment.

AMERICAN ENGINEERING, horizontal, double 2⅛" Chain, 65 HP, 230 DC, complete.

4—AMERICAN HOIST AND DERRICK COMPANY, horizontal, double wildcat—for 2¼" chain double gypsy, 70 HP, 230 Volts DC, with electric controls.

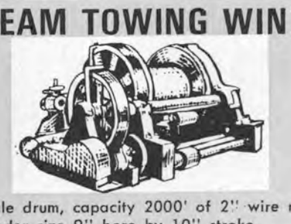
3—HESSE-ERSTED, horizontal, double wildcat, 2⅛" chain, 60 HP, 230 DC.

1—HYDE HORIZONTAL ANCHOR WINDLASS double wildcat—for use with 2⅛" Anchor Chain, and with General Motors Electric Motor, 60 HP, 230 volts DC, 560/1700 RPM, Type CDM 18831 AE. Complete with Contractor Panel, Resistors, and Master Switch.

ANCHOR WINCHES

2—JAEGER, single drum—capacity approximately 900' of 1½" wire rope, double gypsy, with 35 HP Motors, 230 Volts DC, complete with electricals.

STEAM TOWING WINCH



Single drum, capacity 2000' of 2" wire rope, cylinder size 9" bore by 10" stroke.

UNIWINCHES

LAKESHORE UNIWINCHES, with Allis-Chalmers Motors, 50 HP, 230 Volts DC, complete with Control Equipment.

Single speed, double drum, 7450 # at 220 FPM.

Single speed, single drum, 7450 # at 220 FPM.

Two speed, single drum, 7450 # at 220 FPM, 14400 # at 105 FPM.

ARGO HOISTER LOCKS

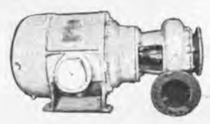
ton rated, Steel, as re-oved from surplus ships. anufactured by: Young, aper, etc., 12" & 14" es.

34.50 ea.

39.50 each with pull test certificates

AC PUMPS

Horizontal Centrifugal



1-GOULDS, 2000 GPM, 470' head, size 8 x 10, Westinghouse Motor, 350 HP, 2300/3/60.

1—WORTHINGTON, 400 GPM, 150 PSI, 5-½" suction, 3-½" discharge, G.E. Motor, 75 HP, 440/3/60.

1—GOULDS, 300 GPM, 336' head, 3" suction, 2" discharge, G.E. Motor, 50 HP, 440/3/60.

5—J. C. CARTER, 365 GPM, 250' head, Aluminum Alloy, 3" suction, 3" discharge, with 25 HP motors, 220/440/3/60.

5—BUFFALO, Class CCS, 250 GPM, 100 PSI, 4" suction, 3-½" discharge, Westinghouse motor, 25 HP, 440/3/60.

6—WORTHINGTON, 200 GPM, 100 PSI, 3-½" suction, 3" discharge, Wagner motor, 25 HP, 440/3/60.

2—WORTHINGTON, 80 GPM, 60 PSI, 2-½" suction, 2" discharge, G.E. motor, 8 HP, 440/3/60.

6—BUFFALO, 875 GPM, 7-½" suction, 6-½" discharge, motor, 7.7/4.3 HP, 440/3/60.

7—WORTHINGTON, 650 GPM, 9 PSI, 6" suction, 6" discharge, with Star motor, 6 HP, 440/3/60.

1—WORTHINGTON, 175 GPM, 20 PSI, 3-½" suction, 3" discharge, with G.E. motor, 3.74 HP, 440/3/60.

4—WORTHINGTON, 60 GPM, 22 PSI, 3-½" suction, 2" discharge, with G.E. motor, 3 HP, 440/3/60.

3—ALLIS-CHALMERS, 35 GPM, 100' head, 2" suction, 1-½" discharge, with Allis-Chalmers motor, 3 HP, 440/3/60.

1—ALLIS-CHALMERS, 65 GPM, 80' head, 1-½" suction, 1-½" discharge, with Allis-Chalmers motor, 3 HP, 440/3/60.

2—WORTHINGTON, 13 GPM, 51 PSI, 1-½" suction, 1-½" discharge, with G.E. motor, 2.64 HP, 440/3/60.

4—WORTHINGTON, 30 GPM, 30 PSI, 1-½" suction, 1-½" discharge, with G.E. motor, 1.75 HP, 440/3/60.

11—WARREN, 6 GPM, 36 PSI, 1-¼" suction, 1" discharge, with G.E. motors, 1.25 HP, 440/3/60.

AC PUMPS

Vertical Centrifugal

6—WORTHINGTON, 275 GPM, 56.6 PSI, 8-½" suction, 3-½" discharge, with G.E. motor, 440/3/60.

4-WORTHINGTON, 490 GPM, 35 PSI, 7" suction, 4-½" discharge, with G.E. motor, 440/3/60.

6—CHICAGO PUMP CO., submersible, 400 GPM, 6# suction, 30# discharge pressure, with Wagner Motor, 15 HP, 440/3/60.

7—DAYTON-DOWD, 1160 RPM, 15 PSI, 10" suction, 8" discharge, with Wagner motor, 10 HP, 440/3/60.

6—ALLIS-CHALMERS, 68 GPM, 114' head, 3" suction, 1-½" discharge, with Wagner motor, 7-½ HP, 440/3/60.

3—WORTHINGTON, 100 GPM, 40 PSI, 5" suction, 3" discharge, with G.E. Motor, 7.37 HP, 440/3/60.

4—WARREN, 135 GPM, 35 PSI, 6" suction, 3" discharge, with G.E. Motor, 6 HP, 440/3/60.

1—WORTHINGTON, 35 GPM, 62.4 PSI, 3" suction, 2" discharge, with G.E. motor, 5.83 HP, 440/3/60.

3—WORTHINGTON, 350 GPM, 11.1 PSI, 10" suction, 3-½" discharge, with G.E. motor, 5 HP, 440/3/60.

9—ALLIS-CHALMERS, 10 GPM, 2" suction, 2-½" discharge, with 3 HP motor, 440/3/60.

AC PUMPS

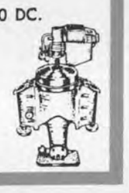
Horizontal Rotary

4—WARREN, 197 GPM, 175 PSI, with Electro-Dynamic motor, 30 HP, 440/3/60.

CENTRIFUGES

SHARPLES PURIFIERS

150 GPH—400 AC,—230 DC.
350 GPH—230 DC.
600 GPH—230 DC.



ALSO: De Laval, size 55-N13, 1-½ HP, 440 AC.

AC PUMPS

Vertical Rotary

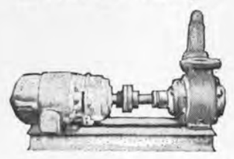
1—DE LAVAL, 550 GPM, 50 PSI, with G.E. motor, 27.4 HP, 440/3/60.

5—QUIMBY, size 2-½, 10/6 GPM, 350 PSI, 2-½" suction, 1-½" discharge, with Wagner Motor, 6/3 HP, 440/3/60.

4—BLACKMER, 50 GPM, 35 PSI, 420 RPM, with G.E. geared motor, 2 HP, 440/3/60.

DC PUMPS

Horizontal Centrifugal



6—WORTHINGTON, Size 8L1, 2100 GPM, 138.5 TDM, with Westinghouse motor, 100 HP, 230 DC.

6—WORTHINGTON, Size 12LA1, 4000 GPM, 67.3 TDM, with Westinghouse motor, 100 HP, 230 DC.

6—WORTHINGTON, Size 3UB1, 400 GPM, 280' head, with Westinghouse motor, 50 HP, 230 DC.

6—WORTHINGTON, Size 4L1, 400 GPM, 83' head, with Westinghouse motor, 15 HP, 230 DC.

1—ALDRICH, 8" suction, 6" discharge, with G.E. motor, 12/25 HP, 115 DC.

3—WARREN, 1175 GPM, 11.2 PSI, with Reliance motor, 10 HP, 230 DC.

1—WESTCO, 100 GPM, 100 PSI, with Imperial motor, 10 HP, 115 DC.

2—YEOMANS, 135 GPM, 115' head, 3" suction, 3" discharge, with Kimble motor, 10 HP, 230 DC.

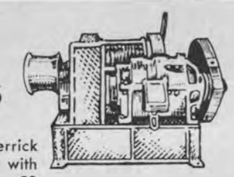
2—WARREN, Size 5, 600 GPM, with Electro-Dynamics motor, 8/4.5 HP, 230 DC.

1—WARREN, 5" suction, 4" discharge, with Reliance motor, 7-½ HP, 115 DC.

1—DAYTON-DOWD, 3" suction, 2-½" discharge, with Crocker-Wheeler motor, 5 HP.

3—INGERSOLL-RAND, Size IMVR, 50 GPM, with Electro Dynamics motor, 3.9 HP, 230 DC.

CARGO WINCHES



American Hoist and Derrick Company Winches with Westinghouse Motors, 50 HP, 230 Volts DC, complete with Contractor Panels, Master Switches, and Resistors.

Single Speed, Single Drum
Two Speed, Single Drum

UNIT WINCHES

American Hoist and Derrick Company

U3H—SINGLE DRUM, Single speed (4)
Line Pull: 7450# - 223 FPM, 6360# - 237 FPM, 3720# - 287 FPM.

U6H—DOUBLE DRUM, Single speed (2)
Line Pull: 7450# - 223 FPM, 6360# - 237 FPM, 3720# - 287 FPM.

U5 -SINGLE DRUM, Two speed (2)
High Speed line Pull: 7450# - 224 FPM, 6360# - 238 FPM, 3720# - 288 FPM,
Low Speed Line Pull: 1100# - 114 FPM, 19000# - 96 FPM (third layer of rope).

Motor: Westinghouse, 50 HP, 230 Volts DC, 1900 RPM, Model 288212, 183 Amperes, compound wound, Frame 9 UW, horizontal.

Unit Winches complete with Contactor Panels, Resistors, Master Switches.

IS IS ONLY A SMALL PORTION OF "ZIDELL'S OVERALL INVENTORY"... Contact Ralph Ingram On All Your Needs

TERRIFIC INVENTORY... AC & DC

Marine Pumps

1—FAIRBANKS-MORSE, 250 GPM, 13' head, with Fairbanks-Morse motor, 3.72 HP, 230 DC.

2—WESTCO, 20 GPM, 50 PSI, with Century motors, 1-½ HP, 115 DC.

2—WORTHINGTON, 60 GPM, 23.7 PSI, 2-½" suction, 2" discharge, with Diehl motors, 1.43 HP, 230 DC.

5—WARREN, 4 GPM, 38 PSI, 1-½" suction, 1" discharge, Century motors, 1.25 HP, (3) 230 DC, (2) 115 DC.

3—ALLIS-CHALMERS, 180 GPM, 81' head, 2-½" suction, 2" discharge, with Allis-Chalmers motor, 7-½ HP, 230 DC.

4—ALLIS-CHALMERS, 650 GPM, 29' head, 5" suction, 5" discharge, with Allis-Chalmers motor, 7-½ HP, 230 DC.

2—ALLIS-CHALMERS, 55 GPM, 51' head, 2-½" suction, 2" discharge, with Allis-Chalmers motor, 2 HP, 230 DC.

2—ALDRICH, brine overboard, 30 GPM, 34.5 PSI, 1-¼x1, with 2 HP motor, 230 DC.

1—WORTHINGTON, 30 GPM, 22 PSI, 1-¼x1, with 1 HP motor, 230 DC.

DC PUMPS Vertical Centrifugal

1—GOULDS, Fig. 3090, 13000 GPM, 24.5' head, size 20, with Reliance motor, 100 HP, 230 DC.

1—WORTHINGTON, Type 20LAS-1, 13000 GPM, 11.5 PSI, size 20, with Westinghouse motor, 100 HP, 230 DC.

2—ALLIS-CHALMERS, Type LS-V, 12, 550 GPM, 20' head, 20" suction, 20" discharge, with Allis-Chalmers motor, 100 HP, 230 DC.

1—WORTHINGTON FIRE & BUTTERWORTH, size 3UBS, 400 GPM, 300 PSI, with Westinghouse motor, 75 HP, 230 DC.

2—ALLIS-CHALMERS, Type BU-V, 400 GPM, 280' head, 4x3, with Allis-Chalmers motor, 50 HP, 230 DC.

3—WORTHINGTON, size 3UBS, 400 GPM, 280' head, with Westinghouse Motor, 50 HP, 230 DC.

2—BUFFALO, size 3SAV, 400 GPM, 125 TDH, with Electro-Dynamics motor, 50 HP, 230 DC.

1—ALLIS-CHALMERS, Type SE-V, 2820 GPM, 29.2' head, 12" suction, 12" discharge, with Allis-Chalmers motor, 40 HP, 230 DC.

1—DE LAVAL, size 14", 5900 GPM, 25'8" head, with Electro-Dynamics motor, 25/50, 230 DC.

1—DE LAVAL, 400 GPM, 127 PSI, with Electro-Dynamics motor, 25/50 HP, 230 DC.

1—GARDNER-DENVER, 1500 GPM, 56' head, 8" suction, 6" discharge, with Century motor, 30 HP, 230 DC.

1—INGERSOLL-RAND, size 18VCM, 8500 GPM, with Electro-Dynamics motor, 20/40 HP, 230 DC.

2—WORTHINGTON, Type 16LAS-2, 5600 GPM, 10 PSI, with G.E. Motor, 20/40 HP, 230 DC.

1—WORTHINGTON, size 10SLHV, 1500 GPM, with Reliance motor, 25 HP, 230 DC.

1—WORTHINGTON, size 12-LAS-1, 3000 GPM, 25 PSI, with Reliance motor, 25 HP, 230 DC.

1—WORTHINGTON, 8-LS-1, 1800 GPM, 13 PSI, with Westinghouse motor, 20 HP, 230 DC.

4—ALLIS-CHALMERS, Type SGV, 600 GPM, 30 PSI, 5" suction, 5" discharge, with Allis-Chalmers motors, 20 HP, 230 DC.

1—INGERSOLL-RAND, 1050/2000 GPM, 10" suction, 10" discharge, with G.E. motor, 20 HP, 230 DC.

2—WORTHINGTON, submersible, size 5", 600 GPM, 30 PSI, with 20 HP motor, 230 DC.

2—ALLIS-CHALMERS, Type CF-2V, size 6" x 3-½", 170 GPM, 208' head, with Allis-Chalmers motor, 20 HP, 230 DC.

4—WORTHINGTON, size 5LS-1, 415 GPM, 78.5' head, with 20 HP motor, 230 DC.

1—WORTHINGTON, Type 2-½UZS-1, 170 GPM, 75 PSI, with Westinghouse motor, 16.8 HP, 230 DC.

2—WORTHINGTON, 340 GPM, 33.6' head, 6" suction, 3" discharge, with G.E. motor, 15 HP, 230 DC.

1—INGERSOLL-RAND, size 2VHM, 150 GPM, 85 PSI, with Reliance motor, 15 HP, 230 DC.

6—WORTHINGTON, size 2-½UZ1, 120 GPM, 208 head, 15 HP, 230 DC.

1—WORTHINGTON, 5LS, 600 GPM, 18 PSI, with Westinghouse motor, 15 HP, 230 DC.

2—INGERSOLL-RAND, 450 GPM, 15' head, 4" suction, 3" discharge, with G.E. Motor, 10/15 HP, 230 D.C.

2—BUFFALO, size 3SLV, 425 GPM, 35' head, with Electro-Dynamic motor, 7-½/15 HP, 230 DC.

2—ALLIS-CHALMERS, Type CF-2V, 30 GPM, 208' head, with Allis-Chalmers motor, 7-½ HP, 230 DC.

1—DE LAVAL, 1600 GPM, 27' head, with Electro Dynamic motor, 7-½/15 HP, 230 DC.

2—DE LAVAL, 425 GPM, 28' head, with Electro Dynamic motor, 7-½/15 HP, 230 DC.

2—INGERSOLL-RAND, size 8VCM, 1400 GPM, with Electro-Dynamic motor, 5/10 HP, 230 DC.

2—WORTHINGTON, size 8LS-1, 1400 GPM, 10 PSI, with G.E. motor, 5/10 HP, 230 DC.

2—DE LAVAL, 80 GPM, 75 PSI, with Electro-Dynamics motors, 5/10 HP, 230 DC.

2—INGERSOLL-RAND, size 1-½ VBM, 70 GPM, with Electro-Dynamics motor, 5/10 HP, 230 DC.

1—DAYTON DOWD, 30 GPM, 85 PSI, Mod. VHM, with Continental motor, 5 HP, 230 D.C.

2—WORTHINGTON, Type 1-½UZS-3, 20 GPM, 75 PSI, with G. E. Motor, 5 HP, 230 DC.

1—WARREN, size 1-½-2CV-6, 30 GPM, 196' head, with Continental motor, 5 HP, 230 DC.

2—WORTHINGTON, 400 GPM, 13.5' head, 5x4, with Westinghouse motor, 5 HP, 230 DC.

1—DE LAVAL, 25 GPM, 75 PSI, with Electro-Dynamics motor, 2.5/5 HP, 230 DC.

2—WEIL, 20 GPM, 40 PSI, 1-½x1-¼, with G.E. motor, 3 HP, 230 DC.

2—INGERSOLL-RAND, size 1MVR, 20 GPM, with Electro-Dynamic motor, 3/1.5 HP, 230 DC.

DC PUMPS Horizontal Rotary

2—WORTHINGTON, size 5GES, 400 GPM, 50 PSI, with Westinghouse Motor, 20 HP, 230 DC.

1—DE LAVAL, 15 GPM, 350 PSI, 2-½ x2-½, with Diehl motor, 10 HP, 230 DC.

2—VIKING, Type EKK, 60 GPM, 70 PSI, 2x2, with Diehl motor, 5 HP, 230 DC.

2—NATIONAL TRANSIT, 50 GPM, 50 PSI, 34 HP, 230 DC.

DC PUMPS Vertical Rotary

4—QUIMBY, size 5, 400 GPM, 60 PSI, 6x5, with Westinghouse motor, 30 HP, 230 DC.

2—QUIMBY, size 5, 400 GPM, 48 PSI, 6x5, 25 HP, 230 DC.

3—WORTHINGTON, Mod. 4GRVS, 225 GPM, 35 PSI, with G.E. motors, 15/20 HP, 230 DC.

2—DE LAVAL—IMO, 250 GPM, 40 PSI, 15 HP, 230 DC.

2—QUIMBY, size 4D, 225 GPM, 50 PSI, 15 HP, 230 DC.

2—DE LAVAL, 325 GPM, 40 PSI, 15 HP, 230 D.C.

1—QUIMBY, size 2-½, 20 GPM, 400 PSI, 10 HP, 230 DC.

1—DE LAVAL, 175 GPM, 42 PSI, 10 HP, 230 DC.

1—DE LAVAL, 225 GPM, 35 PSI, 7.5/15 HP, 230 DC.

1—QUIMBY, size 4, 175 GPM, with Electro-Dynamics Motor, 7-½/10 HP, 230 DC.

1—DELAVAL, 13 GPM, 400 PSI, with Westinghouse motor, 7.5 HP, 230 DC.

2—WORTHINGTON, Type 3GRVS, 90 GPM, 75 PSI, with Diehl motor, 7-½ HP, 230 DC.

1—DE LAVAL, 8 GPM, 400 PSI, with Electro-Dynamics motor, 5 HP, 230 DC.

1—WORTHINGTON, Type 2GRVS, 7 GPM, 400 PSI, with G.E. Motor, 2.5/5 HP, 230 DC.

STOCKLESS ANCHORS

USED, GOOD QUALITY . . . SAVE!

2,000 pound size
3,000 pound size
8,000 pound size
12,000 pound size

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Designed and Manufactured by ZIDELL EXPLORATIONS, INC.

To Give You These Features:

One size fairlead with universal type sheave to accommodate wire rope sizes 1" up to and including 2".

Self Aligning, Swivel Type Head.

Dependable and Ruggedly built to perform consistently year after year with minimum maintenance.

Standard Design $995 each

Deluxe Design $1250 each

Model Design $1350 each

PRICES ARE F.O.B. PORTLAND, ORE.

FIRE PUMPS

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

CLYDE 17-DE-90 WHIRLEY CRANE

LIFTING RATE: 25 tons at 50 Ft. Radius at 50 to 60 FPM.

BOOM: 80' to headblock (with 10' whip)

WHIP: 10 tons at 125 FPM—2 part line

TRACK CENTERS: 20'—Engine: Cummins HBIS 601, 180 HP supercharged, elec. start

MOTORS: Each leg (4 tot.) 7½ HP, 230 DC.

POWER: Diesel electric (DC)

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1000 Tons of miscellaneous line shafting — Call on your requirements.

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Used, Davis Engineering or equal, with ABS and/or Coast Guard certification. 5 sizes available:

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1-3 / 8" size
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2-1 / 4" size

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175' x 26' Open — 195' x 35' Open

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100' x 48' — 110' x 30'

Offshore Barges

120' x 32' — 120' x 40' — 120' x 45'
140' x 34' — 160' x 50'

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7,000 to 10,000 Bbl.

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FOR SALE

The following equipment was removed from the ex MV "Pelican" at Orange, Texas, in late 1969. The engines and gears have very few running hours and are in excellent condition. This vessel was coverted to a barge, and the tailshafts were removed shortly afterward.

Propellers

Two three-bladed manganese-bronze propellers, 8'-0" in diameter, with a pitch of 4' 9½", and turn-out board.

Main Propulsion Engines

Two Superior Model, 40M5x8 turbocharged, direct reversible, marine diesel engines drive the propellers through 3.423:1 Falk reduction gears, incorporating the roller bearing Thrust. The engines are rated 578 horsepower at 800 rpm and 119 BMEP. The bore is 8½", and the stroke 10½". Each engine mounts its own jacket and sea water, lube oil and fuel oil pumps and air compressor, making them completely independent of ship's services after the initial start.

Shafting

The two propellers shafts are machined from solid forgings of carbon steel, A.B.S. Grade 2. The shafts were rough-forged 7½" diameter and 34'-0" long. They are turned down to 6½" diameter between bearings and 6¾" in the way of bearings.

CONTACT:

Reading & Bates Offshore Drilling Company
2500 Houston Natural Gas Building
Houston, Texas 77002
Attention: Mr. J. S. Thompson Phone: (713) 228-0131

For Sale or Charter Seagoing Tugs—Ships-Barges 210' Big Tug, 3600 HP, 40' Beam 18' Draft; Tug 125' 1600 HP; Tug 74' 1200 HP; At Hawaii Tanker 1000 Tons Surplus perfect $90,000.00; Barge Seagoing 153' X 36' with Deckhouse and Repair Shop, Overhead Crane $25,000.00; Barge Seagoing 261' X 49' Two story house for Barracks and shop $90,000.00; At New Orleans Tanker 2000 Tons Twin Screw Coils and Pumps $25,000.00; Bulk Carriers 4500 DWT $125,000.00. Ocean Service Corp., 1177 Brickell Ave., Miami, Fla. Phone 358-3262.

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50 — 6" size 20' long sections with flanged ends, in little used, good condition.
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FOB Portland, subject prior sale.
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at a fraction of original cost

(1) — 139,000 lbs./hr. — 850 psig — 905° TTF C.E. Model V2M-8 Marine Package Boiler. Complete with auxiliaries.

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400 KW TURBO-GENERATORS

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IMMEDIATE DELIVERY

6-Dog right and left hand hinged steel doors — with frames. Built and tested to A.B.S. specifications.

SIZES:
26" x 48" 26" x 57"
26" x 60" 26" x 66"
30" x 60"

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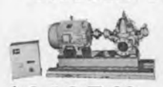
539-1900 (301) 355-5050

CENTRIFUGAL PUMPS

UNUSED BUFFALO PUMPS



$1495.00

All bronze — model S.L. — 750 GPM — 50 PSI head — 28 BHP. MOTOR: Continental—30 HP—440/3/60—37 amps—1760RPM. 5" Suction—4" discharge. OAL 4' 8½"—OAW 22"—OAH 30" —wt. 1200 lbs.

A.C. FIRE PUMPS

250 GPM—160 PSI discharge. Suction 3½"—discharge 2½"—3500 RPM. MOTOR: Reliance—25 HP—440/3/60—35.6 amps. 3 Weil pumps and 3 Aldrich pumps available. Reconditioned pumps and motors.

$887.00

UNUSED AURORA PUMP

$877.77

300 GPM—37' head—5 HP—120 volts DC Centrifugal Pump. Bronze — size 5 x 4 — flanged. MOTOR: Reliance—super T.D.C. Electric Motor—5 HP—120 VDC — 36.8 amps — 1750 RPM — Frame L216A—with control by Cutler-Hammer. Excellent condition. Latest USN surplus.

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Combustion Engineering, Inc., Windsor, Connecticut 06095

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Anixter-New York, 300 Executive Blvd., Elmsford, N.Y. 10523
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Port Electric Turbine Div., 155-157 Perry St., New York 10014
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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, 133 Terminal Ave., Clark, N.J. 07066
Paul J. Plishner, 45 West 45 St., New York, N.Y. 10036
Radiomarine Corp., 20 Bridge Avenue, Red Bank, N.J. 07701
Raytheon Co. Marine Products, 676 Island Pond Rd., Manchester, N.H. 03103
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H. Newton Whittelsey, 17 Battery Pl., New York, N.Y. 10004
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Peck Equipment Co., 3500 Elm Avenue, Portsmouth, Virginia 23704

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Ethyl Corp. Marine Div. Perolin Co., New York, N.Y. 10001
Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019
Humble Oil & Refining Co., Humble Building, Houston, Texas 77002
Mobil Oil Corp., 26 Broadway, New York, N.Y. 10004
Refineria Panama, S. A., 277 Park Ave., New York, N.Y. 10017
Shell Oil Co., 50 W. 50 St., New York 10020
Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017

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Devoe & Raynolds Co., Inc., Subsidiary Celanese Coatings Co., 414 Wilson Ave., Newark, N.J. 07105
Enjay Chemical Co., 60 West 49th St., New York, N.Y. 10020
Forboil Company, 90 West St., New York, N.Y. 10006
International Paint Co., 21 West St., New York, N.Y. 10006
Mobil Chemical Company, Metuchen, N.J. 08840
Patterson-Sargent, P.O. Box 494, New Brunswick, N. J.
Woolsey Marine Industries Inc., 201 E. 42nd St., New York, N.Y. 10017

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Refineria Panama, S. A. 277 Park Ave., New York, N.Y. 10017
Shell Oil Co., 50 W. 50 St., New York, N.Y. 10020
Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017
The West Indies Oil Co., Ltd. St. John's, Antigua, W. I.

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Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231
Philadelphia Resins Co., 20 Commerce Dr., Montgomeryville, Pa. 18936
Rotocast Plastic Products, Inc., 6700 N.W. 36th Ave., Miami, Florida 33147

POLLUTION CONTROL
Enjay Chemical Co., 60 West 49th St., New York, N.Y. 10020
Uniroyal, Inc., 10 Eagle St., Providence, R.I. 02901

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Jacksonville Port Authority, 2701 Talleyrand Ave., Jacksonville, Fla.

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Bird-Johnson Co., 883 Main Street, Walpole, Mass. 02081
Coolidge Propeller Co., 1608 Fairview Ave. E., Seattle, Wash. 98102
Federal Propellers, 1501 Buchanan Ave. S.W., Grand Rapids, Mich. 49502
Ferguson Propeller, 1132 Clinton St., Hoboken, N.J. 07030

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Colt Industries, Inc., Fairbanks Morse Pump & Electric Div., 3601 Kansas Ave., Kansas City, Kansas 66110
M. T. Davidson Co., 1010 3rd Ave., New York, N.Y. 10021
Goulds Pumps, Seneca Falls, N.Y. 13148
Houttin-Pompen N. V. Sophialaan 4, Utrecht, Holland
Worthington Corporation, Harrison, New Jersey 07029

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W. W. Patterson Co., 830 Brocket St., Pittsburgh, Pa. 15233

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Columbian Rope Co., 309 Genesee St., Auburn, N.Y. 13022
Jackson Rope Corp., 9th & Oley, Reading, Pa. 19604
Samson Cordage Works, 470 Atlantic Ave., Boston, Mass. 02210
Tubbs Cordage Company, P.O. Box 709, Orange, Calif. 92669
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Schuyler's Engineered Products Co., Box 87, Staten Island, N.Y.
Yokohama Rubber Co. Ltd., P.O. Box 46, Shiba, Tokyo 105, Japan

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Electric Tachometer Corp., 68th & Upland Street, Phila., Pa. 19142
Galbraith-Pilot Marine Corp., 600 Fourth Ave., Brooklyn, N.Y. 11215
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

SCAFFOLDING
Patent Scaffolding Co., 11-11 - 34th Ave., Long Island City, N.Y. 11106

SEALS
Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231
Syntron, Div. FMC Corp., 398 Lexington Ave., Homer City, Pa. 15748

SEARCHLIGHTS
Snelson Oilfield Lighting Co., 1201 E. Doggett St., Fort Worth, Texas 76104

SEWAGE DISPOSAL
Seapox, Inc., 3645 Warrensville Center Rd., Cleveland, Ohio 44122

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

SHIPBREAKING—Salvage
The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
National Metal & Steel Corp., 1251 New Dock St., Terminal Island, Cal. 90731
Northern Metal Co., Minor & Bleigh Sts., Philadelphia, Pa. 19136
Peck Equipment Co., 3500 Elm Ave., Portsmouth, Va. 23704
Zidell Explorations, Inc., 3121 S. W. Moody St., Portland, Ore. 97201

SHIP BROKERS
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
Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh, Pa. 15219
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., 25 Broadway, New York, N.Y. 10004
Huntington Alloy Products, Div. International Nickel Co., Inc., Huntington, W. Va. 25720
International Nickel Co., 1 New York Plaza, New York, N.Y. 10004

SHIPBUILDING—Repairs, Maintenance, Drydocking
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Astilleros Espanoles, S.A. Zurbano, 70, Madrid 10, Spain
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Beliard Murdoch S. A., Kattendijkdok Westkaai 21, Antwerp, Belgium
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
Blount Marine Corp., P.O. Box 360, Warren, Rhode Island 02885
Brodogradiliste "SPLIT", P.O. Box 107, Split, Yugoslavia
Conrad Industries, P.O. Box 790, Morgan City, La. 70380
Dillingham Corp., P.O. Box 3288, Honolulu, Hawaii 96801
Dravo Corporation, Neville Island, Pittsburgh 25, Pa.
Equitable Equipment Co., Inc., P.O. Box 8001, New Orleans, La. 70122
General Dynamics, Electric Boat Division, 99M Eastern Point Road, Groton, Conn. 06340
General Dynamics, Quincy Division, Quincy, Mass. 02169
Gotaverken American Corp., 39 Broadway, New York, N.Y. 10006
Grafton Boat Co., Inc., Grafton, Ill. 62037
Greignard Shipyards, P.O. Box 829 Colbert, Marseilles, France.
Gunderson Bros. Engrg. Corp., 4700 N.W. Front St., Portland, Oregon 97208
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 Co.,25 Nakanoshima2-chomeKitaku,Osaka-Japan
Industrial Steel & Mach. Works, Inc., P.O. Box 2217, Gulfport, Miss. 39501
Ishikawajima-Harima Heavy Industries Co., Ltd., 15 William St., New York, N.Y. 10005
Jacksonville Shipyards, 644 E. Bay St., Jacksonville, Fla. 32203
Jeffboat, Inc., Jeffersonville, Ind. 47130
Kawasaki Dockyard Co., 8 Kaigan-dori, Ikuta-ku, Kobe, Japan
Kelso Marine, Inc., P.O. Box 268, Galveston, Texas 77550
Kockums Maima, Fack, Malmo, Sweden
Levingston Shipbuilding Co., P.O. Box 968, Orange, Texas 77630
LISNAVE, P.O. Box 2138, Lisbon, Portugual
Litton Industries, 9920 W. Jefferson Blvd., Culver City, Calif. 90230
Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
Maryland Shipbuilding & Drydock, P.O. Box 537, Baltimore, Md. 21203
Matton Shipyard Co., Inc., P.O. Box 428, Cohoes, New York 12047
Mitsubishi Heavy Industries, Ltd., 5-1 Marunouchi 2-chome, Chiyoda-ku, Tokyo, Japan
Mitsui Shipbuilding & Eng. Co., Ltd., Nihonbashi-Muromachi, Chuo-ku, Tokyo, Japan
Nashville Bridge Co., P.O. Box 239, Nashville, Tenn. 37202
National Steel & Shipbuilding Corp., San Diego, Calif. 92112
Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
Northwest Marine Iron Works., P.O. Box 3109, Swan Island, Portland, Oregon 97208
Nuclear Service & Construction Co., Inc., 9296 Warwick Blvd., Newport News, Va. 23607
O.A.R.N. (officine Allestimento e Riparazioni Navi) Genoa, Italy
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Fla. 33156
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862
Rodermond Industries, Foot of Henderson St., Jersey City, N.J. 07302
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
Sembawang Shipyard (Pte) Ltd., P.O. Box 3, Sembawang, P.O. Singapore, 27
Sumitomo Shipbuilding & Machy. Co., Ltd. 2-1 Ohtemachi 2-chome, Chiyoda-ku, Tokyo, Japan
Teledyne Sewart Seacraft, P.O. Box 108, Berwick, La. 70342
Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004

SHIP MODELS
Boucher-Lewis Precision Models, Inc., 36 E. 12 St., N.Y., N.Y. 10003

SHIP MODEL BASIN
Hydronautics, Incorporated, Laurel, Maryland 20810

SHIP ROUTING
Bendix Commercial Services Corporation, Owings Mills, Md. 21117
Weather Routing, Inc., 90 Broad Street, New York, N.Y. 10004

SHIP STABILIZERS
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Maritech, Inc., 38 Union Sq., Somerville, Mass. 02143
John J. McMullen Associates, Inc., 110 Wall St., N.Y., N.Y. 10005
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

STEAM GENERATING EQUIPMENT
Combustion Engineering, Inc., Windsor, Connecticut 06095

STEVEDORING
Luckenbach Steamship Co., 120 Wall Street, New York, N.Y. 10004
M. J. Rudolph Corp., 8 Sackett St., Brooklyn, N.Y. 11231

SWITCHBOARDS
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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, 140 Cedar St., New York, N.Y. 10006
James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004
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McDonough Marine Service, P.O. Box 26206, New Orleans, La.
P. F. Martin, Inc., Mall Bldg., 325 Chestnut St., Philadelphia, Pa.
Moran Towing & Transportation Co., Inc., 17 Battery Place, New York, N.Y. 10004
L. Smit & Co., 11 Broadway, New York, N.Y. 10004
Suderman & Young Towing Co., 329 World Trade Center, Houston, Texas 77002
M. G. J. Tracy, Inc., 1 Broadway, New York, N.Y. 10004
Turecamo Coastal and Harbor Towing Corp., 1752 Shore Parkway, Brooklyn, N.Y. 11214

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Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Mechanical Marine Co., Inc., 900 Fairmount Ave., Elizabeth, N.J. 07207

WIRE ROPE
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., Bethlehem, Pa. 18018
United States Steel Corp., P.O. Box 86, Pittsburgh, Pa. 15230

WIRE ROPE FITTINGS
Esco Corp., 2132 N.W. 25th Ave., Portland, Ore. 97210

ZINC
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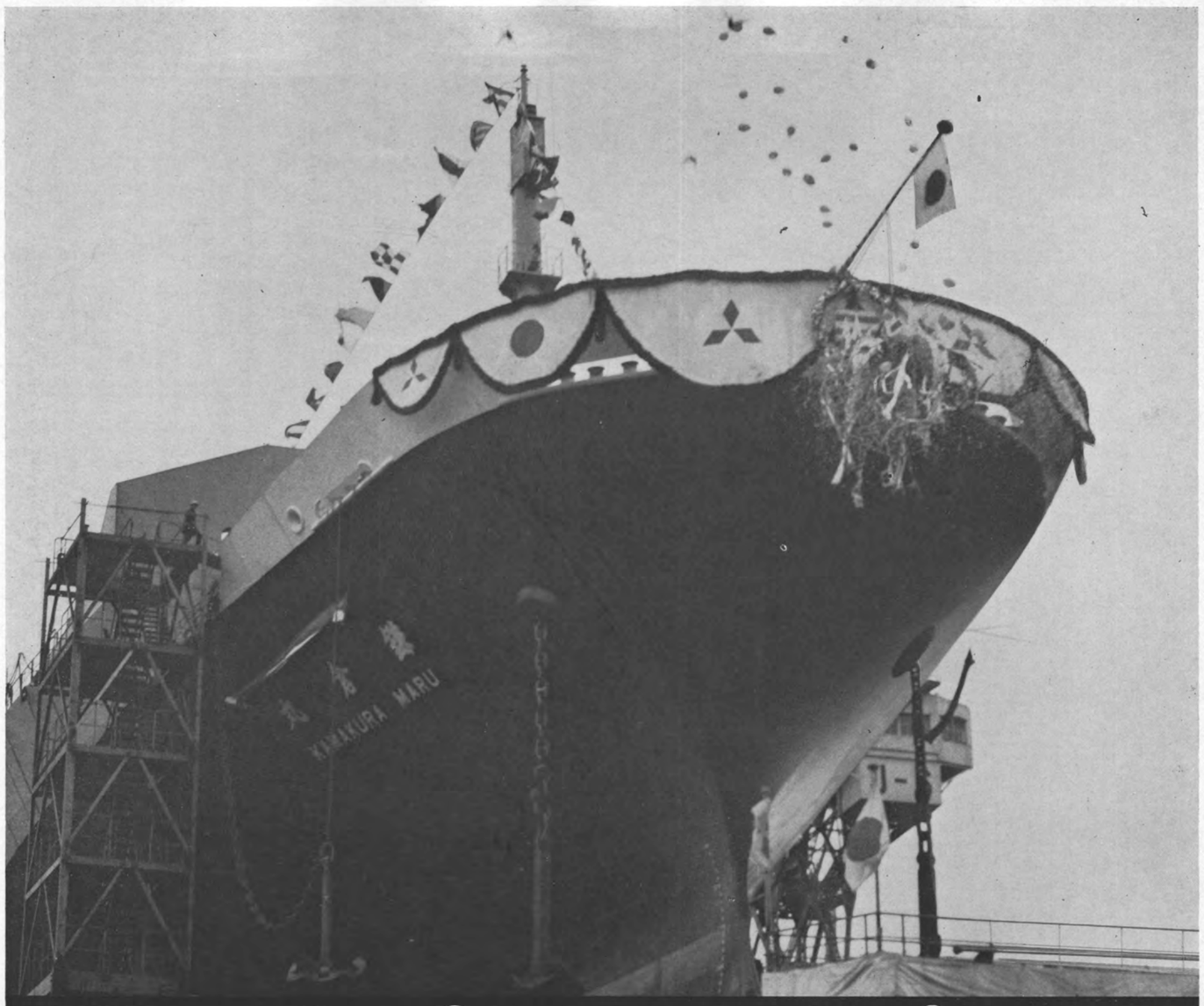

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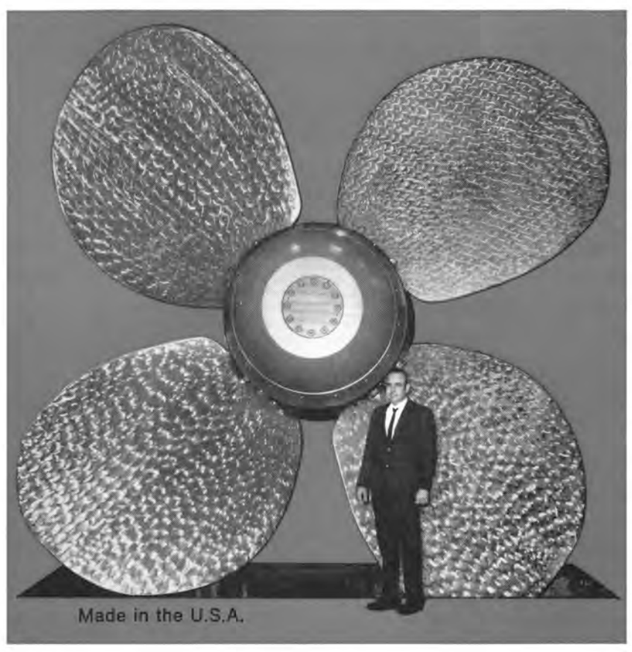

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