

MARITIME REPORTER

AND
ENGINEERING NEWS



**Powerful 224-Foot Tug Noordzee
Added To L. Smit's Offshore Fleet**

(SEE PAGE 8)

JULY 1, 1970

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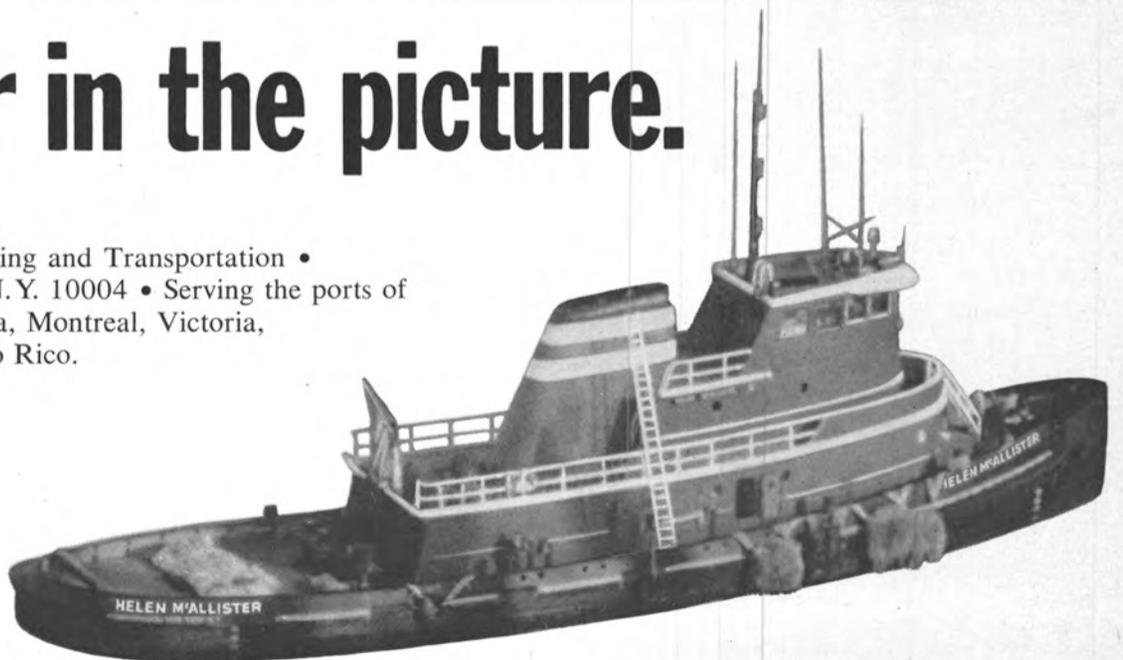
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MarAd To Receive Bids On July 15 For Steel Dragger

The Maritime Administration, 441 G. Street N. W., Washington, D.C., will receive bids on July 15, 1970 for the construction of a 109-foot 2 1/2-inch steel dragger for Dorothy M. O'Hara, Inc., Rockland, Maine.

Requests for IFB should be sent to Dorothy M. O'Hara, Inc., c/o John W. Gilbert Associates, Inc., 58 Commercial Wharf, Boston, Mass. 02110.

Halter To Build Offshore Supply Vessel For Jackson Marine

Halter Marine Services, Inc., New Orleans, La., has been awarded a contract for the construction of an offshore, oil-well supply vessel for Jackson Marine Corporation, Aransas Pass, Tex.

Designated Hull No. 267, the vessel will measure 174 feet by 40 feet by 17 feet.

She will be equipped with diesels of 6,000-total bhp.

Contract To Serodino For Towboat And Portable Marine Ways

A contract for the construction of a 58-foot by 20-foot by 7 1/2-foot towboat, to be used on land-locked Lake Cumberland in Southern Kentucky, has been awarded to Serodino, Inc., Chattanooga, Tenn., by East Kentucky Rural Electric Co-operative.

The contract also calls for a set of portable marine ways that will enable the vessel to be drydocked at any stage of fluctuation of the lake.

Stanley Consultants, Inc., Muscatine, Iowa, prepared the specifications for the vessel.

Swiftships To Build Offshore Crew Boats

Swiftships, Inc., Morgan City, La., has received a contract, from undisclosed interests, for the construction of four offshore, oil-well crew boats.

All four vessels will be powered by twin-screw diesels.

Three will be of steel construction measuring 65 feet in length. The fourth vessel will be 105 feet long and will be of all-aluminum construction.

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Designed by the firm of Friede & Goldman, each ship will have a two-drum B&W boiler that will deliver 108,000 pounds of steam per hour at 870 pounds per square inch pressure and 955 F. This gives these 772 foot long vessels a rating of 32,000 shaft horsepower and an operating speed of 22.5 knots.

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Sun Oil Awards Contracts To Build Tugs And Barges

To meet rising demands for water transportation of its petroleum products, Sun Oil Company has contracted for the construction of six barges and two tugboats in three southwestern United States shipyards.

Five barges are being built at the SBA Shipyard, Jennings, La. A

sixth barge is under construction at Todd's Shipyard, Houston, Texas. Main Iron Works, Houma, La., is building the two tugboats.

Three of the SBA barges will transport petroleum products to customers from the company's 66,000 barrel-a-day refinery now being built at Yabucoa, Puerto Rico. They include a 70,000 barrel barge with heating coils to facilitate delivery of hot asphalt to the Puerto Rico Water Resources Authority,

a 60,000 barrel naphtha barge for delivering petrochemicals feed stocks to a Union Carbide plant in Puerto Rico, and a 25,000 barrel barge for transporting heavy gas oil. A twin-screw, 3,800-horsepower tugboat being constructed by Main Iron Works will power the three barges in Puerto Rican service and perform harbor tasks at Yabucoa.

The other two barges being built at the SBA Shipyard are 25,000 barrel units for carrying lubri-

cating oils refined at Marcus Hook, Pa. to Sunoco terminals at Newark, N.J. and Providence, R.I. These barges will also transport gasoline and distillates from the Newark Terminal to terminals at Albany, Brooklyn, Oceanside, Newburgh, and Peekskill, N.Y.; Hackensack, N.J.; and at Hartford, Conn. The new tug—Chesapeake Sun—will power the barges.

A sixth barge, with a 115,000-barrel capacity, is under construction at Todd's Shipyard in Houston. It will transport gasoline and distillates from Sun's Corpus Christi, Texas refinery to the company's terminals at Tampa, Port Everglades and Jacksonville, Fla. This barge will also move gasoline and lubricating oils from the Marcus Hook, Pa. refinery through the Chesapeake and Delaware Canal to Baltimore and to Sunoco terminals at Wilmington, N.C., Jacksonville and Tampa, Fla. Supplying power for this barge will be a second Main Iron Works built twin-screw tug with a 3,800-hp engine.

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Marcona Appoints Robert E. Chisholm To New Marine Post



Robert E. Chisholm

Robert E. Chisholm has been named to the newly created position of assistant general manager, Marine Group for Marcona Corporation, San Francisco, Calif., according to an announcement by H. C. Downer, senior vice-president, Marine Group.

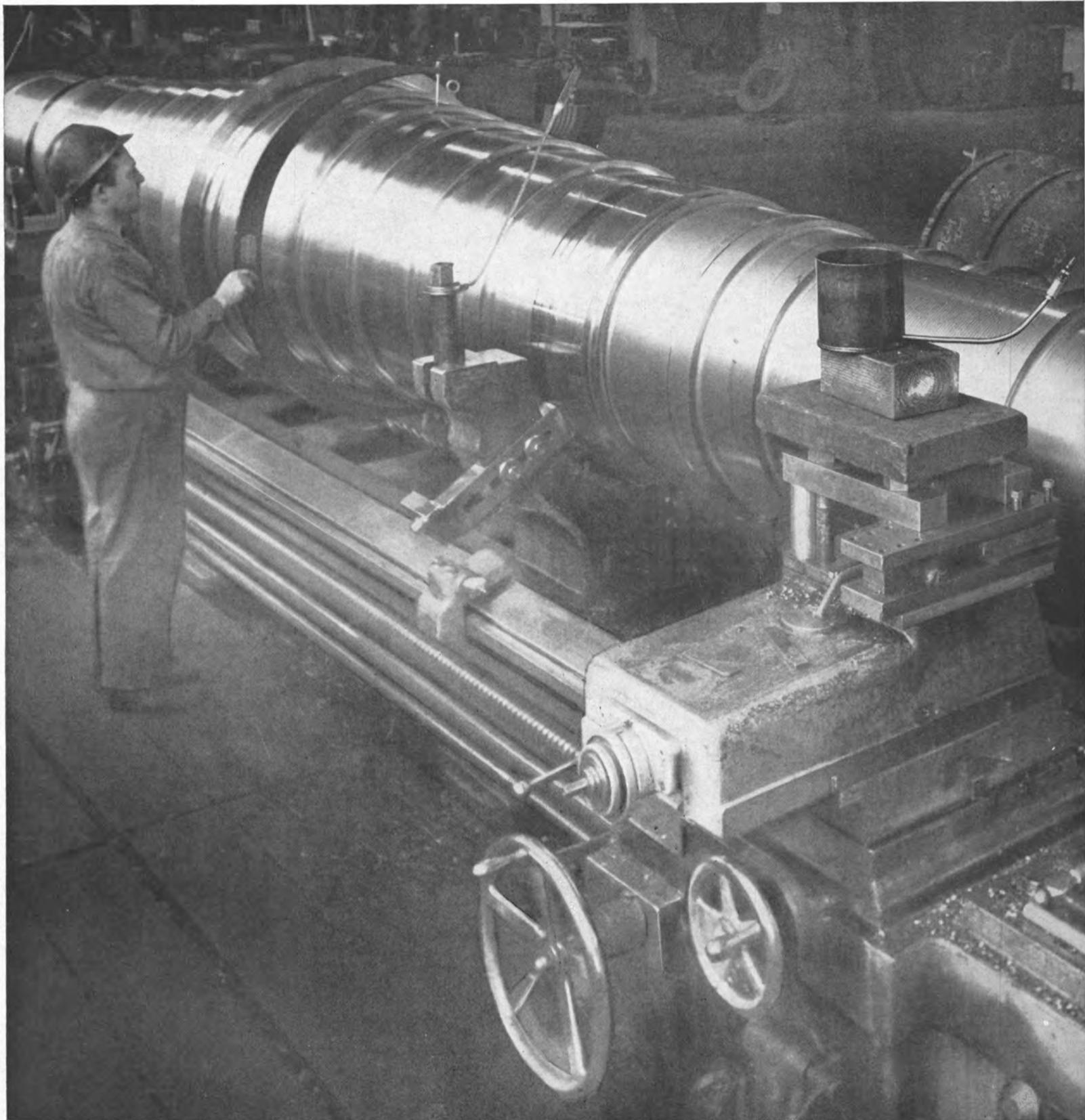
Mr. Chisholm was formerly manager of the Chartering and Traffic Division of Texaco, Inc., New York City. Prior to that time he served 19 years with the Caltex organization in a variety of managerial positions at locations throughout the world. He is a graduate of the United States Merchant Marine Academy, Kings Point, N.Y. and also completed the advanced management course at Harvard University.

Mr. Chisholm will establish residence in the San Francisco Bay Area upon completion of the school year in New York.

Kerr Steamships Ltd. Announce Appointments

Kerr Steamships Limited offices in Montreal, Canada have announced that W.I. Richmond has been appointed a director of both Kerr and Dominion Chartering Co. T.E. Kirkbride was named a vice-president, and C.B. Neilsen was appointed operations manager of Kerr.





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Talk to
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The first assignment for the Noordzee will be the towing of two tankers in tandem from the United States to Spain.

L. Smit's Newest Oceangoing Tug

On May 29, 1970, the ocean-going motor tug Noordzee was added to the fleet of L. Smit & Co.'s International Sleepdienst. The vessel was constructed by the Shipbuilding and Engineering Works "De Merwede" at Hardinxveld-Giesendam, Holland.

Built to Lloyd's Register Maltese Cross 100 A-1 Tug Classification, the Noordzee is a sister ship of the Rode Zee (commissioned in 1968), which was the first tug equipped with the new type Werkspoor T.M. 410 diesel engines.

She is a single-screw tug, equipped with a four-bladed variable pitch propeller which is turning in a nozzle, thereby increasing the bollard-pull considerably. The propeller shaft is driven through a reduction gear and two Vulcan fluid couplings by two Werkspoor turbo-charged, four-stroke, single acting six-cylinder diesel engines. The combined output of this propulsion machinery is 11,000 ihp.

The tug's large bunker capacity enables her to perform ocean towages with heavy objects over very long distances without having to re-fuel en route.

Three generator sets of 275 kw each supply 380-volt alternating current, while for emergency cases an additional diesel generator set is installed.

Adjacent to the engine room is a workshop equipped with various machine tools: lathe, shaping machine, drilling machine, grinding machine, welding units, as well as a welding converter which can be used in underwater cutting or welding.

Two lifeboats, each with a capacity of 30 persons, are on board as is a workboat which is to be used for transferring men and material during salvage operations. This workboat is lowered and hoisted by a hydraulic crane.

Two steel wire ropes of 3,281 feet each with a circumference of 7¼ inches and 6½ inches respectively, are reeled on the towing winch, which has two independent drums. The towing equipment, stored in a special hold, consists of double ny'on hawsers of 15 inch circumference, pennants, chains, etc.

The spare towing equipment includes two steel wire ropes of 7¼ inch circumference, each

with a length of 3,281 feet. There are mechanically operated drums for storing of the spare wires and also for storing of pennants etc., thus diminishing the manual labor for handling the heavy wires.

On the main deck aft a winch with two drums has been installed for handling the gog ropes. The windlass on the raised forecastle deck is driven by the motor one deck below.

The crew is accommodated in air-conditioned quarters. The accommodation comprises a mess room and smoke room for the officers and also a combined mess and smoke room for the crew.

A well equipped galley with an electric range and food machines is situated on the main deck. Adjacent to the two mess rooms there are two pantries.

Apart from the crew the tug can accommodate additional men for manning a tow or for salvage work. Installation of a fresh water distiller reduces the space necessary for fresh water storage and provides more bunker capacity.

The Noordzee carries extensive fire-fighting and salvage equipment, such as a fire-fighting pump with a maximum capacity of 350 tons per hour, nine connections for 2½ inch fire hoses, two monitors on a high platform at the smokestacks and one monitor on top of the wheelhouse. These monitors can also be used for spraying foam. The vessel herself is protected against fire by a CO₂ installation in the engine room.

The transportable salvage equipment includes diesel motor pumps, submersible electric pumps with diesel generator sets, many suction and delivery hoses, an air compressor, salvage anchors, diving gear, welding and cutting plant, patching materials, etc.

The very modern wheelhouse is designed in such a way that an excellent view, forward and aft, is always guaranteed.

A console is installed in the wheelhouse forward for the pneumatic remote control of the propeller, the lever for the rudder and automatic pilot, the communication system, the repeaters of the magnetic and of the gyro compass, the echosounder and the electric log. The

remainder of the navigational equipment is installed on the chart table which is also in the wheelhouse.

The wireless station in a separate room on the port side aft in the wheelhouse, is equipped with the latest and most extensive communication aids.

Her main dimensions are: Overall length 224 feet 9 inches; length b.p. 203 feet 5 inches; overall breadth 41 feet 5 inches; molded beam 39 feet 8 inches; molded depth 21 feet 0 inches; draft at C.W.L. 18 feet 1 inch.

Her first assignment is the towage of two scrap tankers in one tow from the United States to Spain.

Master of the tug Noordzee is Capt. J. Bruins.

The Poolzee, third unit in Smit's 11,000 ihp class of tugs and now under construction at the yard of "De Merwede", will be placed in service in December 1970. Smit's fleet of ocean-going tugs will then number 18 units: three of 11,000 ihp; two of 9,000 ihp; two of 4,500 ihp; four of 4,000 ihp; three of 3,000 ihp and four of 2,000 ihp.

Balancing Service Company Sold To Diehl and Lundgaard

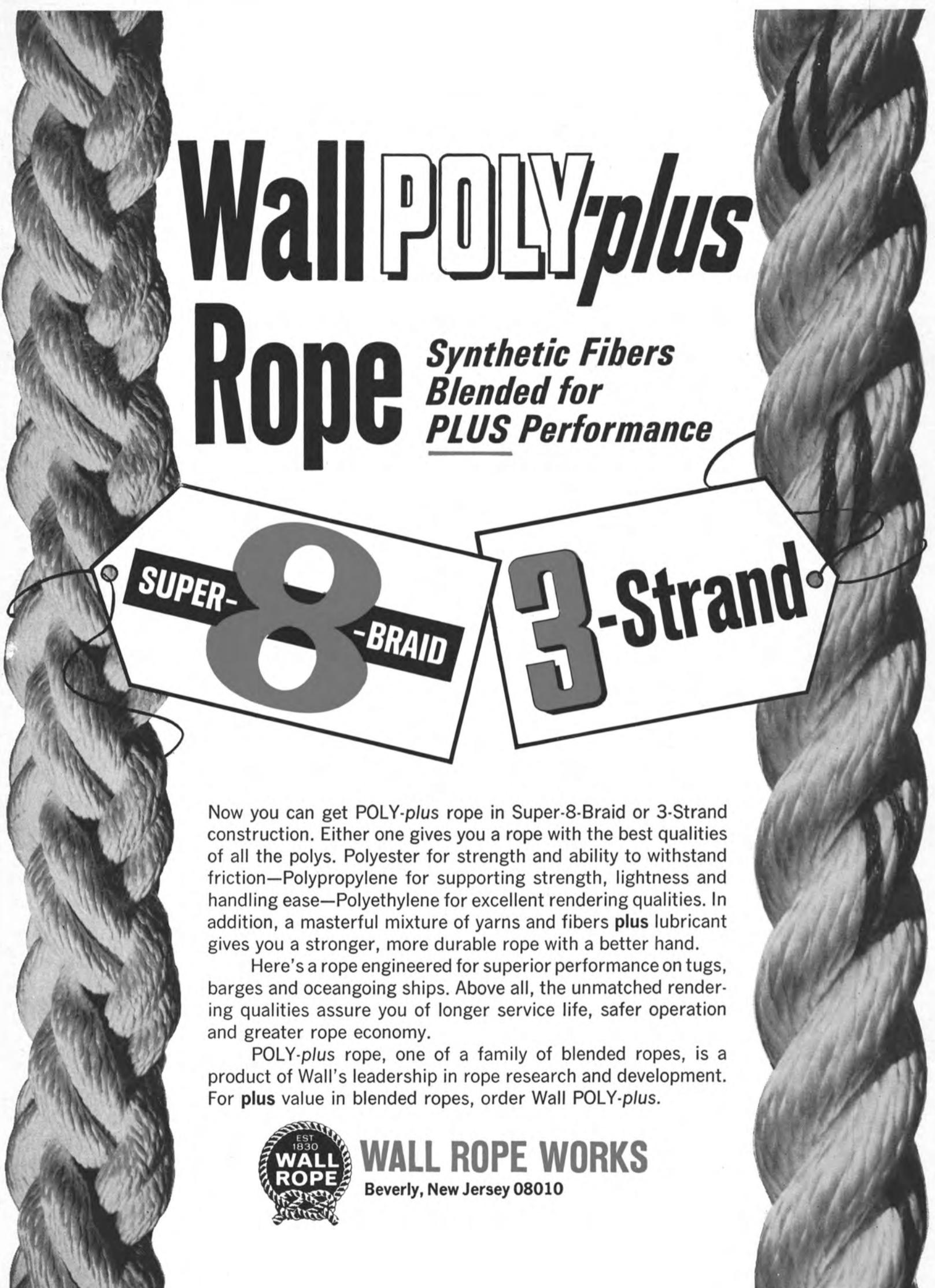
Seattle's oldest balancing company, Balancing Service Company, was recently sold to a group headed by the marine engineering firm of Diehl and Lundgaard. Harold O. Hanawalt, the previous owner of the company, will continue as a consultant. Mr. Hanawalt is well-known along Seattle's waterfront, having balanced everything from destroyer propellers to high-speed turbine rotors.

In the past Diehl and Lundgaard has been performing field balancing as well as acoustic and vibration troubleshooting, and the association with Balancing Service Company will extend their range of capabilities to the entire field of vibration and noise control.

Balancing Service Company is located at 2763 First Avenue South, Seattle, Wash.



SUPPORT FOR U.S. SHIPS: Secretary of Commerce Maurice H. Stans (right) attaches a bumper sticker proclaiming "They serve you and U.S.—Use U. S. ships" to his car. A. E. Gibson, Maritime Administrator in the Commerce Department, assists Mr. Stans. Produced cooperatively by maritime industry and labor organizations, the bumper sticker summarizes the intent of the Maritime Administration's new trade promotion program to alert American shippers to the benefits of using U.S.-flag ships whenever possible. Over half a million of the red, white, and blue bumper stickers have been distributed nationally through the sponsoring organizations.



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Levingston Shipyard To Build Aluminum Hull For 80-Knot Gas Turbine Propelled SES

The Bell Aerospace Division of Textron has announced that it has selected the Levingston Shipbuilding Company of Orange, Texas, to fabricate the hull structure of the 100-ton Surface Effect Ship test craft.

The test craft, a major step in the nation's long-range effort to determine the feasibility of building and operating large, high-speed SES in the 4,000 to 5,000 ton class, is being designed and built by Bell's New Orleans Operations, Michoud, La., under a contract from the Maritime Administration, U.S. Department of Commerce. The project is administered by the U.S. Joint Navy/Commerce Surface Effect Ships Program Office.

Levingston has been awarded a subcontract

by Bell to fabricate the hull structure to Bell's design and specifications. Final assembly of the test craft will be performed by Bell Aerospace. The hull structure of the 100-ton test craft will feature a single hull form of welded marine aluminum, incorporating two side hulls extending nearly the length of the craft and enclosed at the bow and stern by flexible end seals. The structural design is similar to that for high-speed marine craft in operation today. The test craft will measure approximately 72 feet in length and will have a beam of 33 feet. It is being designed for speeds in excess of 80 knots (approximately 92 mph).

Levingston Shipbuilding, founded in 1933, has had extensive experience in fabricating a wide variety of vessels for the United States Government, the offshore oil industry, the maritime transportation industry and for oceanographic research.

Last year Levingston completed delivery of four patrol escort vessels built under contract for the United States Naval Ship Systems Command. The company has worked extensively with aluminum and in one project alone nearly 1,000 tons of aluminum was fitted and welded into three vessels.



Designed for speeds in excess of 80 knots (approximately 92 mph), the hull of the test craft at times will be no more than a few inches below the water.

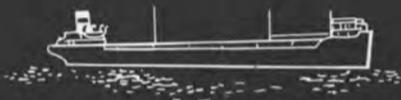
Another recent accomplishment was the fabrication of the Glomar Challenger oceanographic research vessel for Global Marine Inc. This ship, which is working for the Scripps Institution of Oceanography in carrying out a deep-sea core drilling project funded by the National Science Foundation, has established several drilling performance records since beginning operations in 1968.

The Levingston Shipyard is situated on the Sabine River, just north of the Intracoastal Waterway within 50 miles of the Gulf of Mexico.

Other major subcontracts previously awarded by Bell Aerospace New Orleans Operations for various subsystems and materials for the 100-ton SES test craft include: Buehler Corporation, Indianapolis, Ind.—design, build and test the main transmission system; Philadelphia Gear Corporation, King of Prussia, Pa.—design and develop supercavitating, semi-submersible controllable pitch propellers; Pratt & Whitney Division of United Aircraft, Farmington, Conn.—three FT-12, 4,500-shaft-hp marinized gas turbine engines for main propulsion; Aluminum Company of America—aluminum sheet stock, plate stock and extrusions.

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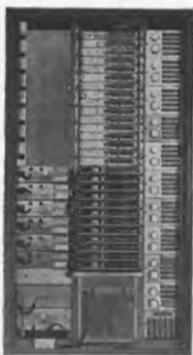
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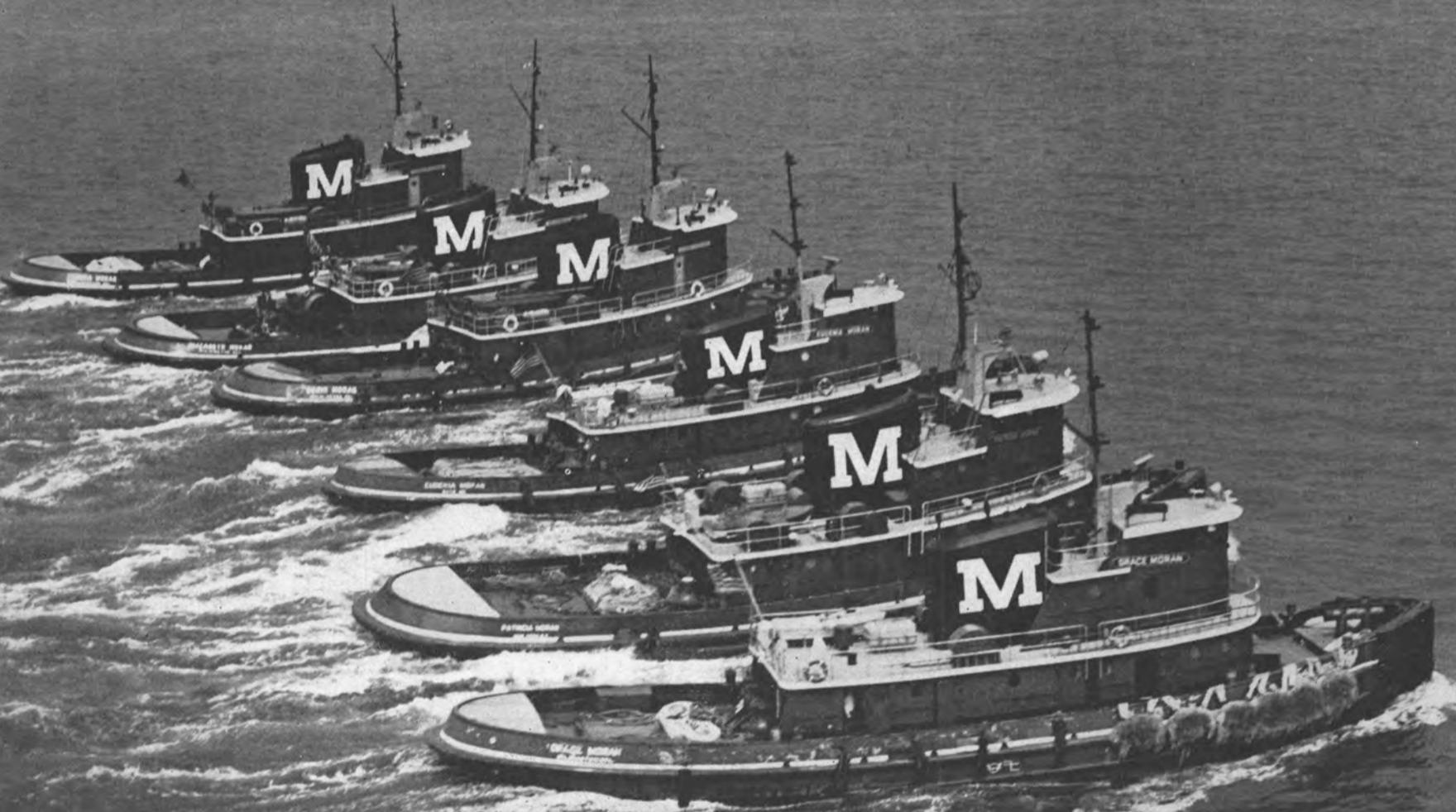


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Newport News Shipbuilding Elects Officers Announces Three Executive Level Promotions



Richard Broad



F. Hunter Creech



William H. Smith

The election of three officers of Newport News Shipbuilding and Dry Dock Company, Newport News, Va., was announced by **L.C. Ackerman**, president and chief executive officer of the Tenneco subsidiary. Elected by the board of directors were **Richard Broad**, vice-president; **F. Hunter Creech**, secretary and general counsel; and **William H. Smith**, treasurer.

Mr. Ackerman said that Mr. Broad's elevation to vice-president was a "recognition of the increasing importance of the shipyard's nuclear activities and allied responsibilities." Mr. Broad was formerly chief of nuclear engineering. He joined Newport News in 1938 and became quality inspection engineer in 1958. His appointment as chief of the company's nuclear engineering operations came in 1963. He is a graduate of the yard's Apprentice School and has a B.S. and M.S. in naval architecture and marine engineering from the University of Michigan. He also attended the Oak Ridge School of Reactor Technology in Tennessee.

The selection of Mr. Creech for the post of secretary and general counsel fills the vacancy created by the retirement of **Harry H. Holt Jr.** on April 30 this year. Mr. Creech, who had worked previously as an attorney for Ingalls Shipbuilding Corp. in Pascagoula, Miss., came to the shipyard in 1964 as assistant to the general counsel. He was named assistant general counsel in September 1966 and elected assistant secretary of the company the following April. He received

both his B.A. in philosophy and his LL.B. degree from the University of Virginia.

Mr. Smith's appointment became effective June 1, when **Thomas L. Lanier** retired as treasurer of the company. He was employed in 1958 as assistant to the treasurer and was elected assistant treasurer in May 1962. He received his B.S. degree from Davidson College and his M.B.A. from the University of North Carolina. Before joining the staff at Newport News, he served as a Navy pilot for four years.

Other officers elected by the board of directors at its annual organization meeting were **W.T. Smith**, senior vice-president; **W.F. Wilson**, vice-president for administration; **A.R. Myers**, comptroller; **F.D. Seney**, assistant secretary; and **D.M. Williams**, assistant treasurer.

N.W. Freeman, president and chief executive officer of Tenneco Inc., was named chairman of the Newport News board and chairman of its executive committee.

In addition to Mr. Freeman and Mr. Ackerman, other board members to serve during the coming year are **Simon Askin**, vice-chairman of the board, Tenneco Inc., New York; **Walter E. Dennis**, financial consultant, New York; **C. L. Huston Jr.**, president Lukens Steel Company, Coatesville, Pa.; **W. Thomas Rice**, president, Seaboard Coastline Railroad Company, Richmond, Va.; and **Gardiner Symonds**, chairman of the board, Tenneco Inc., Houston, Texas. Vice-Adm. **Emory S. Land**, USN (ret.) was named director emeritus.

Cunard Group Awards Eight-Ship Contract To Astilleros Espanoles

Cunard, one of Britain's major shipping groups, has placed orders for eight 27,000-dwt bulk carriers worth \$48-million with a Spanish shipyard. The ships, which are to be built by the Madrid-based Astilleros Espanoles for delivery in 1972 and 1973, will be managed by Cunard-Brocklebank, Ltd., or a subsidiary company formed for the purpose.

A Cunard spokesman said that the contract was won by the Spanish shipyard because no British yard was able to compete on price and delivery. Approximately 40 shipyards throughout the world tendered for the work.

Gibbs & Cox Awarded \$1.7 Million Contract

A \$1,770,947 contract for engineering design services and construction of four technical ship models of an advanced amphibious assault landing craft has been awarded to Gibbs & Cox, Inc., naval architects, New York, by the Naval Ship Systems Command, Washington, D.C.

Bulk Services, Inc. Names Quain VP

The appointment of **James R. Quain** as vice-president of Bulk Services Inc., was announced by **Egil Molsted**, president. The firm, specializing in ship brokerage activity is located at 145-155 John Street, New York City.

Shipboard Sewage Treatment Contract Awarded To Pall

Pall Trinity Micro Corporation of Cortland, N.Y., a wholly-owned subsidiary of Pall Corporation, has announced the receipt of the first major award for the design and manufacture of sewage treatment plants for a new naval ships program. Litton Industries is prime contractor for the new class of fighting ship known as LHA-1 (General Purpose Amphibious Assault Vessel).

The subcontract awarded Pall on June 2, 1970, is in the amount of \$1,531,160 and is to be delivered over a period of four years.

Pall entered the marine sewage treatment field in 1967 and from that time has directed its development and manufacturing efforts toward optimizing sewage treatment plants for pollution control on commercial and naval ships. These development efforts culminated in its unique patented MPT series, "Thermally Accelerated Extended Aeration Treatment Plant." Pall believes it has installed more extended aeration sewage treatment plants on commercial ships than any other manufacturer.

Matson Names Pfeiffer Senior VP-Operations



R.J. Pfeiffer

R.J. Pfeiffer has been named senior vice-president, operations, of Matson Navigation Company by the company's board of directors. The announcement was made by **M.H. Blaisdell**, president, in San Francisco, Calif.

Mr. Pfeiffer will be responsible for all line operations of Matson, reporting directly to the president. He has been vice-president in charge of the company's Far East freight division for the past four years, and president of Matson Terminals, Inc. since 1962. He was succeeded in the latter position by **Gordon Bart** in a recent shift of Matson executive personnel.

Philadelphia SNAME Holds 20th Annual Banquet



Seated at the head table, left to right: **L.B. Bennett**, banquet chairman; **Mrs. Bennett**; **W.D. Vandegriff** (hidden from camera), American Bureau of Shipping; **Mrs. Vandegriff**; **Kent C. Thornton**, outgoing chairman of the Philadelphia Section; **Mrs. Thornton**; **Capt. F.W. Gooch Jr.**, USN, Commander, Philadelphia Naval Shipyard; **Mrs. Gooch**; **G.A. Johnson**, 1970-71 Philadelphia Section chairman; **Mrs. Johnson**; **Robert G. Mende**, SNAME National Secretary, and **Mrs. Mende**.

The 20th Annual Dinner-Dance of the Philadelphia Section of the Society of Naval Architects and Marine Engineers was held at the City Line Holiday Inn, Philadelphia, on May 23.

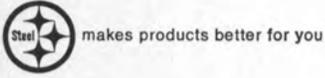
This is the first time the event was held at this location. Due to its successful attendance the affair has outgrown previous sites.

During the festivities, one of the highlights of the affair was the presentation of a Certificate of Recognition by **Robert G. Mende**, National Secretary of the Society, to **Kent C. Thornton**, of the J.J. Henry Company, Inc., Philadelphia, in recognition of his services as chairman of the Philadelphia Section.

This annual banquet, traditionally attended by just about everyone in the Philadelphia maritime community, provided a fitting climax to the formal 1969-1970 season.



Bob Mende, (left) SNAME National Secretary, presenting a Certificate of Recognition to outgoing Philadelphia Section chairman, **Kent C. Thornton**.



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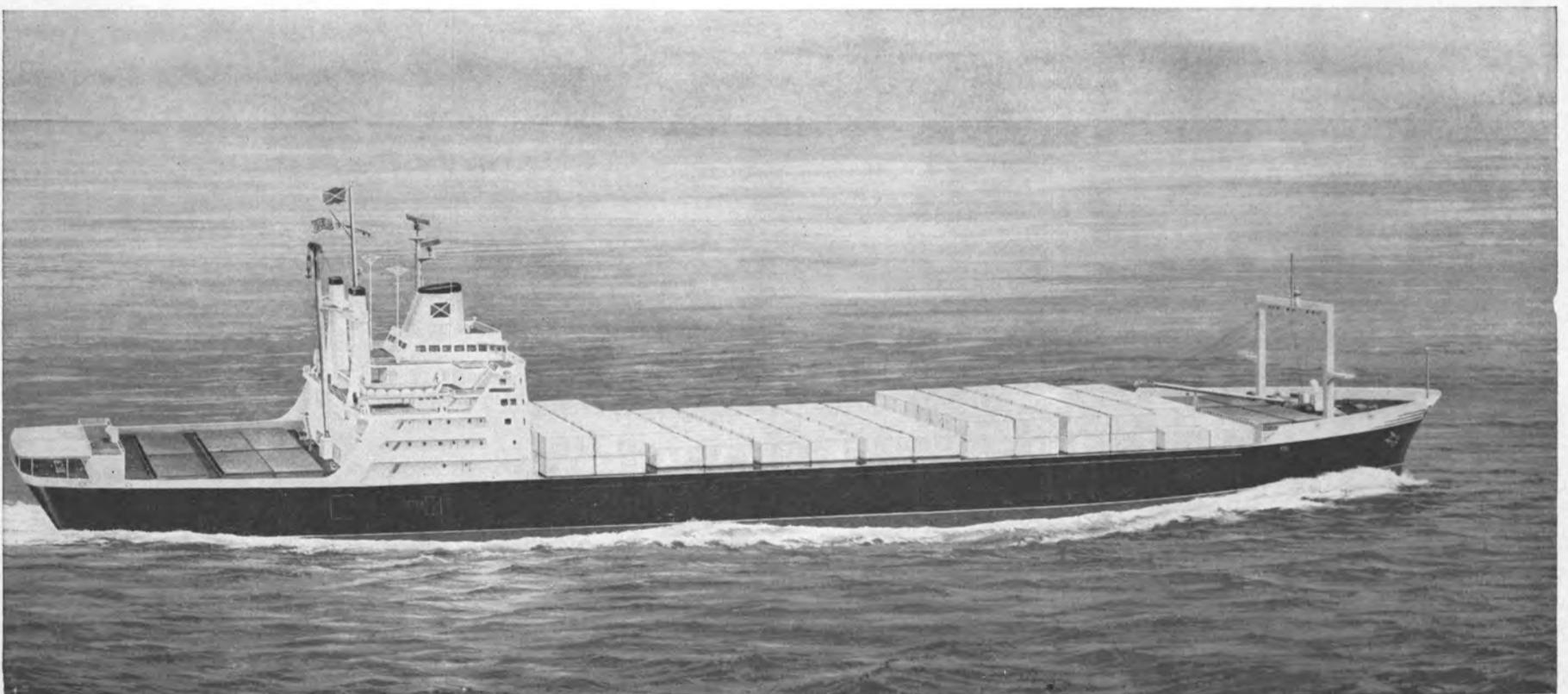
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Trends In Sea-Water Distillation

There Is A Demand For Compact, Reliable And Automatic Sea-Water Distillation Plants Aboard Ships. During The Last Few Years, The Design Of Such Plants Has Improved So That Smaller, Less Expensive, Packaged Plants Are Now Available.

J. Herd, C. Eng., M.I. Mech. E., M.I. Mar. E.*

Although there are several methods by which fresh water can be produced from the sea, including electro-dialysis, reverse osmosis and freezing, it is distillation that is by far the most widely used. Aboard ship it is virtually the only method, although it takes many forms and has advanced to a high degree of efficiency.

In the simplest distillation plant, steam is passed through a heating coil immersed in sea water, which contains about 3.6 percent of dissolved solids, mostly salt. Part of the water vaporizes, leaving the salt behind, and passes into a condenser while the remaining brine, which has become more concentrated is drawn off and led away.

The term "distilling plant" is applied to the collection of various pieces of equipment which, when set to work together, carry out the complete distillation process. For shipboard use such plants have fresh-water production capacities varying from 20 tons to 700 tons or more per 24 hours, and, of course, more than one plant may be fitted into a ship.

Although some ships rely solely on distilled water for all purposes, others use distillation plants to augment water obtained from shore sources and carried in tanks.

Ships in the first category include naval vessels which, with their high crew density, limitations on weight and space and ever extending operational range, cannot afford large water tankage. Distillation, therefore, provides the water for drinking and other domestic uses and for feeding the boilers. As water for boilers must have a salt contamination level limited to one or two parts per million, it follows that these ships require a fresh-water making process which is highly efficient and completely reliable.

The present generation of submarines, being nuclear-steam propelled, and carrying a large complement for extended, totally submerged voyages, also rely on a distillation plant to a very great extent. Such ships clearly do not have the space or buoyancy to spare for carrying large quantities of fresh water.

At the other end of the scale, the very big passenger liners will have some water-carrying capacity, though not enough to supply the passengers with all the water they need. With a ship of this type a major distillation-plant failure would make life for the passengers distinctly uncomfortable and would severely embarrass the shipping company.

The increasing reliance that is being placed on the distillation process is shown by the water-carrying capacity of two passenger liners. The Queen Elizabeth, completed in 1940, has tanks for 6,000 tons of fresh water. The Queen Elizabeth 2 carries only 1,200 tons of fresh

water for approximately the same number of people, but has three flash-distillation plants, each capable of producing 400 tons of water per 24 hours.

Flash Distillation

Flash distillation is the term applied to the process when the formation of the fresh water vapor occurs at reduced pressure from a brine solution in which no heating element is immersed. As in all distillation processes, flash distillation requires the input of heat. However, the heat is imparted to the brine while it is under pressure and, therefore, no boiling takes place at the heat input surfaces.

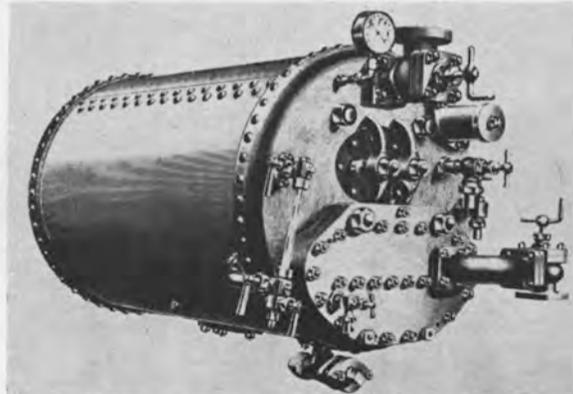
As a result, all the heat is retained by the brine as sensible heat and it is only when the brine is passed into the flash chamber, which is at a pressure below that equivalent to the brine boiling temperature, that fresh water vapor is formed.

One of the main advantages of this method is that it reduces the formation of salt scale which would otherwise be precipitated by the actions of boiling and brine, and would in time affect the plant performance.

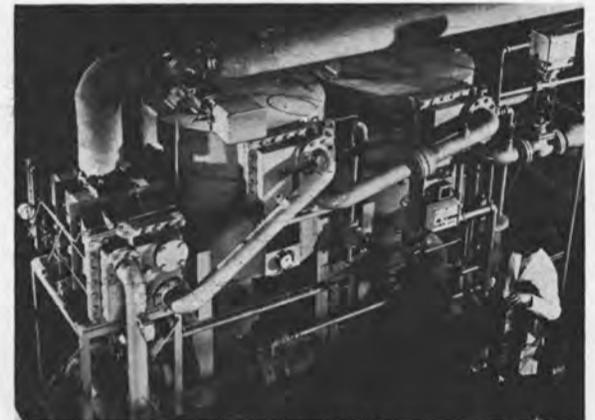
A series of flash chambers can be contained within a single plant. The brine to be evaporated flows from one stage to the next at progressively lower pressures. Thus, a four-stage plant would have four flash chambers, generating vapor at say 165° F., 150° F., 135° F. and 120° F.

A four-stage plant has a main ratio of about 2.3:1, i.e. 2.3 pounds of fresh water is produced for every pound of heating steam condensed. A two-stage plant has a gain ratio of about 1.3:1. These two types present the major proportion of the plants supplied.

The vapor generated in each stage is condensed on condenser tubes in that stage. The latent heat given up by the vapor in condensing is used to preheat the brine on its way to the brine heater, where the external source of heat is applied. In this way a marked degree of heat regeneration is achieved and if, in addition to this, some of the residual brine from the last flashing stage is recirculated, then high thermal economy results.



The first Weir sea-water distiller, manufactured in 1884.



A Weir remotely controlled MXFR two-stage flash distillation plant on test at the Cathcart plant in Glasgow.

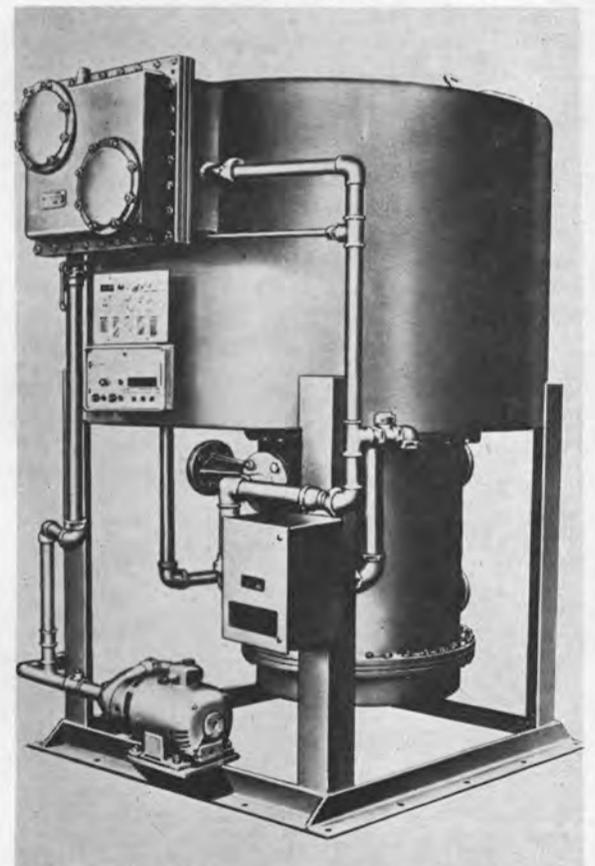
Need For Reliability

Because of the growing reliance on the production of fresh water aboard ship and increasing personnel consumption, the primary need at sea is for a simple, efficient and above all reliable distillation plant.

At the same time it is desirable to make use of the waste heat contained in the circulating water system of diesel engines—heat which otherwise is rejected to the sea.

Ships being built today tend to have machinery control rooms with virtually no watch-

(Continued on page 16)



The Weir type MX automatic sea-water distillation plant.

*Mr. Herd is chief systems designer, Heat Exchange Div., G. & J. Weir Limited, Cathcart, Glasgow, S.4, Scotland.

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Sea-Water Distillation—

(Continued from page 14)

keeping activities in the engine room proper. Some ships are completely monitored with a comprehensive data and alarm system, and in consequence normal operation calls only for the attendance of a day-work staff rather than the traditional watch and watch system. Modern engine rooms also are smaller. The need has, therefore, arisen for compact distillation plants requiring the minimum of control and maintenance.

These factors have dominated the design of modern plants, leading in some cases to a degree of built-in automation hitherto considered impossible to achieve except at heavy cost. The series of MX distillers recently introduced by G. & J. Weir of Glasgow, Scotland, illustrates this type of plant. The modular design permits the plant to be varied to suit large and small naval and merchant ships. The basic unit can be supplied in sizes producing up to 75 tons per day as standard, but units with larger capacities can be manufactured.

Early Distillation Plants

In an effort to make seagoing vessels independent of water supplies from shore, the British Admiralty ordered in the 1880s a Weir marine evaporator to produce pure distilled water for boiler feed. The first unit was made in 1884. It was successful in operation and larger more complex evaporators followed. A full scale naval plant of 60 years ago included a direct-acting pump, brass-bound wooden casing, and a mass of controls and instrumentation.

It was not until 1959, after much developmental work, that the first successful design by this company of packaged distillation plants was achieved. The plant carried out the process at sub-atmospheric pressure, allowing the heating steam to be at lower temperature than in earlier plants and enhancing the temperature difference between heating and heated media for a given pressure difference. For certain applications the process was staged in series to improve thermal efficiency—the vapor genera-

ted in one stage being used as the heating medium for the succeeding stage.

Many forms of vapor baffles were used in order to improve further the purity of the water produced and to increase the stability of operation of the plant. These baffles were of the deflector type, the centrifuge type and a form of fresh water bath through which the vapor passed, being subjected to a scrubbing action to remove entrained droplets of brine.

These plants were heavier, larger and more costly than the new units. Their heating elements had a greater tendency to accumulate scale, and more instruments were needed.

The New Plants

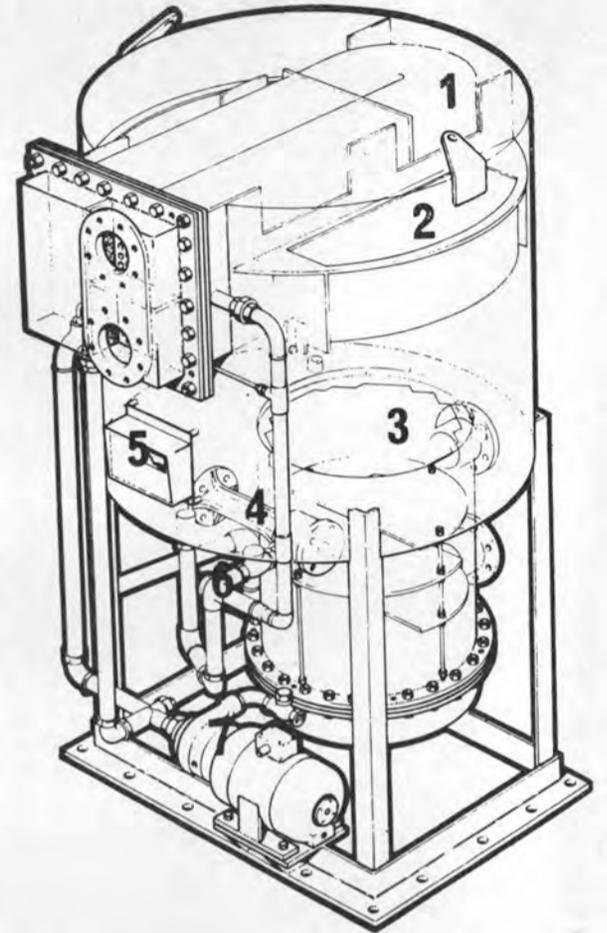
The new MX distiller consists of a set of units which can be assembled in different ways to suit nearly all types of ships. In addition, the traditional array of control instrumentation has been eliminated by automatically controlling the various flows. In these ways capital cost is kept to a minimum.

The primary aims when developing these plants were: to design an economical basic unit, to operate at low temperature so reducing scale formation to the minimum and allowing the jacket cooling-water of a diesel engine to be used efficiently as the heating medium, and to provide a completely packaged unit, the operation of which would be fully automatic.

In addition, the basic unit had to be: suitable for operation with low-pressure heating steam, capable of remote starting and shutdown, and amenable to batch production, using as many common components over the output range as possible.

The basic unit, which uses a heating element submerged in the brine, had to be designed so that when two of these units are combined, their heating elements can be easily replaced by simple flash chambers which are more economic in combination. The result is a two-stage flash plant requiring only the addition of an external heat input exchanger and pumps rated to the water flows involved.

Evaporation of the sea water takes place without the use of the conventional coils or elements and with a comparatively small heat



Main components of the MX automatic sea-water distiller: (1) distilling condenser tube stack, (2) demister, (3) heater tube stack, 4) brine and air ejector, (5) salinometer, (6) feed regulator, and (7) distillate pump.

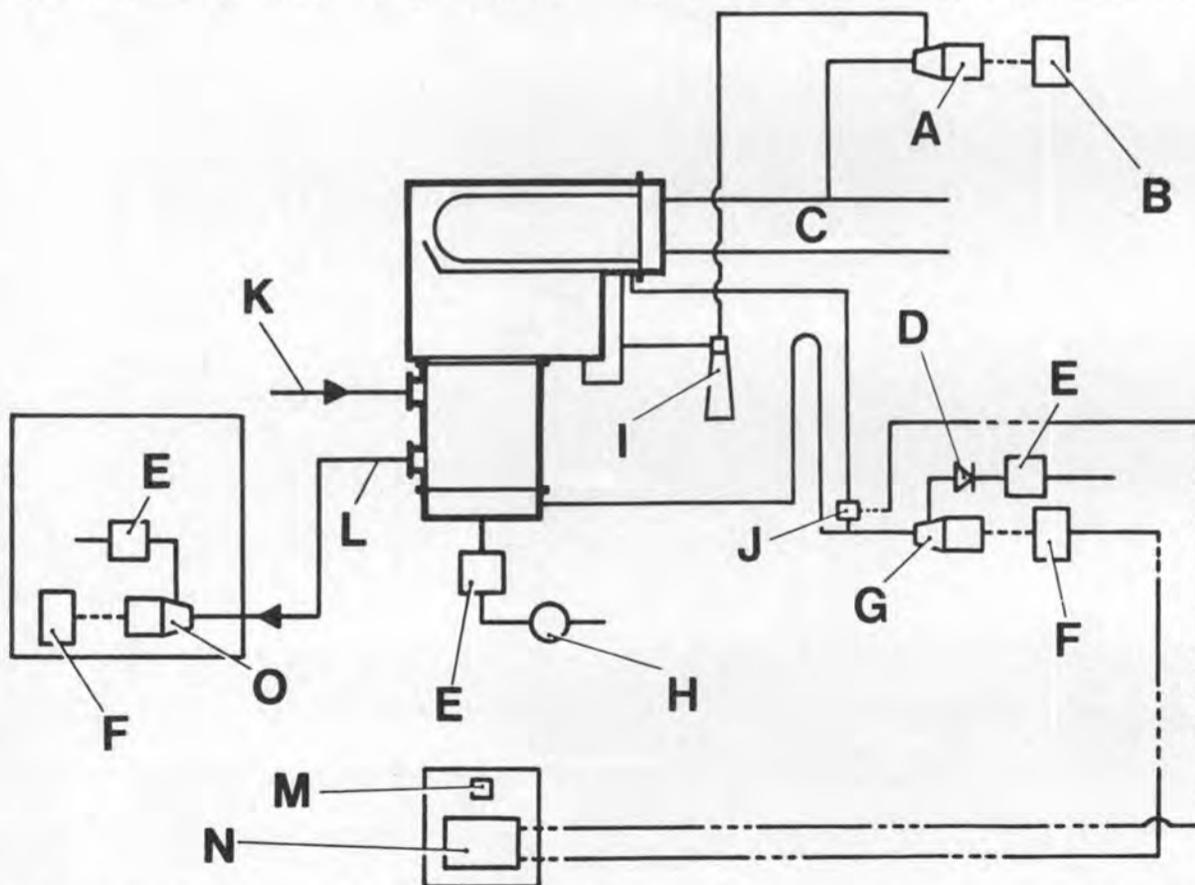
gradient across the transfer surfaces. This feature helps to minimize scale formation. Each distiller has a shell in two parts, a heat-input tube bundle, a distilling-tube stack and two demisters located in the top half of the distilling condenser. A single water-operated brine/air ejector performs the dual task of extracting brine from the evaporator and air from the distiller to discharge the combined waste overboard. The quality of fresh water being distilled is monitored by a salinometer, the alarm system of which has been utilized to control the running of the fresh-water pump which supplies acceptable distillate to the ship's tanks.

The use of this alarm system to control the starting and stopping of the pump means that the traditional method of dumping unacceptable fresh water in the bilge via solenoid-operated valves can be eliminated. A simple return system from the suction of the fresh-water pump returns any unacceptable water to the brine section, thus eliminating spill outside the plant and maintaining a low level of brine concentration which in turn helps the quick return to normal operation.

Conclusion

In the past, when ships carried a large engine room crew, there was little incentive to make extensive modifications in the designs of distillers, which, if relatively costly, were reliable and familiar. Today, with much reduced staffing and the continuing search for economy probably more progress in the overall design of the plant has been achieved in the last five years than in the whole 70 preceding years.

The dependence of ships on shore water supplies can now be eliminated as a matter of routine by the use of distillers which are cheap to install, easy to maintain and simple and reliable in operation.

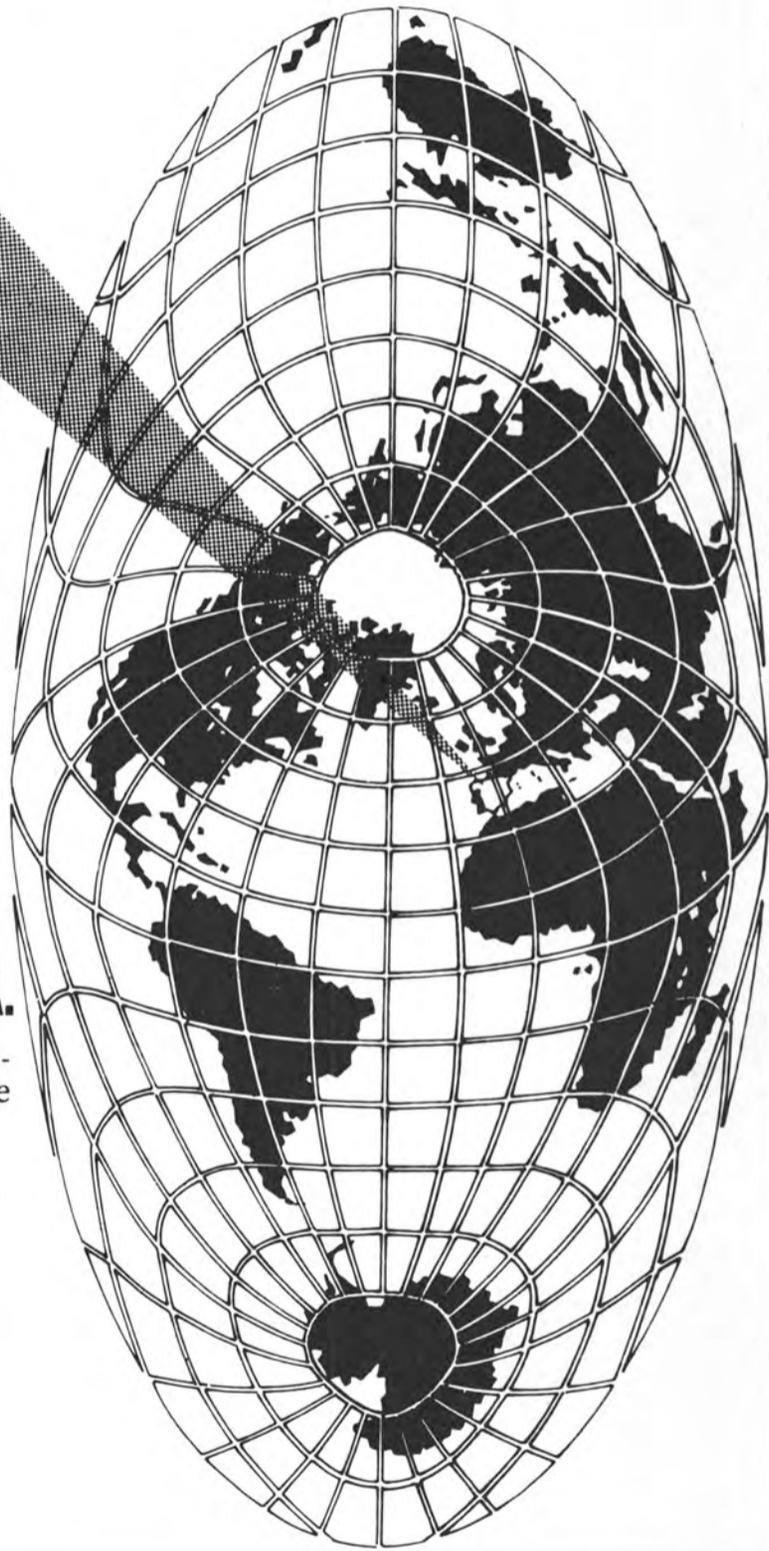


Layout of an MX installation: (A) booster pump, (B) starter, (C) cooling water, (D) non-return valve, (E) flow controller, (F) starter, (G) fresh-water pump, (H) feed indicator, (I) combined ejector, (J) probe, (K) hot water or steam inlet, (L) hot water or drain outlet, (M) salinometer alarm, (N) salinometer, and (O) drain pump.



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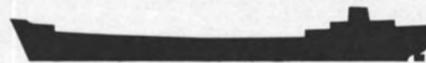


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Gulfport Delivers New Ultramar Chemical Tug



The 4,400-hp E.B. MacNaughton will be employed towing Ultramar's new 430 foot sea-going barge Hawaii between West Coast ports and the Hawaiian Islands.

Ultramar Chemical Company, a subsidiary of C. Brewer and Company, Honolulu, Hawaii, recently accepted delivery of the powerful new 4,400-hp twin screw ocean-going tug, the M/V E.B. MacNaughton, at Gulfport Shipbuilding Corporation, Port Arthur, Texas.

The new vessel, designed by Schuller and Allan, Inc., Naval Architects of Houston, Texas, in conjunction with Hilo Transportation and Terminal Co., Marine Operators of C. Brewer & Co., is particularly adapted to general ocean towing under all sea conditions. The vessel's principal characteristics are as follows: length overall, 121 feet 6 1/4 inches; beam, 34 feet; depth, 17 feet 6 inches; gross tons, 498; diesel oil capacity, 85,000 gallons; lube oil, 2,130 gallons; potable water 7,000 gallons.

Propulsion for the E.B. MacNaughton is furnished by two Fairbanks Morse 12-cylinder Model 38D8-1/8 direct reversing marine diesel engines, each capable of developing 2,200 continuous bhp at 825 rpm. The main engine controls, with full starting and stopping capability of the engines, is controlled from four stations, the engine control room, the wheelhouse, the aft steering station on the boat deck and bridge on top of the pilot-house. The large five-bladed 120-inch diameter stainless steel fixed propellers are driven through Lufkin Model 3024 horizontal offset reduction gears having a ratio of 4.75:1.

The main service electrical power is supplied by two diesel engine driven generator sets. Each of the General Motors 6-71 Model 6061N diesels operating at 1,800 rpm are directly connected to a 115 kw, 450 volt, 3 phase, 60 cycle A.C. Delco Model E-5278 MH generator. The generator units are arranged for parallel operation.

Both main engines, auxiliaries, and some additional equipment are protected with function and shut-down indicators. An Albina Engine and Machine Works monitoring system is installed in the main engine control console.

A large, well-arranged combination galley and crew's lounge runs across the full width of the after end of the main deckhouse. Also on the main deck are quarters for eight men in spacious, well-designed staterooms, with connecting lavatories and showers between each room. On the boat deck is the captain's lounge, stateroom and office and the chief engineer's stateroom. All crew accommodations, as well as the pilothouse, are centrally air-conditioned.

Since the E.B. MacNaughton will be used primarily in ocean towing, it is equipped with one of the largest heavy-duty hydraulically-driven deep sea towing machines on the market. A Burrard Type HJ-S towing winch, mounted on the main deck immediately aft of the house and partially enclosed, has a capacity of 2,500 feet of 2 1/4-

inch diameter high tensile wire rope. It is capable of providing a line pull of 75,000 pounds when reeling at the rate of 30 FPM. Power for the winch is furnished by a Dowty Type 2 pump mounted on a General Motors 6-71, Model 6061N diesel engine.

The E.B. MacNaughton, designed for use in towing Ultramar Chemical Company's new 430 feet by 80 feet by 30 feet seagoing barge Hawaii, will be operated by Hilo Transportation and Terminal Co. primarily between West Coast ports and the Hawaiian Islands. The vessel is built to the highest class of American Bureau of Shipping for vessels of this type, carrying the symbols Maltese Cross A-1 Towing Service, Maltese Cross AMS.

R.J. McCarthy Joins Western Gear Corp.



Richard J. McCarthy

Richard J. McCarthy has joined Western Gear Corporation's Heavy Machinery Division, Everett, Wash., as program manager.

Mr. McCarthy was previously affiliated with United Concrete Pipe Corp., Baldwin Park, Calif., where he was vice-president, operations. He is a graduate of Webb Institute of Naval Architecture, New York.

Mobil Oil Appoints Wall Sales Manager Marine Lubricants



Richard A. Wall

Richard A. Wall returns to the maritime field with his appointment as manager of lubricant sales in Mobil Oil Corporation's marine sales department.

Mr. Wall received a B.A. degree in business administration from Bates College in 1941 and a War Shipping Administration certificate in marine engineering in 1943. He joined Mobil as a marketing trainee in the New England division in 1941 and subsequently held several marketing positions in marine sales.

In 1958 Mr. Wall was appointed commercial sales manager in the New York division and then successively, assistant manager of wholesale sales, and manager, cargo product and industrial sales.

Swiftships Building Aluminum Supply Boats

Two aluminum offshore, oil-well supply boats, each measuring 110 feet in length, 32 feet in beam and 14 feet in depth, will be constructed by Swiftships, Inc., Morgan City, La., for undisclosed interests.

Each vessel will be powered by 1,000-total-bhp diesels.

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SNAME Southeast Section Annual Meeting



Shown aboard the M/V Freeport, left to right: **Harold F. Robinson**, honorary vice-president of the Society; **Robert W. Hobbs**, chairman-elect (1970-71), Southeast Section; **James J. Henry**, national president of the Society of Naval Architects and Marine Engineers; **Robert G. Mende**, secretary, SNAME; **George H. Hodges**, honorary vice-president of the Society; **Philip A. Thomas**, author; and **Timothy J. Nolan**, author.

The annual meeting of the Southeast Section of The Society of Naval Architects and Marine Engineers was held on board the M/V Freeport during a short weekend cruise from the Port of Miami to Freeport, Grand Bahama Island, May 8, 9 and 10, 1970. Members of the Society and their guests were afforded an opportunity to visit the City of Freeport and enjoy its attractions.

Robert W. Hobbs, newly elected chairman of the Southeast Section, presided at the meeting. SNAME headquarters was represented by **James J. Henry**, president of the Society, and by **Robert G. Mende**, secretary of the Society. Preliminary plans regarding the Society's projected Annual Spring Meeting in 1973 with the Southeast Section as host were discussed.

A feature of the meeting was the presentation of an award to **Timothy J. Nolan**, student member, by the president of the Society. The award was an American Bureau of Shipping certificate signifying scholastic excellence during the last two years of study in naval architecture and marine engineering at the University of Michigan. A check for \$100 accompanied the certificate.

Four papers were presented at the meeting as follows:

Paper No. 1. "M/V Freeport—Design Philosophy," by **S.A. Bertelsen** of Knud E. Hansen, I/S, presented by Rear Adm. **I.J. Stephens**, member of the Society and director of the Port of Miami.

Abstract—The design philosophy for the M/V Freeport has been to create a cruise liner which would satisfy the requirements of passenger comfort, etc., for short cruises, and at the same time satisfy the requirements for a vessel trading between the Port of Miami and Freeport City on Grand Bahama Island. On this route the vessel must be able to transport passengers, trailers, containers, etc., i.e., a combination passenger and trailer carrier.

Tage Wandborg, naval architect

with **Knud E. Hansen**, I/S, designer of the Freeport, was on board the ship and presented an interesting and informative discussion of the Freeport paper. Mr. **Wandborg** also accompanied the members on a tour of the ship and revealed intimate knowledge of its design features. **Knut Nielsen**, vice-president of Freeport Cruise Lines, Ltd. also attended the meeting and discussed the paper from the point of view of the overall service objectives of the ship.

Paper No. 2. "Computer-Aided Design of Developable Hull Surfaces," by **Timothy J. Nolan**, student member of the Society, University of Michigan.

Abstract—An algorithm mathematizes a developable surface design procedure for the digital computer. Given points on a pair of boundary curves, the algorithm generates spline-approximating polynomials to represent the boundary curves and computes a set of closely-spaced rulings which lie in the surface spanning the boundary curves. Offsets to the surface are then computed at any specified transverse, vertical, or horizontal plane cutting the surface. The procedure emphasizes freedom of shape but does not guarantee the existence of a developable surface. In this case, the results will be information describing the developability violation rather than offsets describing the surface. The outstanding advantages of a computer-aided approach to developable surface design are speed and precision.

Paper No. 3. "The Aquarius—A major development in high-speed rough-water transportation," by **Philip A. Thomas**, visitor, vice-president and chief engineer of Hydro-Ski International Corporation, Port Everglades, Fla. The author's presentation of the paper was moderated by **James K. Barden**, member of the Society, naval architect, James S. Kroger and Company, Inc., Miami, Fla.

Abstract—A boat of radical de-

sign, that can operate at 45 mph in three to five foot seas with passenger comfort, is completing trials off Florida's East Coast. The boat, **Aquarius**, competes in speed and performance with hydrofoils and hovercraft, and offers advantages such as potentially lower operating costs and maintenance, low noise and vibration level and maneuverability not equaled in the industry. The **Aquarius** has demonstrated the capability of operating in a seastate far exceeding that of hydrofoils and hovercraft or comparably sized conventional boats.

Motion pictures showing performance of the **Aquarius** accompanied the presentation of the paper.

Paper No. 4. "The S/S Great Eastern," by **E.B. Williams**, member of the Society, presented by **Harold F. Robinson**, SNAME honorary vice-president.

Abstract—The S/S **Great Eastern**, built in England more than 110 years ago, was 50 years ahead of her time. Approximately 25 slides were shown to illustrate the paper during its presentation. Many of these were from actual photographs taken during construction; others were from drawings and paintings.

Part I of the paper deals with the design of the **Great Eastern** conceived in 1851 by **Isambard Kingdom Brunel**, and its construction over a period of six years. Part II relates her operating career, beginning in 1860 and lasting 31 years until finally broken up in Liverpool.

Financially, the ship was a failure, although she boasted many innovations. Her moment of triumph, however, was the laying of the first successful trans-Atlantic telegraph cable. No other ship afloat could have done it.

Halter Marine Appoints Robert G. Notine Jr.



Robert G. Notine Jr.

Harold P. Halter, president of Halter Marine Services, New Orleans, La., recently announced the appointment of **Robert G. Notine Jr.** as East Coast and Caribbean representative for the company with offices at 52 Wall Street, New York City.

Mr. **Notine** recently resigned from **Ira S. Bushey & Sons Inc.**, after serving over 20 years in various capacities from yard manager to marine superintendent, and for the past 10 years he was in charge of all repair, maintenance and new construction. He also served as marine superintendent for **Spentonbush Transport and Red Star Towing Company**.

Mr. **Notine** served in World War II as chief engineer on **Moore-McCormack** ships and holds an unlimited chief engineer's license for steam and motor vessels.

He is a member of The Society of Naval Architects and Marine Engineers, the Society of Naval Engineers, the Society of Marine Port Engineers and a member and past governor of the Downtown Athletic Club.



EIGHTH IN A SERIES FROM ALBINA: Pictured above on builder's trial in the Willamette River is the **Duncan Foss** recently completed by Albina Engine and Machine Works, Portland, Ore., a division of Dillingham Corporation, for Foss Launch and Tug, Seattle, Wash. The 72-foot by 24-foot by 9-foot tug is equipped with two Caterpillar D-348TA engines which operate the 72-inch diameter, five-blade stainless steel propeller at a combined running horsepower of 1,130. The auxiliary power is supplied by two Caterpillar D-330 diesel engines. Other equipment includes Mathers steering controls, Foss-built towing winch, Raytheon radio telephone, Ross depth indicator and transducer, and Decca radar. The **Duncan Foss** is the eighth in this series that Albina has built. The boats, all their names beginning with a "D", are called the D-Class by Foss. The **Duncan Foss** will be used for towing barges in the Foss Alaskan coastal operations. This Foss boat combines the capabilities of Albina's engineering and production departments with the working knowledge of Foss to develop a versatile "work horse." The **Duncan Foss** will join her sister "D" tugs as well as a fleet of over 100 tugboats and 200 barges which makes Foss, another division of Dillingham Corporation, one of the largest tugboat fleet operators in the world.



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Beth-San Francisco Apparent Low Bidder To Convert AML Ships

The apparent low bid for the conversion of two C-4 Mariner ships into full container vessels for American Mail Line was received by the Maritime Administration, Washington, D.C., from Bethlehem Steel Corporation's San Francisco yard.

A total of eight bids were received, and Bethlehem's bid called

for the conversion of each of the two ships at \$8,398,000.

Plans call for the vessels, now being operated by the Seattle-headquartered steamship company in transpacific service, to be increased in length from 564 feet to 668 feet through an additional mid-body section. Container capacity of the ships will be 892 twenty-foot units. Total displacement at full load draft will be 27,090 long tons. The converted ships will carry deluxe accommodations for 12 passengers.

New Chartering Firm Opens In New York

Union Bulk Chartering Services, Inc., a new company at 80 Broad Street, New York City, announced that **Anthony D. Pinto**, vice-president and director of Funch Edge & Co. Inc., is joining the new firm. Mr. Pinto, who is discontinuing his services with Funch Edge, is joining Union Bulk along with **Stephen J. Stapleton** and **Horst Miesner**.

Bruce Hobbs Named President Of Albina



Bruce D. Hobbs

Dillingham Corporation's Maritime Services Group headquarters, Honolulu, Hawaii, has announced the appointment of **Bruce D. Hobbs** as president of the corporation's Albina Engine & Machine Works, a Portland, Ore., affiliate. Albina builds and repairs ships, makes flow control devices and power-driven elevated work platforms. Mr. Hobbs, formerly Albina's vice-president and general manager, assumed his new post May 25. He replaces **L.R. Husa**, Albina's retiring president, who will be available to the company as a consultant. Mr. Husa, one of Albina's pioneering executives, has been with the firm since 1920.

Prior to joining Dillingham earlier this year, Mr. Hobbs was vice-president of new construction and repair for Gulfport Shipbuilding Corp., Port Arthur, Texas, which specializes in the construction of very large barges.

Dillingham Corporation is a diversified firm engaged in other ocean-oriented activities as well as shipbuilding which include marine transportation and oceanography. Additional areas of operation are land development, environmental technology, LP-gas transportation and distribution, construction, quarrying and mining.

Navy Contract To FMC Totaling \$78.4 Million

FMC Corporation, San Jose, Calif., is receiving \$3,165,970 as the first-year increment to a three year \$78,482,730 negotiated, fixed-price contract for the construction of 942 assault amphibious landing craft (LVTP-7).

The contract is being issued by the Naval Ship Systems Command (N00024-70-C-0281).

The LVTP-7 is a tracked craft, designed primarily to land combat-equipped Marines on shore and then carry them inland.

George G. Coorsen

George G. Coorsen, co-founder and former president of Henschel Corporation, died on April 29 in Amesbury, Mass. at the age of 82.

With the late **Charles J. Henschel**, Mr. Coorsen founded the present company in 1919 and served as its president until his retirement in 1966. He was for many years a member of the Shipbuilders Council, The Society of Naval Architects and Marine Engineers, and the Society of Naval Engineers.



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Oglebay Norton Co. Elects Dwyer President



John J. Dwyer

John J. Dwyer was elected president and chief executive officer of Oglebay Norton Company at a recent meeting of its board of directors. Mr. Dwyer, 53, succeeds Edward W. Sloan Jr., who has served as president since 1959 and has decided to take an early retirement. Other newly elected officers are John Limbocker Jr. as assistant to the president, and David A. Kuhn, as an assistant secretary.

Mr. Dwyer joined the legal department of Oglebay Norton Company in 1946 after association with the Cleveland law firm of Thompson, Hine and Flory. He began as an attorney, handling primarily labor and industrial relations, and he advanced through several executive positions to become a senior vice-president in 1965, executive vice-president in 1967 and a director of the company in 1968. He has been involved in all phases of Oglebay Norton's businesses, but has been particularly active in Oglebay Norton's role in Minnesota taconite ventures, having served for several years as an officer of Reserve Mining Company, and currently, as a director and vice-president of Eveleth Taconite Company, a joint venture of Oglebay Norton and Ford Motor Company.

He is a graduate of DePauw University, 1939, and recipient of its Distinguished Alumni Award in 1964. He is also a graduate of Harvard Law School, 1944. At the present time, he is a director of Atlas Corporation, New York, N.Y.; a director and chairman of the executive committee of the American Iron Ore Association; chairman of the Lake Carriers' Association Legislative Committee; and is involved in several other industry activities.

Mr. Dwyer has also been active in civic and community affairs. Currently, he is the first vice-chairman of the Cleveland chapter of the American Red Cross; a trustee and vice-president of the Health Fund of Greater Cleveland; and a trustee of United Appeal and the Governmental Research Institute. For more than 12 years, he served as a councilman in the city of Cleveland Heights.

Mr. Sloan, who has been with Oglebay Norton for 35 years, and who has been president for the past 11 years, will continue as a director and consultant to the company. Last fall, he announced his plan to take early retirement at this time

in fulfillment of his long-held desire to devote more time to personal interests.

Mr. Limbocker, who graduated from Yale University, joined Oglebay Norton in 1957. He has served in various departments, including iron ore and mineral sales, accounting, and most recently, as a staff assistant to the executive officers.

Mr. Kuhn joined the company's legal department in 1959. He is a graduate of Kenyon College and

Western Reserve Law School, and did graduate work in law at Georgetown University.

Oglebay Norton Company, its subsidiaries and predecessor organizations, have been engaged in the mining, sale and transportation of iron ore, coal and other minerals since 1854. Its operations include a diversified fleet of 16 Great Lakes vessels, general cargo docks on the Great Lakes, and coal mines in Ohio.

American Ship Building Negotiates To Build Lakes Bulk Carrier

George M. Steinbrenner III, president and chief executive officer of The American Ship Building Company, Lorain, Ohio, has recently announced that the company is in the final stages of negotiations for the construction of a new bulk carrier for undisclosed interests.

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**Blaisdell Named President
Matson and Oceanic SS
—Top Management Changes**

Several changes in top management of Matson Navigation Company were announced by the company's board of directors in San Francisco, Calif.

Norman Scott, executive vice-president, has resigned. His future plans were not announced. **Allen C. Wilcox Jr.**, president of Alexander & Baldwin, Inc., and president of Matson, an A&B subsidiary, has been moved up to chairman of the board of Matson. He will continue as president of the parent company as well. **Malcolm H. Blaisdell** has been named the new president of Matson and The Oceanic Steamship Company, and a director of both companies. He was a vice-president of Alexander & Baldwin, Inc.

**Egil Arnessen Elected
President Of International
Electrical Association**

At the first Western Hemisphere meeting of the International Ship Electric Service Association (ISES) held recently at the Hotel Biltmore, New York City, **Egil Arnessen** of Arnessen Electric Company, Inc., East Coast member, was elected president. **Gordon S. Fowler** of Staveley-Smith Controls, Ltd., Manchester, England, was elected secretary-general. **G.F. Scarsi** of Italy and **dos Santos Pinto** of Portugal constitute the board of directors.

The 16 member, 14 nation organization added to its membership: The Taikoo Dockyard & Engineering Company, Hong Kong; Antem, N.V., Curacao; Vignolo Hnos., Buenos Aires; and Samuel Davila, Lima. Bahrain Ship Repairing and Engineering Company, Bahrain,

was elected a Trial Member for the coming year.

During its New York meeting, the group was addressed by **Arthur Bergesen**, vice-president, Global Bulk Transport, Inc. His topic was, "What a shipowner expects of his electrical/electronic contractor."



From left to right conferring at first ISES meeting in New York City are: **Gordon S. Fowler** (England) Secretary-General, **Egil Arnessen** (U.S.A.) President, and **Arne Larsson** (Sweden) Founder of ISES.

ISES members discussed and sent to various committees several study topics as follows:

1. To study the feasibility of common purchasing with an aim towards lowering equipment and repair prices to shipowners.
2. To study the problems inherent in the servicing of automated shipboard equipment and to determine possible solutions to such problems.
3. To devise new and better training methods for service personnel, especially in the field of automation.
4. To establish common, uniform, standards of service performance.
5. And to develop efficient and quick means for interchanging technical and other data between members.

The 1971 general meeting of ISES will be held in Lisbon, with the Portuguese member, Electricidade Navele Industrial, S. A. R. L. (ENI) acting as host.

Organized in 1963 by six European electric/electronic service firms ISES members can now be found on four continents. "More than 22 additional service firms have applied for membership this year," said Mr. **Arnessen**, the new president.

Currently, the present members do in excess of \$60 million annually in marine work of all types.



MOBIL FOUNDATION CHECK: W. A. Brockett (right) Rear Adm. USN (ret.), president of the Webb Institute of Naval Architecture, Glen Cove, L.I., N.Y., receives a Mobil Foundation check for \$7,500 from **E.S. Checket**, vice-president of Mobil Oil Corporation. Mr. **Checket** is also general manager of Mobil's marine transportation and marine sales department. The check covers a \$5,000 grant for Webb's campus development program, and \$2,500 for current operating expenses.

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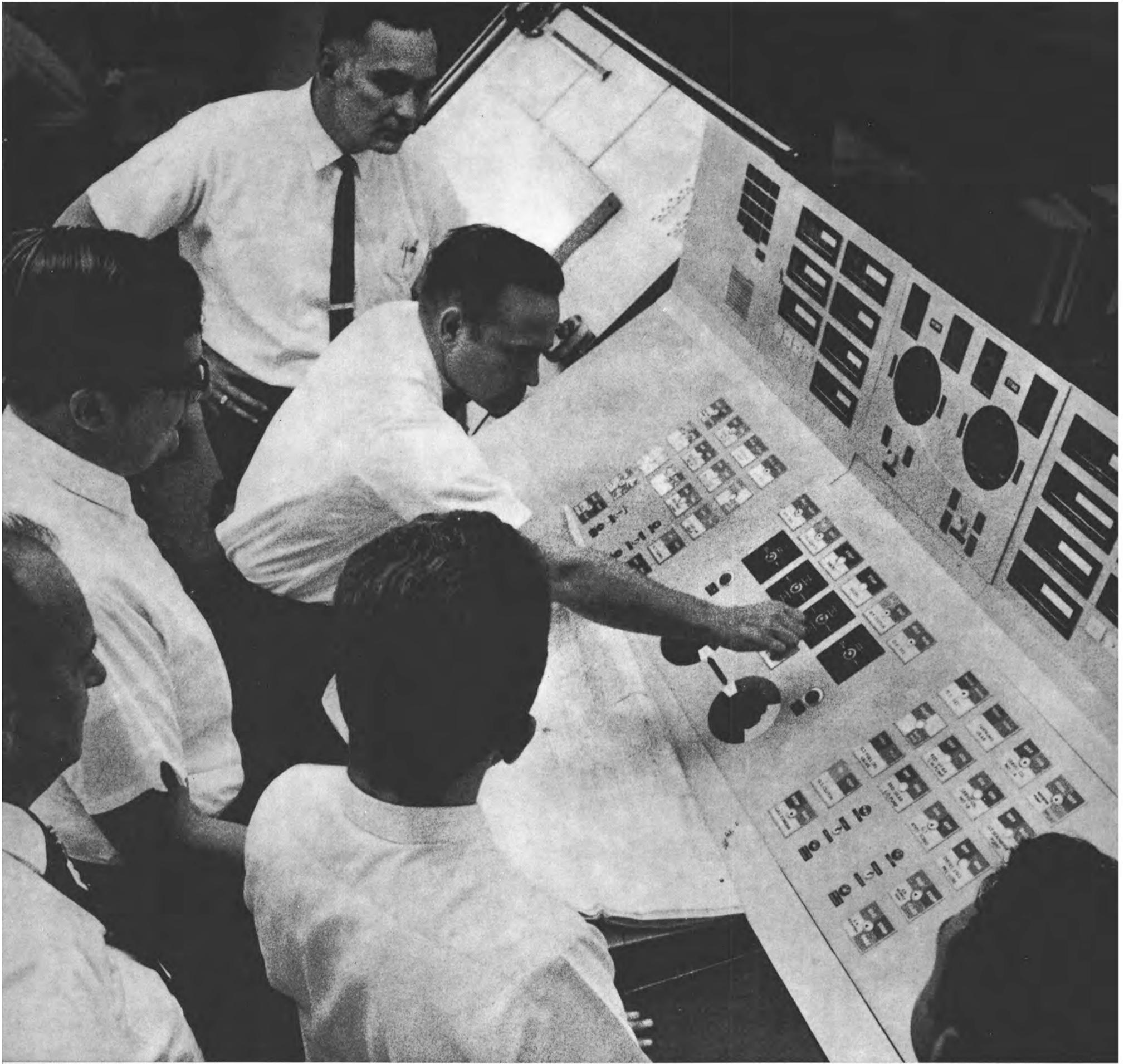
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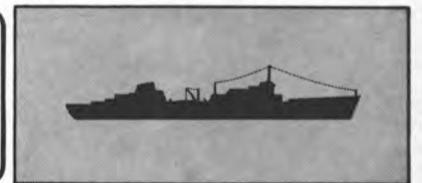
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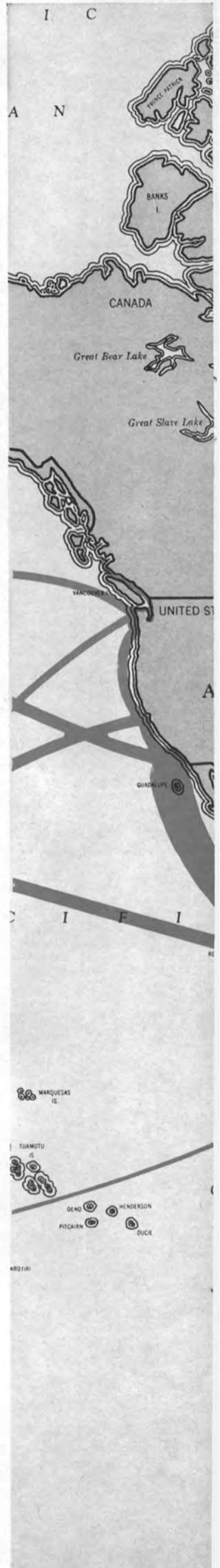
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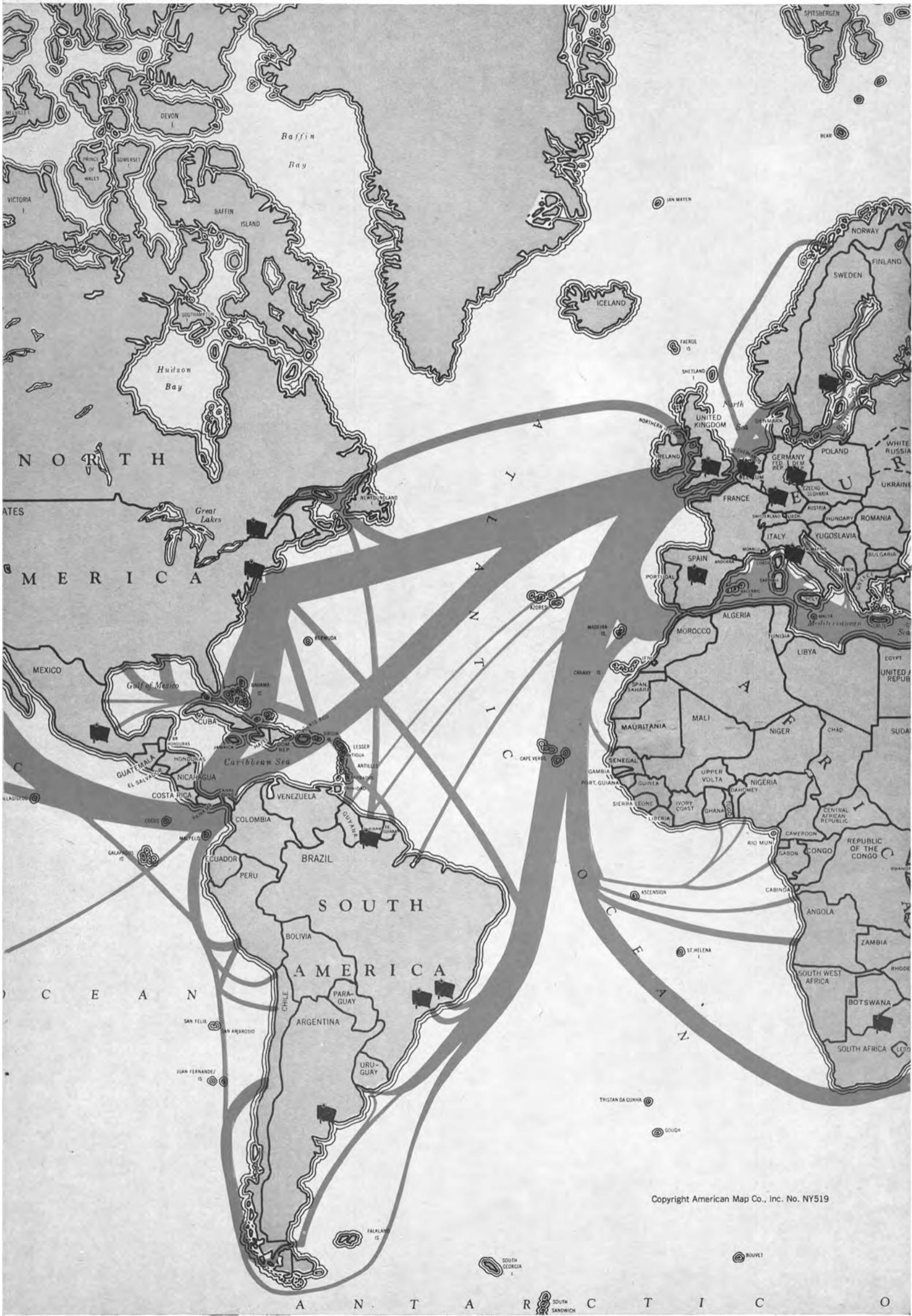
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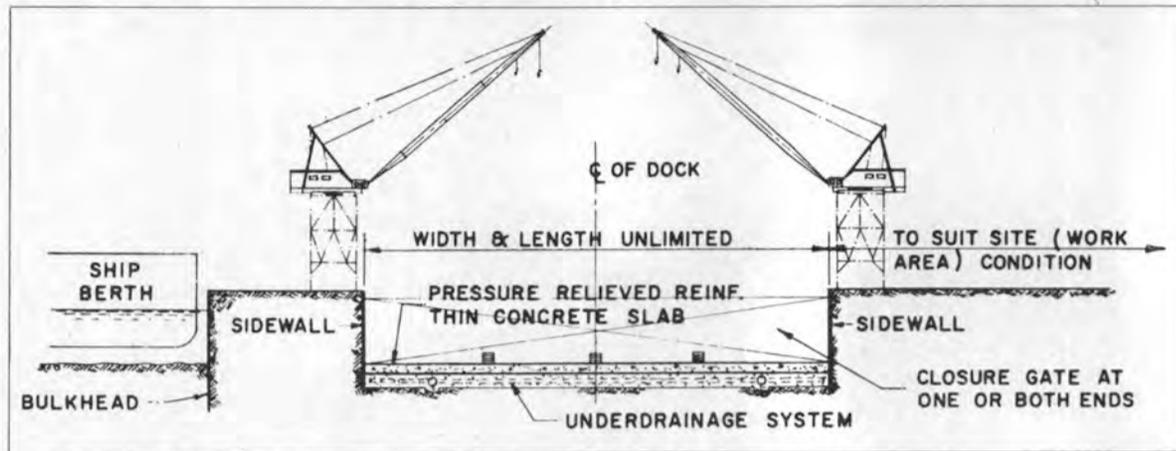
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Largest Graving Dock In The U.S. Licensed To Use Foster Patent For The Under Drainage Of Basin Floor



The above drawing illustrates the under-drainage system which protects the floor of the graving dock, when dewatered, from the uplift pressure of ground water. Beneath the relatively thin slab, which forms the dock floor, is a previous layer of gravel with drain pipes to lead any seepage water to the sump of the pump well. According to the soil mechanics of the particular area, a tolerable rate of seepage is controlled by a cut off bulkhead or by the extent of relatively impervious ground which may adjoin the dock. This method of constructing a relieved floor for the dock is considerably cheaper than the gravity dock construction where the reinforced concrete floor must be of sufficient depth so that in combination with the dock's side walls, the dead weight will resist the uplift of the ground water.

Christopher J. Foster, Consulting Engineers and Naval Architects, with offices in New York, Washington, D.C. and Florida, have granted to Bethlehem Steel Corporation the right to use the patented features of the Foster patents for construction of the Sparrows Point Building Basin, the largest single building basin to date in the country. The basin is 1,200 feet long and 200 feet wide to accommodate tankers up to 250,000 deadweight tons.

This is the seventh commercial shipbuilding basin to be built using the Foster patented pressure-relieved system which makes the construction of large basins more economical than any other type facility for building and dry docking large ships. The first three basins us-

ing the Foster patents were built for Bethlehem Steel Corporation's Quincy, Mass. shipyard now owned by General Dynamics Corporation. There are two more graving docks designed by Foster at the Electric Boat Division of General Dynamics in Groton, Conn. The most recent dock is the graving dock completed last year for Litton Industries at their Ingalls East Bank yard in Pascagoula, Miss.

The Manhattan, which completed a north-west passage of the Arctic Ocean last year, was originally built by Bethlehem Steel at its former Quincy, Mass. shipyard in the shipbuilding basin designed by Foster, using the pressure-relieved system and hinged closure gate.

MSTS Announces \$273 Million In FY 71 Shipping Agreements

Shipping and container agreements which will result in payments to 21 United States-flag ship operators of an estimated \$273-million between July 1, 1970 and June 30, 1971 were announced by Vice-Adm. Arthur R. Gralla, commander of the Military Sea Transportation Service.

The agreements cover worldwide sealift of approximately 9-million measurement tons of military cargo on foreign trade routes during the command's 1971 fiscal year.

Awards were made on the basis of offers received by the Navy's sealift command in response to MSTS' Request for Proposals No. 500. The request for shipper proposals was issued early this year (February 13).

Carrier rates accepted by MSTS will be effective for 12 months, beginning July 1, 1970 and continuing through June 30, 1971.

Transportation services provided by the 21 steamship operators under the provisions of the award include movement of cargo in conventional break-bulk lots and in carrier-owned containers. Agreement provisions also provide for sealift of Government-owned containers on commercial ships should it be necessary.

To be considered for receipt of an award, each carrier was required to commit one or more ships for military use in event of a need for emergency shipping. Ships called up under this agreement would be time chartered by the Military Sea Transportation Service in accord with terms set forth in sealift augmentation agreements which were part of the awards.

United States-flag carriers receiving awards include: American Export Isbrandtsen Lines, Inc.; American Mail Line, Ltd.; American

President Lines, Ltd.; American Union Transport, Inc.; Central Gulf Steamship Corp.; Columbia Steamship Co., Inc.; Global Bulk Transport, Inc.; Gulf & South American Steamship Co., Inc.; Isthmian Lines, Inc.; Lykes Bros. Steamship Co., Inc.; Matson Navigation Co.; Moore-McCormack Lines, Inc.; Pacific Far East Line, Inc.; Prudential-Grace Lines, Inc.; Sea-Land Service, Inc.; Seatrain Lines, Inc.; States Marine Lines, Inc.; States Steamship Co.; United Fruit Co.; United States Lines, Inc.; Waterman Steamship Corp.

Rail Container Transfer Yard To Be Built At Port Newark

A rail container transfer yard that will speed the movement of containers between rail cars and ships and will provide cost benefits to shippers in the Port of New York-New Jersey, will be built by the Port of New York Authority at Port Newark. It will be operated by the Penn Central Transportation Company, according to a recent joint announcement by the bi-state agency and the Penn Central.

The ten-acre transfer yard and storage area will enable Penn Central to handle containers and trailers directly by rail to and from rapidly growing Port Newark and the adjacent Elizabeth-Port Authority Marine Terminal. This will eliminate the substantial expense of hauling containers over the congested highways between the port area and Penn Central's existing piggyback yards at Kearny and North Bergen, N.J.

Initially, the rail facility will be able to handle train-loads of approximately 60 cars. As

volume grows, it can be expanded to about double that capacity.

The rail facility, to be built by the Port Authority at an estimated cost of \$1,621,000, is scheduled for completion in December, and will be leased to Penn Central for twenty years.

Farrell Lines Captain & Crew Receive Medals And Citations



Shown at the award ceremonies aboard the SS African Star are, left to right: James A. Farrell Jr., chairman of the board; Thomas J. Smith, Farrell Lines president; Mrs. Adorian W. Schodde and Capt. Adorian W. Schodde.

At ceremonies held recently aboard the SS African Star in New York harbor, James A. Farrell Jr., chairman of the board of Farrell Lines Incorporated of New York, awarded Farrell Lines Medals and Citations to the former captain of the Star and five crew members. Citations were also awarded to four other crew members.

While proceeding down the Mississippi River outward bound from the Port of New Orleans toward the sea in the early morning hours of March 16, 1968, the SS African Star was involved in a collision with oil laden steel barges under tow of the pusher tug Midwest Cities. Following the collision, the SS African Star caught fire. While everyone aboard deserves praise for their instinctive actions, the outstanding performance of ten of the vessel's crew, including the master, merits special commendation.

A gold medal, the first ever to be awarded by the company, went to Capt. Adorian W. Schodde, former master of the SS African Star; silver medals went to Raymond Purnell, assistant pantryman, and James McCarthy, second mate, with bronze medals going to Herbert V. Woodger, chief engineer, Nicholas Metkovic, third mate, and Raymond F. Tocci, second assistant engineer.

Citations were given to Lauro Cisternino, able seaman, Robert Redfern, third assistant engineer, Roy A. Lang, fireman/water tender and Patrick McLaughlin, fireman/water tender. Special citations were awarded to Capt. Alpha W. Moore, manager, safety and accident prevention, and Capt. Alfred Boerum, now master of the SS African Meteor, who were immediately dispatched to the scene of the accident.

The history of the Farrell Lines Medal dates back to 1950 when it was decided to present the late Capt. T.B. Robertson and then Chief Officer Erik Tallbe, both on the SS African Sun I, with something more than the ordinary citation for saving a drowning shipmate in the Indian Ocean January 5, 1950. As a result, the Farrell Lines Medal was cast, the dimension being one-half dollar in size, with a raised bust of James A. Farrell, Sr. on the front and suitable inscription on the reverse. The gold and silver medals are given for courage beyond ordinary duty, while the bronze one is awarded for distinguished service. As of this date, including those awarded recently, one gold medal has been awarded, five silver and 11 bronze.



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OSG To Build Dry Bulk Carrier And Supertanker

Overseas Shipholding Group, Inc. announced at its annual stockholders' meeting in New York that it has signed letter agreements for the construction in Japan of a 262,500-dwt supertanker and a dry bulk carrier of 25,400-dwt for delivery in 1973. The recent acquisition of a 31,000-dwt bulk ship, currently

operating in the group's international fleet, was also announced.

This new building and acquisition represent an investment of approximately \$35-million, according to **Raphael Recanati**, chairman of the finance and development committee of OSG's board of directors, who reported these major developments at the company's first annual stockholders' meeting since going public in January of this year.

The OSG fleet, Mr. **Recanati** said, now stands at 33 tankers and

dry bulk carriers with a total carrying capacity of 1,022,000 dwt. The company also has a 50 percent interest in a 29,000 ton oil barge.

The multinational shipping company now has seven ships under construction in the United States, Japan and England, which by 1973 will raise the OSG fleet to 40 vessels aggregating 1,827,000 dwt. Mr. **Recanati** noted that this represents an 85 percent increase from OSG's 1969 level.

Alan MacNaughten Joins Independent Petroleum Supply



Alan MacNaughten

Alan MacNaughten has joined IPS, the Independent Petroleum Supply Company, according to an announcement from the Natomas Company subsidiary. Mr. **MacNaughten** has held various managerial positions with the Royal Dutch/Shell group in the field of International Marine Bunkers. Prior to his joining IPS, Mr. **MacNaughten** was Bunker Manager for Shell Oil in the United States.

Mr. **MacNaughten** is well known in international shipping and petroleum circles. His ability and experience will help IPS strengthen its marketing program. IPS is the exclusive bunker marketer for the West Indies Oil Company, Limited, Antigua, W. I., and in addition sells bunkers worldwide. IPS will also market Natomas Company's Indonesian crude production.

Mr. **MacNaughten** is a resident of Verona, N.J. and is a graduate of Wesleyan University. He is a member of the National Propeller Club, the Whitehall Club, the Montclair Golf Club, the Oslo Golf Club, the Caledonian Club (London), the Burns Society, and the New York Ski Club.

Maritime Management Institute Proceedings Volume Available

The "Proceedings" of the Fourth Annual Maritime Management Institute, which was held March 4-5 under the auspices of the State University of New York Maritime College, have been published in a volume. The 1970 Maritime Management Institute attracted national attention, and for this reason a limited number of copies of the "Proceedings" are being made available to the general public.

The volume includes the text of 17 speeches given at the Institute by Government and industry leaders, covering all facets of the transportation field. The theme of this year's two-day meeting was "Intermodal Transportation—Government Regulatory Policy?", and probed deeply into the question of the necessity for through-rate bills of lading.

Copies of the "Proceedings", which are priced at \$10.00, may be obtained by writing the Ship's Store, SUNY Maritime College, Fort Schuyler, Bronx, N.Y. 10465, telephone: 892-3000, Ext. 260 or 327.

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Half-a-million Tons at a Time Building Ships Indoors

Two 227,000-ton tankers, totalling nearly half-a-million tons, emerging into the building docks at Arendal. These tankers are the first in a series of 11. Another series—of 15 OBO-ships in the 96,000-ton range—is being built simultaneously by Götaverken (10 at Arendal and 5 at Öresund).

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GÖTEBORG SVARVET
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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  **700 KW NON-CONDENSING MARINE TURBO GENERATOR SET**

TURBINE: DRV-318-MRI — 850# — 850°TT — 24 pounds back pressure—10938 RPM. GEAR—Type S—432 — 10932/1200 RPM. GENERATOR: 700 KW — 440/3/60—1200 RPM.

3  **75 KW 120 VDC GENERAL ELECTRIC TURBO GENERATOR SET**

TURBINE: 225 lb. W.P.—150° superheat—15 lbs back pressure—4962 RPM. GEAR: 4962—1800 RPM. GENERATOR: compound—75 KW—120 VDC—651 amps—1800 RPM.

4  **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.

5  **300 KW WORTHINGTON-MOORE CROCKER-WHEELER UNITS**

AP2 Ex-Medina Victory units. Worthington-Moore turbine—440 lbs—740°TT—28 1/2" 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 8 1/4" — 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.

6  **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—5 1/4". GENERATOR: Westinghouse 300 KW—120/240 DC—1250 amps—1200 RPM—C.B. 208.4.

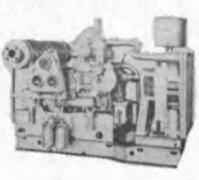
DIESEL GENERATOR SETS

7  **G.M. 6-71 DIESEL GENERATOR SET**

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

8  **350 KW 120/240 VDC DIESEL GENERATOR SET**

Ingersoll-Rand—heavy duty type 5 engine—8 cyl.—505 HP—10 1/2 x 12. GENERATOR: G.E. 350 KW—120/240—600 RPM—switchgear. Good condition—as removed from Grace Line ships.

9  **NEW — UNUSED 10 KW SUPERIOR GAB-2 DIESEL GEN.**

4 1/2 x 5 3/4 — BHP 16 — RPM 1200 — radiator cooled. GENERATOR: Delco 10 KW 120 VDC — 83.3 amps — 75" OAL — 57" OAW — 57" OAH. **\$1695.**

10  **GM 3-268A DIESEL GEN. SET**

3-Cyl. diesel engine — 6 1/2 x 7 — 1200 RPM — air or electric starting. GENERATOR: 100 KW — 440/3/60 — 1200 RPM. Good condition. From U.S.N.

11  **200 KW G.M. 8-268A DIESEL GEN. SET**

200 KW — 440/3/60/1200. 8-268A GM diesel heat exchanger cooled. Westinghouse generator.

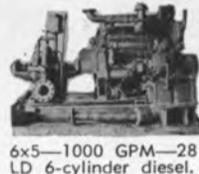
PUMPS

12  **TERRY TYPE ZS-1 FEED PUMP**

Turbine driven. Turbine fits T2 feed pump. 115 HP at 4000 RPM—440# steam—#18422.

13  **400 GPM BRONZE FIRE & FLUSHING PUMP**

400 GPM at 150 lbs. 73 HP—440/3/60—3550 RPM.

14  **GARDNER-DENVER BRONZE DIESEL DRIVEN FIRE PUMP**

6x5—1000 GPM—281' head—driven by BUDA 468-LD 6-cylinder diesel.

15  **VICTORY AP2 MAIN CIRCULATOR**

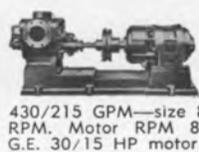
Ingersoll-Rand — 18 VCM — 20" x 18" — 10,500 — 10 lbs. MOTOR: 75 HP — Allis-Chalmers — 230 VDC — 670 RPM. Spare unused armature. Motor frame F.B.V.—162.

16  **NEW BLACKMER FUEL OIL TRANSFER PUMP**

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

17  **UNUSED BLACKMER VERTICAL ROTARY PUMP**

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

18  **KINNEY MOLASSES PUMP**

430/215 GPM—size 8x8—pressure 60 lbs.—142/280 RPM. Motor RPM 875/1750. Falk 6.25:1 reducer. G.E. 30/15 HP motor.

19  **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—4 1/8 x 5—130 HP—air starting.

20  **UNUSED BOILER FEED PUMP**

Worthington Triplex—36.5 GPM—590 PSI—variable stroke—2 3/4 x 5 — P₂—S₂—R₂ vessels. 40 HP—230 VDC—1800/2400 RPM.

21  **UNUSED SIZE 4 BUFFALO FEED PUMPS**

Terry Turbine—BM—273 HP—5500 RPM—exhaust 15 lbs—590 PSI—superheat 0°—425 GPM Buffalo Pump—discharge pressure 750 lbs.—5" x 4"—built for USN DD destroyers.

22  **COFFIN MODEL F BOILER FEED PUMP—VICTORY OR T2**

Control valve 1 1/4"—Form V1—constant pressure regulator—type C—150 HP—200 GPM at 575 lbs discharge pressure. 7200 RPM—440 PSI—500°TT.

23  **SELF-PRIMING RECIPROCATING BILGE PUMP**

80 GPM @ 60 lbs.—5" x 8" — 4" suction—3" discharge — 22 HP motor—230 VDC — air dome.

24  **UNUSED WARREN BRONZE PUMP**

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

25  **2 BRONZE I.R. 10GT CARGO PUMPS—14x12**

4400 GPM—280' head—3500 GPM—350' or 4000 barrels/hr. IR-10GT—14 x 12—1750 RPM—driven by Elliott 2DRY turbine—400 HP—400 PSIG—500° TT—10 lbs. back pressure—4550 RPM. Gear: 4550/1750. Good condition.

26  **BRONZE 14x14x12 CARGO STRIPPING PUMPS**

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

27  **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.

28  **RECIPROCATING VERTICAL DUPLEX PUMP**

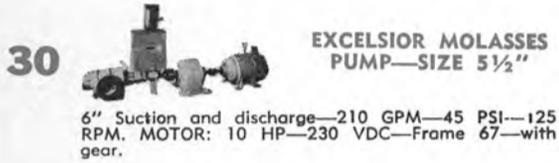
8x8x10—Hendy Pump Co.—8" suction—6" discharge — 160 GPM @ 100 PSI.

MISCELLANEOUS



**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° rise—stab. shunt—BB drip proof—controls available.



**EXCELSIOR MOLASSES
PUMP—SIZE 5 1/2"**

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

WINCHES AND WINDLASSES



**AH&D SINGLE SPEED
WINCHES**

7250 lbs. @ 220 FPM—50 HP—230 VDC—with control. \$1750 as is.



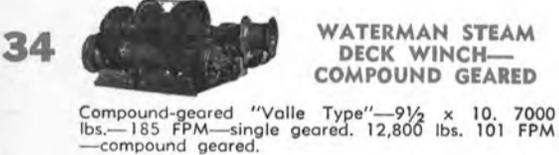
**VICTORY UNIT
WINCHES**

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



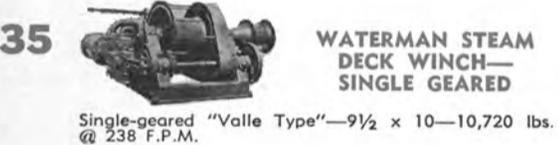
**MODEL U-6 DOUBLE
DRUM WINCHES
WITH GYPSIES**

50 HP—230 VDC—reconditioned.



**WATERMAN STEAM
DECK WINCH—
COMPOUND GEARED**

Compound-gear "Valle Type"—9 1/2 x 10. 7000 lbs.—185 FPM—single geared. 12,800 lbs. 101 FPM—compound geared.



**WATERMAN STEAM
DECK WINCH—
SINGLE GEARED**

Single-gear "Valle Type"—9 1/2 x 10—10,720 lbs. @ 238 F.P.M.



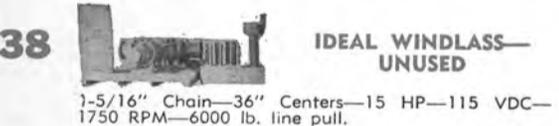
**HYDE NO. 7
WINDLASS**

1 3/4" Chain—Wildcat centers 3'3"—Handles 3000 lb. anchors. MOTOR: 8.7/35 HP—440/3/60—1800/450 RPM.



**NEW — UNUSED LINK
BELT WINDLASS**

1 5/8" and 7000 lb. anchors. 56" Centers—50 HP—230 VDC—spares.



**IDEAL WINDLASS—
UNUSED**

7-5/16" Chain—36" Centers—15 HP—115 VDC—1750 RPM—6000 lb. line pull.



**UNUSED 70 HP
McKIERNAN-TERRY
WINDLASSES**

2 3/4" 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 47 1/2". Base 9'5" wide x 11' long. Weight 36,000 lbs.



**3-TON CLYDE DOUBLE
DRUM WINCH**

3-Ton double drum winch—10 HP—115 VDC—de-clutchable drums—with controls. Drum is 16" in diameter and 28" wide. Winch OAW 10' 2"—OAL 8'1".



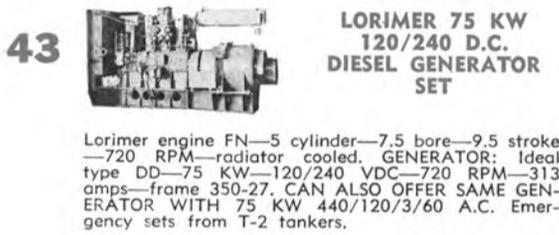
**UNUSED DOCK
CAPSTAN**

15 HP—220/440/3/60—3000 lbs @ 100 FPM. Gyp-ay 8"—waterproof box—floorplate.



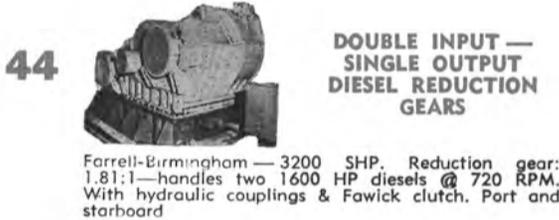
**HYDE 30" DOCK
CAPSTAN**

10" x 10"—reversible—W.P. 125 lbs—2 1/2" steam—3" exhaust.



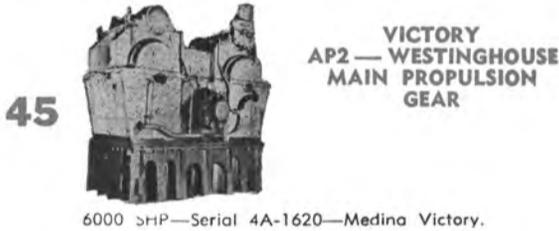
**LORIMER 75 KW
120/240 D.C.
DIESEL GENERATOR
SET**

Lorimer engine FN—5 cylinder—7.5 bore—9.5 stroke—720 RPM—radiator cooled. GENERATOR: Ideal type DD—75 KW—120/240 VDC—720 RPM—313 amps—frame 350-27. CAN ALSO OFFER SAME GENERATOR WITH 75 KW 440/120/3/60 A.C. Emergency sets from T-2 tankers.



**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.



**VICTORY
AP2 — WESTINGHOUSE
MAIN PROPULSION
GEAR**

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



**MURRAY &
TREGURTHA
DIESEL PROPULSION
UNITS**

Model 02-D—with 6-cylinder GM engine & gear. Propeller 48" x 24".



**DIESEL DRIVEN
INGERSOLL-RAND
AIR COMPRESSOR**

I.R. Compressor—315 cu. ft. @ 125 lbs. Driven by International Harvester UD-18 diesel. Tank mounted on skid—radiator cooled—from Corps. of Engineers salvage vessel.



**INGERSOLL-RAND
MODEL 40 AIR
COMPRESSOR**

Two stage—135 CFM—7" x 6 1/4" x 5"—110 lbs.—870 RPM—inner cooler. MOTOR: Allis-Chalmers 40 HP—230 VDC—145 amps—1750 RPM—Model EB121.



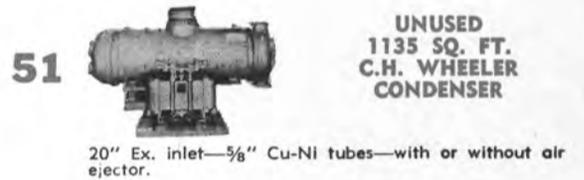
DeLAVAL PURIFIERS

Model 55-13—225 GPM. MOTOR: L.A.—Frame 224—2 HP—230 VDC—1750 RPM. Oil inlet & outlet 1"—water discharge 1 1/2". Also available A.C. 440/3/60.



**GRISCOM-RUSSELL
EVAPORATOR**

12,000 evap.—230 VDC pumps or 440 A.C. pumps. Complete with Weir automatic water valve.



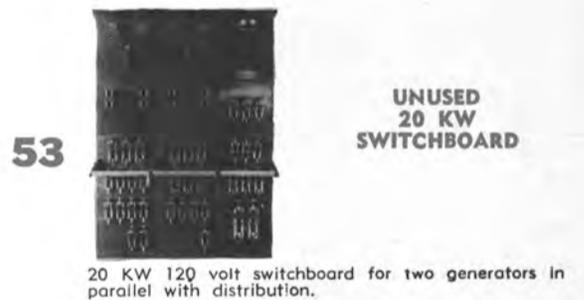
**UNUSED
1135 SQ. FT.
C.H. WHEELER
CONDENSER**

20" Ex. inlet—5/8" Cu-Ni tubes—with or without air ejector.



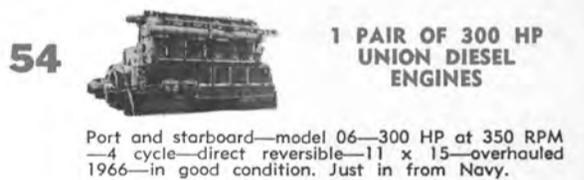
**UNUSED
GEARHEAD MOTORS**

20 HP — 230 VDC — 30 RPM output.



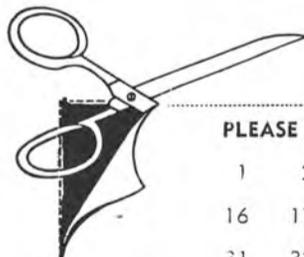
**UNUSED
20 KW
SWITCHBOARD**

20 KW 120 volt switchboard for two generators in parallel with distribution.



**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.



PLEASE SEND INFORMATION ON THE FOLLOWING: (Please circle items)

7/1/70

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

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

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

Bethlehem Steel Corp. To Build 79-Acre Shipyard In Singapore

Daniel D. Strohmeier, vice-president of Bethlehem Steel Corporation in charge of shipbuilding, has announced that negotiations have been completed with the Government of Singapore for a waterfront tract where Bethlehem and the Development Bank of Singapore will establish a new shipyard as a joint venture.

First disclosure of this project came last February when Edmund F. Martin, chairman and chief executive officer of Bethlehem, stated in his annual report to stockholders that the corporation was arranging to build a shipyard in Singapore "to take advantage of increased offshore drilling and production activities" in the Far East.

The new yard, incorporated as Bethlehem Singapore Private Limited, will be owned 70 percent by Bethlehem and 30 percent by the

Development Bank. The tract of 79 acres upon which the yard will be built is located on the British naval base property adjacent to the Sembawang Ship Repair Yard.

Mr. Strohmeier said the new yard will specialize in the design and construction of mobile offshore oil drilling platforms and associated equipment. It will also build supply boats, barges, storage units, dredges and fixed-platform equipment and provide a wide range of services to oil drilling contractors.

It is anticipated that actual fabrication will begin at the new yard in about six months.

Bethlehem's Beaumont, Texas, yard, one of the world's leading designers and builders of specialized equipment for offshore drilling, production and storage, will serve as engineering consultant to the new Singapore shipyard and will act as its United States sales representative.

Late last year the Beaumont yard completed the platform for the offshore drilling rig Milton G. Hulme. Built for the Reading & Bates Exploration Company, this platform was towed 13,000 miles from Beaumont to Singapore where the rig was completed. It is now at a drilling site off the coast of Indonesia. A second similar rig for Reading & Bates, named the J.W. McLean, is now under construction in Singapore under the supervision of Bethlehem. This rig is also scheduled for operations in Indonesian waters.

Directors of the new corporation are: J.O. Croke, general manager of Bethlehem's Beaumont yard; S. Dhanabalan, Development Bank of Singapore; Mr. Strohmeier; Wong Yui Cheong, Development Bank of Singapore; and Yong Pung How, senior partner of Shook, Lin & Bok of Singapore.

Walter F. Williams has been elected president of Bethlehem Singapore Private Limited and will also retain his present post as assistant vice-president, shipbuilding, at Bethlehem Steel.

Mr. Croke is to be executive vice-president of the new yard and also remains as general manager of the Beaumont yard.

Lykes Offers MarAd 20 Ships As Collateral

Plans to help finance more than \$100 million worth of new construction and conversions, by using 20 of its vessels currently in operation as collateral, have been announced by Lykes Bros. Steamship Company, Inc., New Orleans, La.

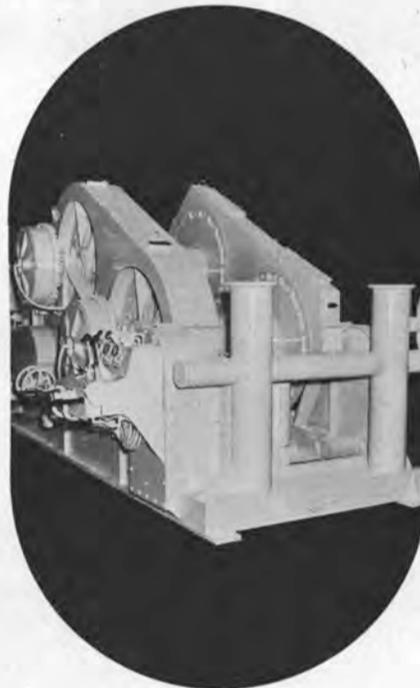
To aid in the cost of the construction of three Seabees, the acquisition of 266 barges for them, and the conversions of nine Pride-class C4s into full containerships, Lykes has applied to the Maritime Administration for permission to use Title XI government ship mortgage insurance, with the 20 presently operating ships for collateral.

Arthur Levy Opens Singapore Office

Arthur Levy Boat Service, Inc., Morgan City, La., recently opened an office in Singapore at 201 B Thomas Road. Preston Thomas is area manager. The company presently has 10 vessels under construction. All of these vessels are due to be completed in 1970 and several are expected to be sent to the Singapore area.

These vessels range in size and power from 110 feet, 1,600 hp combination crew/supply vessels with speeds in excess of 18 mph, to 185 feet, 4,200 hp, combination tug/supply vessels.

Skagit
high
performance
winches
triple tug
anchor moving
performance



This Skagit RB-90 combination anchor handling and towing winch using a level winder and towing bit gives the operator 100,000 lbs. of breakaway pull on the anchor, then raises it at up to 150 ft. per minute. That's triple the speed of older methods. You can figure exactly what this would mean in your case, when moving pipe laying and pipe jetting barges. We can equip your tugs with the right combination of speeds, pulls, power, controls and line capacity in any size from 1 1/2" to 2 1/2" cable to improve performance substantially.

For more information, write: Skagit Corporation, a Subsidiary of The Bendix Corporation, Box 151, Sedro Woolley, Washington 98284.

Bendix Skagit Corporation

Capstans • Anchor Handling Systems
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Here is a line of remote operating gear designed to provide remote control of valves through the use of standard equipment, engineered to operate almost any size or type of valve, from any location.

THE BROOKS LINE INCLUDES:

- Gear Box Assemblies and Gear Box Brackets
- Hinged Gear Joints: Variable Angle 0 to 90°
- Mounting Brackets for Hinged Joints
- Shaft Hangers: Fixed and Variable
- Shaft Bearings
- Universal Joints: Steel, Bronze, Monel, etc.
- Expansion Couplings and Slip Couplings
- Pin Type Shaft Couplings and Slip Joints
- Weld Type Shaft Couplings
- Stuffing Boxes
- Deck Access Boxes
- Deck Stands and Floor Stands
- Valve Yokes
- Wrenches for Deck Boxes
- Valve Forks and Pads

For detailed descriptions and specifications on the complete Brooks line, send for your copy of BROOKS DESIGN MANUAL 670. And remember, our engineering staff will be happy to work with you on any design project involving remote control or power transmission. Just check one or both of the boxes below and send the coupon to the address nearest you.

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Dept. VB-1, 1630 Evans St., San Francisco, Calif. 94124

- Please send me Design Manual 670 on Brooks Remote Valve Operating Gear.
- Send me Design Manual 618 on Stow Flexible Shaft and Rigid Rod Valve Controls.

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President Nixon Names Dr. John J. McMullen



Dr. John J. McMullen

President Nixon has named Dr. John J. McMullen, president of United States Lines, Inc., to the Board of Visitors to the United States Naval Academy at Annapolis. As one of the six Presidential appointees to the Board of Visitors, Dr. McMullen will be a member of the group which reviews all aspects of education and training at the United States Naval Academy and reports directly to the President.

Coincidentally, the appointment of Dr. McMullen was made exactly 30 years after his own graduation from the Naval Academy in June 1940. During his 13½ years of commission service as a naval officer, Dr. McMullen obtained a master of science degree from the Massachusetts Institute of Technology and a doctor of technical science degree from the Swiss Federal Institute of Technology in Zurich, Switzerland.

Subsequent to his naval service, Dr. McMullen served three years as a civilian employee in the Maritime Administration in Washington, D.C., and after leaving Government service in 1958 he established John J. McMullen Associates, Inc. of New York, a firm of international naval architects, marine engineers and consultants. Since June 1958, Dr. McMullen has been president and chief executive officer of United States Lines, Inc.

Flomerca Gulf Line Names Thor Eckert

Thor Eckert & Company, Inc. has been named New York sales agent for Flomerca Gulf Line. This appointment was made by Lone Star Shipping Inc., United States Gulf general agents for the line.

Flomerca Gulf Line, the National Guatemala Line, maintains a regular service to and from New Orleans and Houston to Santo Tomas, Puerto Barrios and Puerto Cortes. Inquiries should be directed to Thor Eckert & Company, Inc., 19 Rector Street, New York, N.Y. 10006.

Marinette To Build Navy Personnel Boats

Marinette Marine Corporation, Marinette, Wis., has received a \$935,625 contract for the construction of various 36-foot personnel landing craft (LCP-L), Mark 4, from the Naval Ship Systems Command, Washington, D.C.

Sperry Appoints Ensley Radio Company

Sperry Rand Corporation's Sperry Marine System Division, Charlottesville, Va., has appointed Ensley Radio Company Inc., of New Bern, N.C., as its sales and service representative for the state of North Carolina.

Headed by George Ensley the company has served marine operators and owners in North Carolina

for more than 20 years. Ensley Radio joins an extensive worldwide sales and service network maintained by Sperry Marine Systems Division.

Ensley Radio will be handling Sperry's wide line of marine navigation aids and steering systems. Products include a full line of marine radars, loran, echo sounders, automatic pilots and custom-designed steering systems for all classes of vessels.

New Chartering Firm Formed In New York

The formation of Bergensen Marine Corporation, at 17 Battery Place, New York City, has been announced by Harry J. Bergensen, president. The company will primarily be engaged in ship chartering, ship operations and marine consulting services. In addition, the new firm will perform ship husbanding agency work in the Port of New York.



Essomarine® cuts costs for your Lady.

True bulk lube deliveries in Tokyo Bay. Another Essomarine service. One that reduces costs for your seagoing ladies.

Direct pumping into ships' tanks does away with drums as it lowers costs. You save time, space, money.

We have the equipment at well over a hundred ports: almost half our deliveries now are made this way.

For the products and the service to get the most from your ship, call on us; call on Essomarine.



FUELS AND LUBRICANTS

**Offshore Logistics, Inc.
Opens Singapore Subsidiary
—Building Six Vessels**

Burt Keenan, president of Offshore Logistics, Inc., Lafayette, La., has announced the organization of Offshore Logistics Far East (PTE), Ltd., an operational subsidiary in Singapore, to serve the offshore oil industry in Southeast Asia.

The wholly-owned subsidiary's office is at Stamford House, 37 Stamford Road, Singapore 6, Singapore. Its operational area will be the offshore portions of Indonesia, Malaysia, and Thailand, including the South China Sea, Gulf of Siam, and the Timor Sea.

The establishment of the new Southeast Asian headquarters comes hard on the heels of major activities by the world's largest oil and gas producing companies to develop petroleum

potential in that section of the world. "The equipment necessary to support exploration and producing activities in Southeast Asia requires unusual design specifications for long range operations in ocean areas remote from supply sources," said Mr. Keenan. He added that to meet these requirements, Offshore Logistics has under construction for summer delivery six of the oil industry's largest and fastest ocean towing and supply vessels.

Two of the vessels will be 200 feet in length, and designed to carry 5,000-cubic feet of bulk materials in below-deck storage or 800 tons of drill pipe, tubing or other deck cargo at speeds in excess of 20 miles per hour. These vessels each have 5,600-hp propulsion systems to extend their operational capabilities.

The four other ships designed for use in remote areas of the world include two 185-foot and two 175-foot towing and supply vessels of

5,600 hp and 4,000 hp respectively. Each of the six new vessels is equipped with hydraulically-driven towing and anchor winches, and each has a complete backup system for all major operating components. In addition, all are equipped with bow thrusters for more flexible service.

Stewart W. Daigle has been appointed manager of marine operations for Offshore Logistics Far East (PTE), Ltd., in Singapore. Additional operating personnel will be assigned to the new subsidiary from the parent company's Morgan City offices. Offshore Logistics Far East (PTE) will be fully operational by July 1, 1970.

Prior to joining Offshore Logistics in December 1969 as special assistant to the president, Mr. Daigle spent 20 years in offshore operations with a major oil company. His experience will enable Offshore Logistics to provide in-depth operational expertise in Southeast Asia.

Offshore Logistics presently owns and operates 33 crew and supply vessels. Operating headquarters are in Morgan City, La., and executive and administrative headquarters are in Lafayette, La.

**Los Angeles Sect. Hears Paper
On Computer Aided Approach
To Design Of Sailing Yachts**



Pictured at the Los Angeles meeting, left to right: T.B. Wilson, Section vice-chairman; H. Motin, papers committee; B.J. Young, author; R.A. Rourke, chairman of the Los Angeles Metropolitan Section; and D. Logan, secretary-treasurer.

The last formal session of the Los Angeles Metropolitan Section of The Society of Naval Architects and Marine Engineers for the 1969-70 season was held at the Buggy Whip restaurant.

The social hour was followed by dinner during which the tradition of honoring past chairmen of the section was observed, and the newly elected section officers were introduced. The technical session was devoted to an informative paper titled, "A Computer-Aided Approach to Optimizing the Design of Sailing Yacht Rigs," which was presented by the author, Bernard J. Young, who is currently a graduate student at Michigan.

Mr. Young's paper discussed the problems of designing optimum sailing yachts. An optimization problem is formulated based on extrapolated towing tank data of the yacht hull and sail force data determined by analytical techniques. A nonlinear optimization method which may take into account the measurement rule and the time allowance is proposed for solving the problem. Calculations are presented for one aspect of the problem, that of sailing close hauled under a single sail, which demonstrates the feasibility of the proposed method. The results indicate that the complete problem can be solved where adequate data are given.

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This 15-acre Valve Division plant in Portland, Ore., shares 400,000 square feet of storage space with other Zidell divisions and also manufactures its own approved line of marine valves under the brand name of Duoseal.

Zidell's Acres Of Valves

The Valve Division of Zidell Explorations has come a long way in a short time.

Back in 1947, Zidell's Valve Division was easy to overlook. Operating out of small headquarters at the Zidell main plant in Portland, Ore., the Valve Division was a minor sideline selling about three carloads in surplus valves yearly.

Today, Zidell's Valve Division is one of the nation's most prominent suppliers of marine valves, with the largest stock of new surplus and re-manufactured valves in the United States. Sales have zoomed.

How did Zidell's Valve Division come so far, so fast? "It was simple," said Emery Zidell, president of Zidell Exploration. "We decided the marine valve business was worth going after, so we committed ourselves to becoming a major supplier to this huge industry."

As a result, Zidell now has a multimillion dollar inventory, four strategically located seaboard warehouses, and a phenomenal reputation for being able to deliver prac-

tically any valve—no matter how hard to find—on short notice. Zidell sells every kind of industrial valve, but about 40 percent of its business is in marine valves.

There are two factors behind Zidell's success. The first comes from the worldwide procurement efforts for valves that has been made possible by the mammoth and far-flung maritime operations of Zidell Explorations. The second comes from the commitment Zidell has made to stocking, remanufacturing and supplying valves on a volume basis.

The Valve Division moved out of Zidell's main plant in 1967, crossing the Willamette River to a 15-acre plant of its own on Portland's east side. The new plant provides 150,000 square feet under cover, with an outside storage area almost as large. This is the heart of Zidell's Valve Division—an up-to-the-minute, completely integrated warehousing - manufacturing - distributing operation.

Here is where the Zidell inventory of marine valves awaits action



One of Zidell's shops is concerned with small valve and fitting processing. Both shops produce one thing in common—dimensional accuracy, backed by a factory-par warranty. Zidell's Engineering-Machine Section will rigidly follow your specifications, or will recommend specs to meet your installation requirements.



Just a small sample of the materials stored at Zidell's, which maintains the largest inventory of new surplus and remanufactured valves in the United States. An additional two acres of valves and fittings are housed, row by row, in 54 rows of dry, lower-level storage at Zidell Valve Division's Portland, Ore., main plant.

—an inventory that includes everything from globes to angle valves and from brass to steel valves, in every description. There are also two machine shops staffed with expert machinists to perform trim changes, modifications, surface conditioning and reprocessing on an assembly-line basis.

"Another valve supplier might consider this part of the business a headache," Mr. Zidell said, "but it's the backbone of our operation. We have earned the reputation of being able to supply valves and perform trim changes faster than anyone, and that's what gives us our competitive edge. So it's no headache to us. It's the way we keep our reputation."

The Portland plant is Zidell's "mother" warehouse—the largest, but not the only, valve warehouse maintained by Zidell. Other warehouses are located in Houston, Texas, Brooklyn, N.Y. and Los Angeles, Calif.—each one stocked with marine and industrial valves according to the market demand in its area.

Since earning its reputation as a foremost supplier of new surplus marine valves, Zidell has branched out into another field. In 1967, the Oregon-based company began manufacturing its own approved line of marine valves under the brand name of "Duoseal." Sales of Duoseal Valves are expected to climb, since Duoseal is manufactured primarily for the marine industry (a semi-line of oil field type Duoseal valves is also manufactured).

Zidell puts a full factory warranty behind every valve it sells, and there is no major brand name that cannot be found in Zidell's in-

ventory. The Zidell Valve Division has indeed come a long way since it decided to step out on its own in the marine valve industry. It is because of the vast completeness of its inventory and machining facilities that Zidell's Valve Division is able to guarantee quick delivery.



One of Zidell Valve Division's two machine shops. These shops are staffed with expert machinists to perform trim changes, modifications, surface conditioning, and reprocessing on an assembly-line basis.

United Tanker Corp. Elects Paul C. Yu

Paul C. Yu, vice-president in charge of chartering and planning, has been elected executive vice-president of the United Tanker Group. The announcement was made on June 1, 1970 by the chairman of the board, J. Carter Hammel.

Mr. Yu joined the company on April 1, 1949. His previous employment was with Waukesha Motor Co., Nordberg Manufacturing Company and the Worthington Corporation. He graduated from Chiao Tung University, Shanghai, China, and received his Masters Degree from Polytechnic Institute of Brooklyn.

Largest Phosphate Rock Carrier Built In Japan



The Nichirin Maru, shown above, a 44,600-dwt phosphate rock carrier for the Nippon Yusen Kabushiki Kaisha, and Tanda Sangyo Kisen, was recently completed at the Aioi Shipyard of IHI (Ishikawajima-Harima Heavy Industries Co., Ltd.).

The new ship, the largest of its kind ever built in Japan, will be chartered by Nippon Rinsan Company which was established in 1967 by leading Japanese chemical companies and owns Japan's biggest phosphate acid plant.

The Aioi Shipyard is also building an even larger phosphate rock carrier of 57,200 dwt (or 35,600 gt) for Iino Kaiun Kaisha, a Japanese shipping firm.

Built to NK classification, the Nichirin Maru has a length overall of 683.43 feet; breadth, molded 105.64 feet; depth, molded 52.50 feet; draft, molded 34.45 feet.

Power is supplied by an IHI-Sulzer 7RD76 type diesel engine with an output of 11,200 bhp, giving her a service speed of 14.3 knots.

**Bailey Meter Company
Names D.K. Hankinson**



D.K. Hankinson

Bailey Meter Company national sales manager, **S.G. Dukelow** has appointed **D.K. Hankinson** to Pittsburgh district manager. He succeeds **K.E. Atwood**, newly appointed manager for the company's field service activities throughout the United States.

Mr. **Hankinson** joined Bailey in 1950 and served in the New York District following completion of the company's engineering training course. His experience includes work as a service engineer, a field coordinator of company projects, and a sales-application engineer, specializing in industrial fluid process applications.

Mr. **Hankinson** received his bachelor's degree in electrical engineering from Cornell University. He is a past president of the New Jersey section of the Instrument Society of America.

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

**Henschel Corporation
Names P.V. Johnson
Marketing Vice-Pres.**



Philip V. Johnson

Philip V. Johnson has been appointed vice-president, marketing, at Henschel Corporation, Amesbury, Mass., a unit of General Signal Corporation. He comes to Henschel after some 24 years of experience in marine sales and engineering with General Electric Company.

In addition to directing the company's marketing operation, Mr. **Johnson** will also serve as Henschel's Washington representative. He takes over the Washington duties of **Lloyd E. ONeal** who retired as an officer of the company on June 30.

**Det Norske Appoints
Haaland Chief Surveyor**

Andreas Haaland has been appointed chief surveyor of Det norske Veritas, effective June 1, 1970.

The former Department of New Machinery and Reports from Ships in Service has been divided, also effective June 1, into the Department of New Machinery, with assistant director **Sivert Overaas** in charge; and the Department for Reports from Ships in Service,

headed by Mr. **Haaland**, the new chief surveyor.

Mr. **Haaland**, 47, graduated from the Norwegian Technical University in 1949. After a number of years with yards in Norway and the United Kingdom and after serving as a scientific assistant at the Ship Model Test Basin at the Technical University in Trondheim, he joined Det norske Veritas in 1952. Since 1963 Mr. **Haaland** has been a principal surveyor at the head office in Oslo.

**Pyramid Ventures
Names Chartering Mgr.**

The Pyramid Ventures Group Inc. of New Orleans has announced the appointment of **Richard V. Tedesco** as chartering manager. Mr. **Tedesco** was formerly associated with A. Johnson & Co. of New York.

Pyramid Ventures, located at 1815 International Trade Mart Building, are ship owners and operators in the Caribbean trade.



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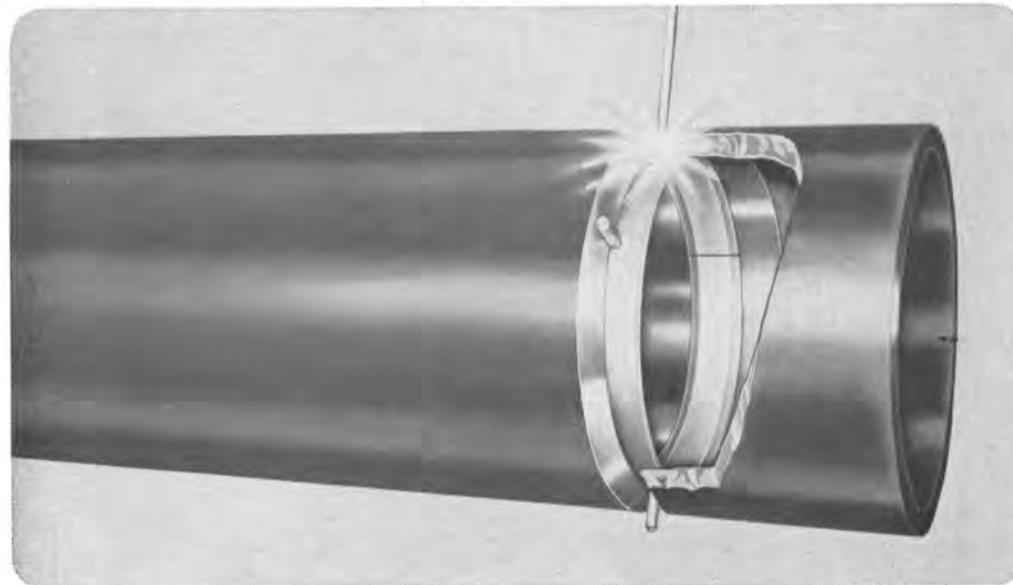
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Mexican Shipyard Building Copper-Nickel Shrimp Boat

A unique prototype copper-nickel-hulled shrimp boat is being advanced by the copper and brass industry as a permanent solution to the age-old problem of hull-adhering barnacles, other harmful marine growth, and corrosion damage. Unlike any other work vessel afloat, the new copper and brass industry shrimp boat is designed to remain free of costly "bottom fouling" including the usual pitting and other corrosion damage that occurs in steel-hulled vessels.

Construction of the copper-nickel vessel is a cooperative effort of Copper Development Association Inc., the advanced market development arm of the copper and brass industry; Ingenieria y Maquinaria Especializada, S.A., a large Mexican builder of commercial fishing

vessels and the builder of the copper-nickel boat; Jaime L. Manzanillo, the marine architect; and Booth Fisheries, a division of Consolidated Foods, Inc. Chicago, Ill., the vessel's operator.

The 67-foot shrimp trawler features a hull of copper-nickel—specifically, Copper Alloy No. 706, which is 90 percent copper, 10 percent nickel. Copper-nickel was chosen because of that metal's inherent resistance to corrosion and to the various forms of marine life that attach themselves to a vessel's bottom. Solving the manifold problems of boat hull maintenance means more profitable vessel through: (1) reduced fuel bills, (2) greater speeds, (3) no deterioration of material through corrosion, (4) and no expenditures for periodic scraping and painting of the hull.

The copper-nickel boat is the nucleus of a four-year test program to demonstrate to ma-

rine operators the overall savings resulting from using copper-nickel alloy as a hull material. Operating costs of the copper-nickel boat will be compared with sister ships launched at the same time, functioning out of the same port and in the same type of service, and built to identical specifications—except for the hull material. The unusually comprehensive test program will document maintenance cost savings through prevention of both marine growth and salt water corrosion. The tests will also show the difference in fuel consumption resulting from bottom fouling in intervals between haulouts.



Artist's conception (top) of the Copper Mariner, copper-nickel-hulled shrimp trawler presently under construction. A four-year in-service test program will determine savings in operating and maintenance costs resulting from use of the inherently corrosion-resistant and non-fouling copper-nickel hull material. The Copper Mariner under construction (bottom) at Salina Cruz in Oaxaca, Mexico. Projected launching date is September 1970.

Built at the Mexican free port of Salina Cruz in Oaxaca, Mexico, the copper-nickel vessel will be operated under a test program as part of a commercial fishing fleet of shrimp trawlers operated by Booth Fisheries and based at San Juan del Sur, Nicaragua.

The 67-foot copper-nickel boat has an 18-foot, four inch beam; a depth of nine feet, six inches; and a hold capacity of 1,765 cubic feet. Construction is according to the American Bureau of Shipping Rules, and the vessel will be fully classified by American Bureau of Shipping with "Maltese Cross A-1 Fishing Service." The vessel's power plant is a Caterpillar D-343 diesel engine with a rating of 335 continuous hp at 1,800 rpm. Fuel capacity is 8,900 gallons. Anaconda American Brass Company, Waterbury, Conn., and Revere Copper & Brass Incorporated, New York City, are fabricating the eight-foot by 15-foot by one-quarter-inch thick plates of copper alloy. The Monel welding electrodes are from the Huntington Alloy Products Division of International Nickel Company in Huntington, W. Va.

Wilson Industries To Build Two Underwater Workboats

International Underwater Contractors, Inc., Flushing, N.Y., has awarded contracts for the construction of two underwater workboats to Wilson Industries, Houston, Texas.

One will be a submersible, propelled by electric motors and storage batteries. It will be named Mark IV-C4 and will include a 66-inch ID sphere.

The other will be a decompression chamber.

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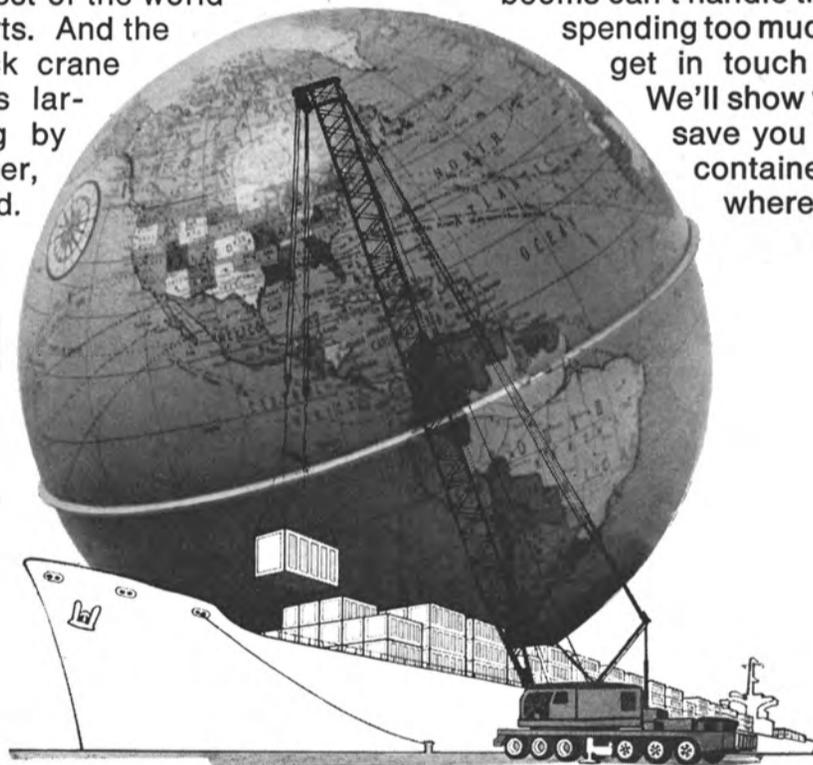
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SNAME Northern California Section Elects Officers Hears Technical Paper On Controllable Pitch Propellers

The Northern California Section of The Society of Naval Architects and Marine Engineers met on May 14 at the Engineers Club in San Francisco. Elections were held with the following results: Chairman, **William Hickman**, Ocean Machinery Company; vice-chairman, **A.J. Haskell**, Matson Navigation Company; secretary-treasurer, **Jack H. Troyer**, Todd Shipyards Corporation, San Francisco division; executive committeemen, **Douglas F. Finlayson**, Marcona Corporation and **Frank Lee Jr.**, Morris Guralnick Assoc.

The acting papers chairman, **T.B. Thomas**, introduced the author, **R. Norrby**, technical manager of KaMeWa, who presented the paper "Notes on Ships with Controllable Pitch Propellers with Special Emphasis on Speed and Maneuvering Qualities." After a short history of the controllable propeller pitch design evolution, Mr. Norrby presented data on two classes of ships in which sister ships were fitted with fixed and controllable pitch propellers. His data suggested something on the order of one percent less efficiency for the CP wheel. He further explained that the various systems are being used by KaMeWa with different prime movers to insure continuous prime mover operation at optimum powers. In this area, he felt that economic justification for the greater initial cost could be found.



Pictured left to right: **Reginald Warner**, past chairman of the Northern California Section, Chevron Shipping Co. (retired); **Thomas Campion**, membership committee chairman, Carrier Corp., and **Hugh Downer**, Section past chairman, Marcona Corp.

T. Bille, of the East Asiatic Company of Denmark, forwarded a written comment praising the improved maneuvering characteristics available with CP propellers. **Edward Johnson** of the Maritime Administration commented adversely on the availability of suitable service engineers. **Hugh Downer**, vice-president of Marcona Corporation, advised that the additional \$225,000 invested in their recent vessel of more than 20,000 shaft horsepower was considered recoverable in two to three years.



Left to right: **James A. Stasak**, public relations chairman, Kings Point Machinery; **Benjamin Andrews**, executive committee, Systems Economic Analysis; **William Swan**, executive committee, General Electric Co., and **Joseph Busch**, meetings committee chairman, H.J. Wickert Co.



Left to right: **Arthur Haskell**, Section secretary-treasurer, Matson Navigation Co.; **R. Norrby**, author, technical manager, KaMeWa; **T.B. Thomas**, acting papers chairman, Marcona Corp., and **Frank Norbut**, western regional manager of Bird-Johnson Company.

Brazilian Yard To Employ Hydranautics Hydraulic Systems

Robert Bush, president of Hydranautics, Inc. recently announced in Goleta, Calif. that a shipyard in Brazil will employ two novel hydraulics systems to expedite the construction and launching of ships.

EMAO-Engenharia de Maquina S/A ordered "friction-lock skidding" and "shiplift" systems designed and built by Hydranautics to increase its production capability. The "friction-lock" system will be utilized in two separate production facilities. In the first application, it will be used to move a series of completed 140-ton fishing vessels from two fabrication bays to the "shiplift" where they will be launched.

"Friction-lock" is a patented system that combines two components to move heavy loads while providing its own movable anchor point, Mr. Bush stated. The components are the gripper and jacking cylinders. Hydraulic pressure holds the gripper on a rail while the jacking cylinders move the vessel in the desired direction. By providing its own anchor point, the "grripper" has all of the advantages of a long-stroke cylinder with none of the disadvantages, Mr. Bush explained.

"Shiplift" consists of eight vertical hydraulic

subsystems, each with a capacity of 40 tons, that will lower the completed vessels into the water or in reverse, lift vessels from the water for maintenance or repair.

In the other application, "friction-lock" will be used in the fabrication of 7,000-ton ships constructed from modules. Modules weighing up to 300 tons will be built on pallets, moved to the launch ways, and aligned by the "friction-lock gripper." Load movement can be controlled to within one-sixteenth of an inch by "friction-lock."

Hydranautics, a subsidiary of the Cosmodyne Corporation, Torrance, Calif., also designs and manufactures heavy material handling equipment for the petroleum and construction industries.

Twin-Screw Tug Ordered From Southern Shipbuilding

A twin-screw tug with a length b.p. of 89 feet 6 inches, a beam of 28 feet and a depth of 17 feet is currently under construction for the Panama Canal Company, New Orleans, La., at the Slidell, La., yards of Southern Shipbuilding Corporation.

Designated Hull No. 92, the tug will be powered by 3,000-total-bhp diesels.

Gotaverken's Arendal Yard Builds Sweden's Biggest Merchant Ship



The 227,500-dwt Brita Onstad at Gotaverken's Arendal yard. Two ships of the same size are shown in the building docks—both for non-Swedish owners.

The biggest ship in the Swedish merchant fleet, the 227,500-ton turbine tanker, Brita Onstad, was recently delivered to its owners, Rederi AB Monacus, Kungsbacka, Sweden. The former holder of the title was the Sea Sovereign, of 210,500 tons also built by Kockums, for the Salen Line.

The Brita Onstad has been built to the highest class of Det norske Veritas, and to that society's class for unmanned engine room. Her leading particulars are: overall length, 1,090 feet; length bp, 1,050 feet; molded breadth, 149 feet seven inches; molded depth, 87 feet six inches; and draught on summer freeboard, 67 feet 9/4 inches.

The total capacity of the cargo

tanks is 9,992,745 cubic feet, and the ballast water tanks have a total capacity of 985,000 cubic feet.

The tank division in the cargo space has been carried out with a view to segregation that is the possibility of carrying at the same time various grades of cargo, and has resulted in an arrangement enabling part cargoes to be loaded or discharged, while maintaining normal trim and bow stress.

High-tensile steel has been used more extensively than is usual for a tanker, and about 35 percent of the steel weight has been carried out in HT steel.

The Gotaverken/Stal-Laval steam turbine of AP type develops a maximum of 32,450 shp at 86 rpm

and gives the ship a speed of about 16 knots fully loaded.

Instrumentation, automatic operation and remote control is built-in to such an extent that it makes it possible to run with an unmanned engine room in accordance with the current requirements of Det norske Veritas.

Steam is generated in two oil-fired watertube boilers of Babcock & Wilcox type manufactured by Gotaverken. Each boiler has a maximum capacity of 69 tons of steam per hour.

B.C. And Singapore Firms To Represent Bull & Roberts, Inc.

Bull & Roberts, Inc. of Murray Hill, N.J., have appointed two new representatives for their boiler water treatment supplies and services offered by experienced marine engineers.

Their Singapore representative is Nor-Marine (Private) Ltd. in the Maritime Building at Collyer Quay. In British Columbia, Vantest Services, Ltd. of 555 Homer Street, Vancouver, B.C., Can., will represent Bull & Roberts.

Mersey Docks Names Leonard H. Brueton

To spearhead a major promotional program, the Mersey Docks and Harbour Board, has appointed Leonard H. Brueton as international marketing consultant.

Mr. Brueton will be responsible for development, promotion and the sales of port services at home and abroad. He was formerly managing director of the transportation division of the Central Wagon Group.

British Shipbuilder Combats Absenteeism With Free Lottery

In a novel move to combat absenteeism in their shipyards, Swan Hunter, the leading United Kingdom shipbuilders, are organizing a free lottery with weekly prizes of \$240 and a quarterly bonus prize of a minicar which is fully taxed and insured.

To qualify for the \$240 tax-free draw, the 15,000 shipyard workers must put in a full working week without absence for any cause other than agreed holidays. In order to qualify for the quarterly minicar prize they must work a full quarter without absence.

This plan is to run for a 12-month trial period and will be continued should it prove to be successful.

Foerster Named To C.M.I. Post

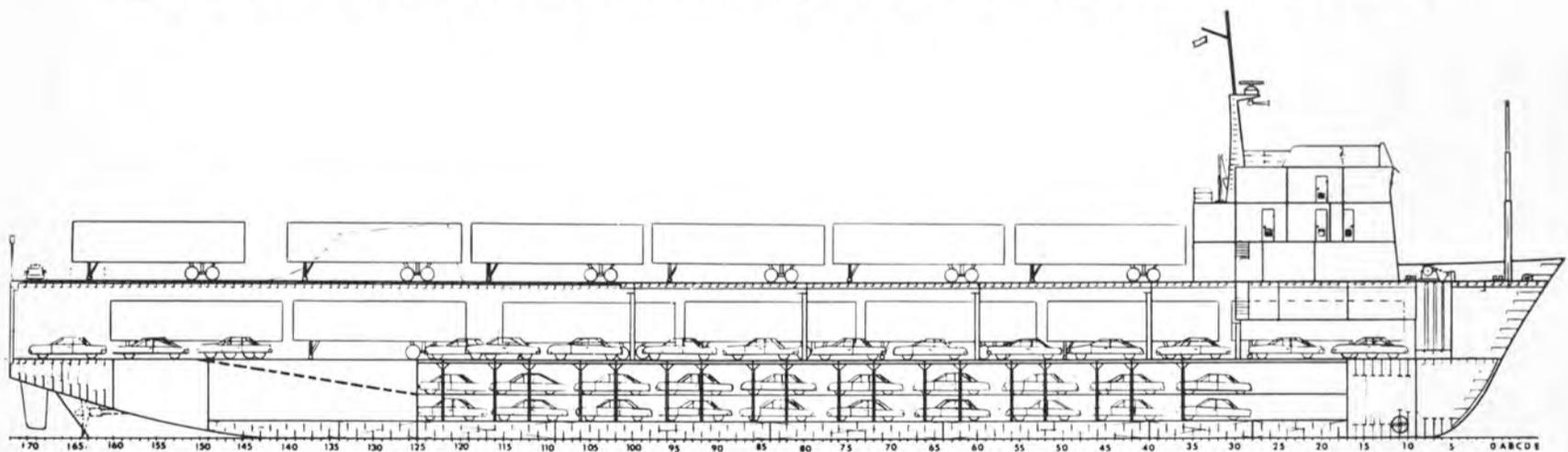
Hugh H. Howard, president of Consolidated Marine, Inc., a west coast terminal operating company, has announced the election of Robert O. Foerster as vice-president.

Mr. Foerster has been general manager of the CMI terminal in San Pedro since April, 1969. He formerly was an executive of Pittston Stevedoring Co., New York, and of Grace Line in Chile and New York.

Mr. Howard also announced that Dieter Hegger has joined CMI as assistant manager of terminal services. Mr. Hegger has been with Atlantic Container Line of New York.

CMI is a wholly-owned subsidiary of American President Lines, Pacific Far East Line, and American Mail Line.

New TMT Roll-On/Roll-Off Containership And Car Ferry Proposed By Matzer



Inboard profile of the proposed 360-foot vessel.

A combination roll-on/roll-off containership and car ferry is the subject of a recent design by Rudolph F. Matzer & Associates, Inc. A proposal for TMT Trailer Ferry, Inc., the 360-foot vessel will feature three stern ramps, a 250-hp bow thruster and the facilities for containers, trailers and automobiles.

With a total displacement of 5,116 long tons, the vessel will be capable of carrying 2,576 long tons of deadweight. Fuel oil carried in

the inner bottoms tanks accounts for 336 long tons of deadweight, while 86 long tons of fresh water is carried in the forepeak and after peak tanks. Approximately 5,200 shp will be required to sustain a speed of 15 knots, while operating at a maximum draft of 15 feet.

Twin 15-foot wide stern ramps, port and starboard, lead to the weather deck. This deck can accommodate 28 trailers or, by special deck fittings, a mixture of contain-

ers or trailers. The need for a shore-side or ship-mounted container crane is eliminated by using a special mobile device to carry the container aboard the vessel. The device, called Swinglift, is mounted on a trailer and can unload 40-foot containers to its side and stack them two high. By using this Swinglift, a total of 40 containers can be stacked on the weather deck. In addition to these containers, eight

trailers may be carried on the 53-foot wide super-structure deck. Twenty-five 40-foot trailers and 25 automobiles can be loaded on the main deck over a 21-foot wide ramp, which also serves as a weather-tight closure in the stowed position. Seventy-six cars are carried in the hold on two levels. Access to the car decks is by a ramp from the main deck through a sliding water-tight door.

Howard R. Kornberg Named Port Engineer Port Of Galveston



Howard R. Kornberg

Howard R. Kornberg has been named Port Engineer for the Port of Galveston. C.S. Devoy, Port Director, made the announcement following a meeting of the board of trustees, Galveston Wharves.

Born in St. Louis, Mo., Mr. Kornberg received a bachelor of science degree in civil engineering from North Dakota State University in 1940 and is a registered professional engineer. He has spent considerable time overseas in his career, and for the past three years was a consulting engineer in Cape Town, South Africa. He has also worked in Indonesia, Greenland and Australia.

Mr. Kornberg's experience also includes the positions of chief field engineer on an atomic plant at Oak Ridge, Tenn., and sales engineer with the U.S. Steel Export Company in New York City.

J. de Graff Publishes "Ship Model Testing" By D. Phillips-Birt

A new book, describing the use of models for research into basic questions of ship design and construction, is being published by John de Graff, Inc., 34 Oak Avenue, Tuckahoe, N.Y. 10707. The book is titled, "Ship Model Testing," and is written by Douglas Phillips-Birt, a naval architect. This publication sells for \$8.95 a copy.

The use of models for research into basic questions of ship design and construction is a growing field in view of the new importance attached to speed, seaworthiness and maneuverability. This book gives a general review of the hydrodynamic principles and experimental techniques involved in the various types of model tests used. Written for both student and practising naval architects and ship designers, this book will interest all those in any way responsible for ships and their design.

Douglas Phillips-Birt is a naval architect with wide experience. After serving his student apprenticeship with John I. Thornycroft, Southampton, England, he was naval architect with the same yard for several years. He then worked as a yacht architect with Camper and Nicholsons until 1955. Since that time he has worked as a consulting naval architect. Mr. Phillips-Birt is the author of a number of well-established books on ship and boat design.

Bollinger To Build Work-Over Drilling Barge For Well Service

Bollinger Machine Shop & Shipyard, Inc., Lockport, La. 70374, has been awarded a contract to construct a work-over drilling barge for John W. Smith Well Service, Inc. This structure will be the first of its kind to be constructed on the banks of Bayou Lafourche in Louisiana.

The barge structure is 173 feet by 39 feet by nine feet ten inches and will have a housing structure built on with complete living quarters. The barge, when completed, will be self-contained, having everything on board for complete drilling and work-over operations.

The crew's quarters will have facilities to sleep 22 men, including needed service personnel. All quarters will be air-conditioned with each man having gear and personal

lockers for proper storage. In addition, a large cafeteria and lounge will be provided for added comfort during nonworking hours.

The barge will be equipped with all heavy duty drilling equipment, large drilling mud tanks, and drilling and potable water. In addition, on board will be large generators for necessary electrical supply and working machines and dryers for added comfort and convenience for personnel.

from drawing board



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John O'Leary Elected President Transmarine Navigation Corporation

Transmarine Navigation Corporation has announced that its board of directors has made two major changes in the top corporate structure of the company.

Max J. Linder, president and chairman of the board for the past 15 years, is stepping down from the presidency and will continue in the

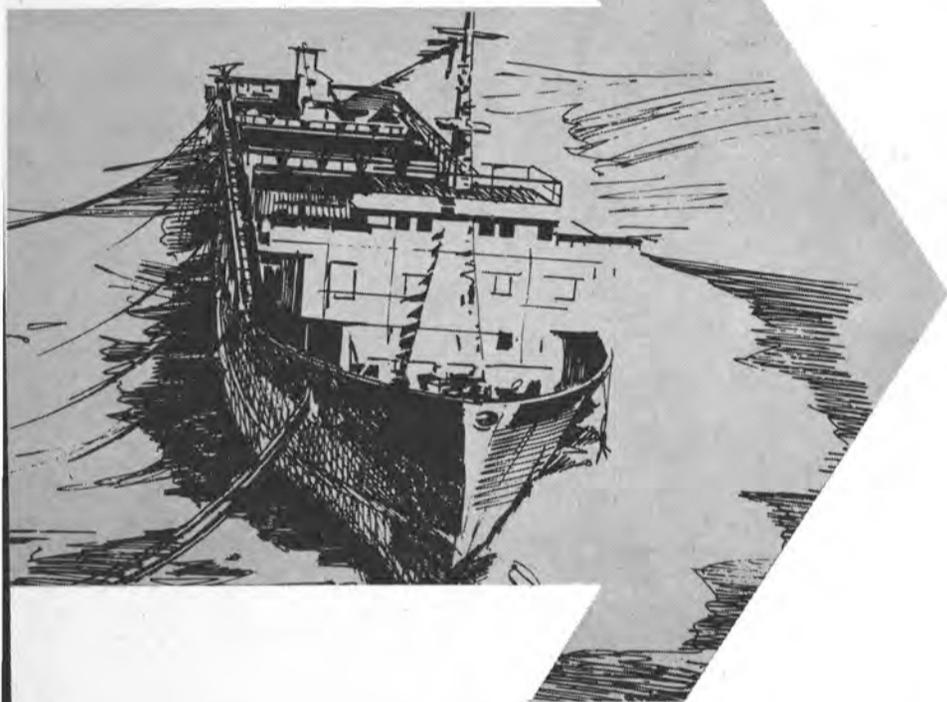
capacity of chairman and chief executive officer. John F. O'Leary, executive vice-president, has been elected president and general manager. Mr. O'Leary will be headquartered in the firm's new executive offices to be located in the Bank of America Center, 555 California Street, San Francisco, Calif.

Other important changes in management in the Los Angeles area are: Lloyd A. Linn, vice-president of operations, will transfer from

the Long Beach office to the Los Angeles office where he will assume the duties of vice-president of administration; Joseph J. Berru, general traffic manager, will be promoted to assistant vice-president of traffic, and will be in overall charge of traffic and container services for the southern California area; James J. Anzai, traffic supervisor, will become manager of outward freight, NYK/Showa Lines department; Gerd Rachut, manager of ItalPaci-

fic Line department, will transfer to the San Francisco office and maintain the agency management and control of the ItalPacific Line; Miki Moriwaki, container operations manager, has been elected vice-president of traffic, and will be responsible for the management of the NYK and Showa Lines; Paul S. Flood, general traffic manager, will be promoted to assistant vice-president of traffic. Mr. Flood will assist Mr. Moriwaki in the management of NYK/Showa Lines.

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General Dynamics Quincy Shipbuilding Names Paul Schofield



Paul Schofield

Paul Schofield, a former newsman, has been named manager of public relations at the Quincy Shipbuilding division of General Dynamics, Quincy, Mass. The appointment was announced by Lloyd Bergeson, vice-president of General Dynamics and general manager of the shipyard.

Mr. Schofield succeeds Frank C. Kerr, who left General Dynamics to establish his own public relations agency.

Since joining General Dynamics in 1966, Mr. Schofield has been a public relations representative at the Quincy Shipbuilding division. Earlier, he was a reporter for the Brockton Daily Enterprise, and a news copy editor of the Boston Globe. He is a member of the Boston Press Club, Navy League of the United States, Propeller Club of Boston, and the American Newspaper Guild. He is a graduate of the State College of Bridgewater, Mass., and also has studied at Northeastern University.

Alpine Geophysical Opens London Office

Alpine Geophysical Associates, (U.K.) Ltd., a subsidiary of Alpine Geophysical Associates, Inc. of Norwood, N.J., has announced the opening of a new office at 64 Lincoln's Inn Fields, London W.C. 2, England. Alpine Geophysical, a world leader in applied oceanography, has taken this action in order to give better service to its clients in the United Kingdom and northern Europe.

William T. McGuinness, former director of Alpine's Oceanographic Projects Division, will be in charge of the London office. The company also maintains a European office in Rome, headed by Dr. Gino Mecarini.

Sailors' Snug Harbor Elects Wilbur E. Dow And Dr. John O. Mellin

The trustees of Sailors' Snug Harbor, one of America's oldest and most unusual charities, have elected Wilbur E. Dow Jr. president of the board, and Dr. John O. Mellin, vice-president, at its annual meeting at the Chamber of Commerce of New York City.

Mr. Dow is an admiralty lawyer with offices at 80 Broad Street, New York City, and is vice-president of the Marine Society of New York City, an organization of shipmasters which dates back to 1770. One of its founders was Capt. Robert Richard Randall, also founder of Sailors' Snug Harbor, an institution dedicated to the care of elderly seamen. Captain Randall's will, which created Sailors' Snug Har-

bor, was drafted by his friends, Alexander Hamilton and Daniel D. Tompkins. His farm, located just north of Washington Square, has provided the income for the maintenance of Sailors' Snug Harbor on Staten Island.

Dr. John O. Mellin, reelected vice-president of the board of trustees, has served on the board for the past 28 years. He is minister of The First Presbyterian Church

at 12th Street and Fifth Avenue, New York City.

The other members of the board of trustees are: John V. Butler, Rector of Trinity Parish; G. Wallace Bates, president of the Chamber of Commerce of New York City, and vice-president and general counsel of the New York Telephone Company; Capt. George C. Kozel, president of the Marine Society of New York City; and the Honorable John V. Lindsay. Capt. Leo Kraszeski was reelected director of Sailors' Snug Harbor and governor of its facilities on Staten Island.

E. Canadian Section Elects New Officers

The Eastern Canadian Section of The Society of Naval Architects and Marine Engineers recently held their annual general meeting in Montreal.

Section officers for the 1970-71 season were elected as follows: Capt. K.P. Farrell, RCN, chairman; G.E. Kristinson, vice-chairman; T. D. Anderson, secretary-treasurer; R. Sinclair, papers chairman; C.H. Owston, publicity chairman; J.G. German, membership chairman, and D.M. Craig, past chairman.

Following the election of officers, a paper titled "The Anatomy of a Collision and its Consequences" was presented by A.S. Hyndman Q.C. Mr. Hyndman's paper discussed the collision some years ago between the Lionel and Manchester Merchant in Montreal harbor. The presentation traced the various legal suits and counter suits involved in the settlement of the case.

The author's wide experience in matters of marine law provided for a most interesting and informative evening.

Wire Rope Blocks Described In 88-Page DRH/Johnson Catalog

The Johnson Blocks Division of Don R. Hinderliter, Inc. has published a complete new 88-page catalog of wire rope blocks and accessories. The new DRH/Johnson Catalog '70 includes prices and data on expanded lines of crane blocks, swivels, overhaul balls, construction blocks, snatch blocks, wire rope sheaves and wedge sockets, and a 10-page reference section packed with information.

A comprehensive and unique 10-page reference section covers field problems and applications frequently encountered with wire rope blocks and accessories. Tables, charts, and problem examples offer solutions to such questions as how much a block or ball should weigh, choosing the diameter of a block, strength of various parts of wire rope, how to figure line parts and lifting capacities, safety factors on blocks and hooks, reference notes on sheaves, and many other subjects.

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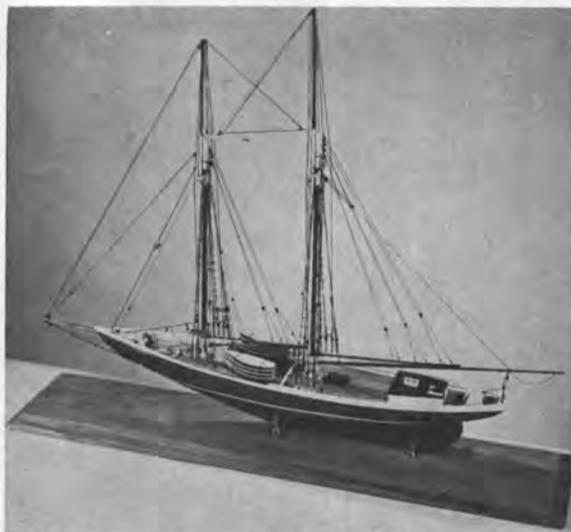
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Dignitaries present for the occasion, shown left to right, were **Andrew E. Gibson**, Maritime Administrator, U.S. Department of Commerce; Vice-Adm. **J. Victor Smith**, USN, Commander, Amphibious Forces, U.S. Pacific Fleet; **John V. Banks**, NASSCO executive vice-president; **Mrs. Gordon L. Allott**, sponsor; The Honorable **Gordon L. Allott**, U.S. Senator, Colorado; **Mrs. Donald G. Brotzman**, matron of honor and wife of U.S. Congressman **Donald G. Brotzman**, second Congressional District, Colorado; Rear Adm. **Harry C. Mason**, USN, Representing Commander, Naval Ships Systems Command; and Capt. **H.A. Gerdes**, USN, Supervisor Shipbuilding, Conversion and Repair, USN, 11 ND.

The Boulder (LST-1190), ninth in a series of 17 LSTs to be built at National Steel and Shipbuilding Company, San Diego, Calif., under a \$250-million Navy contract, was launched on May 22.

Following the launching, Capt. **Richard J. Coad**, USN, Commander Amphibious Squadron Two, laid the keel of a sister ship, LST-1194, USS La Moure County.

First ship of the fleet to be named for the city and county of Boulder, Colorado, the new LST was launched under the sponsorship of **Mrs. Gordon L. Allott**, wife of United States Senator **Gordon L. Allott** of Colorado. **Mrs. Donald G. Brotzman**, wife of United States Congressman **Donald G. Brotzman**, Second Congressional District of Colorado, served as matron of honor.

Others who participated in the activities, included The Honorable **Gordon L. Allott**, United States Senator (R), Colorado, as main

speaker; Rear Adm. **Harry C. Mason**, USN, representing Naval Ship Systems Command; Capt. **John M. Danielsen**, USN, Force Chaplain, Amphibious Force, United States Pacific Fleet; Capt. **Henry A. Gerdes**, USN, Supervisor of Shipbuilding, Conversion and Repair, USN, 11 ND, San Diego; **John V. Banks**, NASSCO executive vice-president; and **John M. Murphy**, NASSCO vice-president, sales.

The Boulder (LST-1190) is a Newport-class tank landing ship, having a greatly increased combat vehicular lift and landing capability over those of World War II. Ships of her class afford the fastest and most efficient means of landing tanks, artillery and assault vehicles under combat conditions. The normal method of unloading will be over the ramp to pontoon causeway, and then to the beach. A stern ramp is also provided for loading and unloading amphibian vehicles in deep water.

Maritime Arbitrators Announce Elections

The Society of Maritime Arbitrators, New York, held its seventh annual meeting at the Whitehall Club, New York City, and elected the following officers: president, **Ferdinand E. Sauer**, general manager, Chilean Nitrate Sales Corp.; vice-president, **Michael Van Gelder**, president, M.A. Van Gelder, Inc.; treasurer, **Edward Schilling**, Lamorte Burns & Co., insurance adjusters; secretary, **John M. Reynolds**, comptroller, Association of Ship Brokers & Agents, Inc. Elected to the board of governors for two years were: **Jones F. Devlin Jr.**, retired vice-president, United States Lines, now marine consultant; **Hendrik L. Busch**, retired executive vice-president, Skaarup Shipping; and **Max J. Ramsden Wolfson**, maritime consultant.

This organization is dedicated to the advancement of knowledge and improvement of practice in the maritime industry's arbitration procedure. Its membership includes executives, both active and retired, in all branches of the maritime field.

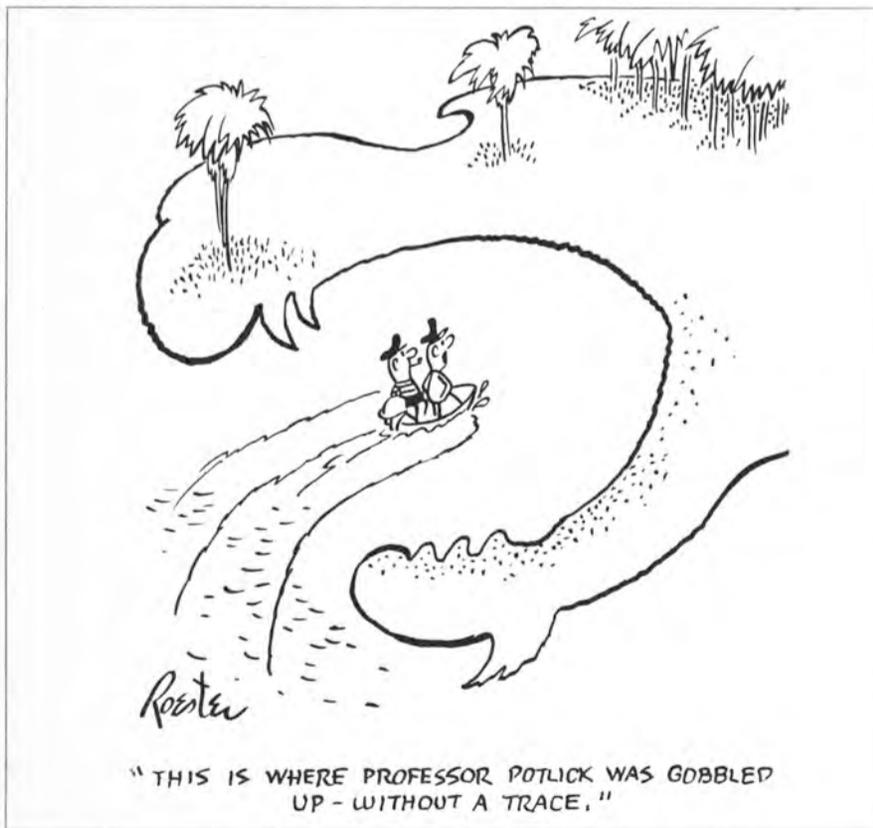
It will accept disputes of all kinds, except labor, arising from such things as charter party contracts, shipbuilding and ship repair contracts, salvage contracts, etc.

To stimulate a better and broader concept of maritime arbitrations, a workshop course of six sessions is given annually. It is open to the public, although membership in the Society is normally limited to men with at least 10 years of service in either junior or senior executive positions.

Rowan Drilling Barge Contract To Levingston

A contract for the construction of a posted-type submersible drilling barge, capable of drilling to depths of 30,000 feet, has been awarded to Levingston Shipbuilding Company, Orange, Texas.

The barge, to be built for Rowan Drilling Company, Houston, Texas, will be fitted initially with living quarters for domestic operations. However, provisions for ocean towing and quarters expansion for foreign operations have been included in its design.



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Tidewater Marine Service Operating Over 400 Vessels Issues Financial Report

Tidewater Marine Service, Inc. earnings for the fiscal year ended March 31, 1970 were \$5,137,649 or \$1.36 per common share compared with \$5,132,746 or \$1.35 (as adjusted) per share for the comparable period in fiscal 1968-69, John P. Laborde, president, announced. These figures were computed on the average number of shares outstanding during the fiscal year amounting to 3,790,890.

Mr. Laborde noted that the yearly earnings figures represented a modest increase over those of the previous year despite the general condition of the economy and an income tax increase of almost \$700,000 resulting, in part, from elimination of the investment tax credit.

Revenues for the year increased to \$51,164,615 from \$47,513,496 for the previous year, and were the highest in company history.

Mr. Laborde explained that the company realized substantial progress in scope and size of operations despite what he termed "a disappointing fourth quarter" attributed, in large

measure, to temporary postponement of off-shore lease sales in the Gulf of Mexico.

The 14-year-old New Orleans based corporation offers marine surface support to the petroleum industry on a worldwide basis, presently operating a total of more than 400 vessels of various types and sizes. In recent years the company has also acquired several service companies whose work is closely allied with the oil and construction industries.

Tidewater Marine shares became listed on the New York and Pacific Coast Stock Exchanges on May 19, 1970. The company recently declared the regular quarterly dividend of 10 cents a share.

Webb Institute Holds 74th Commencement Exercise



Left to right at the Webb Commencement Exercise, James J. Reynolds, principal speaker, is shown with John A. Livingston, chairman of the Webb board, and Adm. William A. Brockett, USN (ret.), pres. of Webb Institute.

Webb Institute of Naval Architecture held its 74th commencement exercise on its Glen Cove campus on June 12. James J. Reynolds, president of the American Institute of Merchant Shipping and former Under Secretary of Labor, was the principal speaker.

Rear Adm. William A. Brockett, USN (ret.), president of Webb Institute, presented the bachelor of science degrees to the 18 graduating members of the Class of 1970, assisted by Dean Joseph Urban.

Following the academic procession, President Brockett recognized the members of the board of trustees and presented John A. Livingston, chairman of the board, who offered brief remarks to the graduates. Dean Emeritus T.M. Curran presented the honor awards to the Class of 1970 recipients. Following the conferring of degrees, David M. Bovet spoke for his graduating class. The invocation and benediction were offered by the Reverend Howard Lowell, rector of St. John's Episcopal Church in Lattingtown.

Webb Institute was founded in 1889 by William H. Webb, a leading ship designer and builder in the nineteenth century. In the late 1940's the college moved from its original site in Fordham Heights in the Bronx to its present location on the north shore of Long Island Sound, with 26 acres of waterfront campus. Webb is unique in being the only fully accredited four-year college in America with a curriculum devoted exclusively to ship design, propulsion, and construction. It also has the distinction of granting tuition-free scholarships to all undergraduate students.

In spite of its small size, Webb Institute of Naval Architecture holds a worldwide reputation for excellence and its graduates are held in high regard throughout the maritime industry.

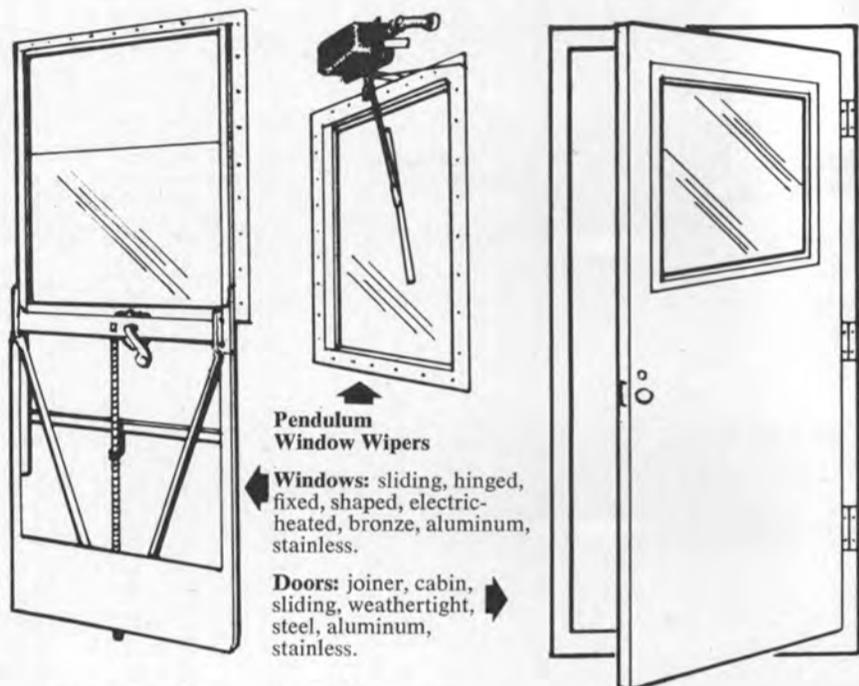
Walter D. Mawhinney Named New C-E Naval Reactors Chief

Walter D. Mawhinney has been promoted to general manager of Combustion Engineering's Naval Reactors Division, it was announced by C-E corporate vice-president, **Howard M. Winterson**. Mr. Mawhinney joined C-E in 1958 and rose through successive

positions to operations manager, his most recent position. He received a BSME degree from Tufts, and an MSME degree from the University of Connecticut. He is a Navy veteran, a member of the National Society of Professional Engineers, and a registered professional engineer in Connecticut.

Functions of the Naval Reactors Division, located in Windsor, Conn., include naval reactor development and operational training.

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ASTILLEROS ESPANOLAS BULK CARRIER: The second 19,056-dwt Santa Fe type bulk carrier Westwind (shown above), built for the Westwind Africa Line of Liberia, was launched recently at the Olaveaga shipyards of Astilleros Espanoles S.A. The 482-foot vessel has a total cargo capacity of 861,196 cubic feet, beam of 75 feet and depth of 44 feet. Her main engine, built by Astilleros Espanoles at its Olaveaga yards, develops 9,800 bhp at 140 rpm, giving the vessel a speed of 16.10 knots. The vessel was sponsored by **Mrs. John Lentakis**. Leading officials of the shipyard along with management representatives of the Westwind Africa Shipping Line attended the ceremony.

Mariport To Be Held In Baltimore In 1971

Mariport, the maritime exhibition, will be held in Baltimore, Md., April 5-8, 1971, and will be presented jointly by EUROPORT, the world's largest maritime exposition and the Mariport organization.

It will cover all aspects of marine engineering, including propulsion, navigation, automation and other specialized equipment. It will also encompass all aspects of port equipment, such as cranes, workboats, radar controls, warehousing and loading systems, buoys, and many other items of equipment used in ports. Dredging will also be a feature of Mariport. An excellent conference is being planned,

with "The Future of American Shipping" as a central theme.

The Advisory Board for the exhibition consists of the following: **Edwin Hood**, executive secretary, Ship Builders Council of America; **Charles G. Visconti**, executive vice-president, International Cargo Gear Bureau; **Carl E. McDowell**, executive vice-president, American Institute of Marine Underwriters; **James J. Reynolds**, president, American Institute of Merchant Shipping; **John Humble**, American Bureau of Shipping; **Glenn Mather**, managing director, The Containerization Institute; and **Al Filia-trault**, executive secretary, Propeller Club of the United States.

More than 50,000 square feet of exhibit space has been allocated and this will be allotted to exhibitors in order of application for space and site.

An official brochure on the event is available and all firms and organizations who are directly involved in the field of industrial shipbuilding as a supplier or user will be mailed one upon request. Requests for this brochure should be mailed to: **Irwin I. Chaitin**, Director MARIPORT, 1601 West Lafayette Avenue, Detroit, Mich. 48216.

Huskisson Re-Elected International Shipping Federation President

The chairman of the British Shipping Federation, **Robert Huskisson**, was re-elected president of the International Shipping Federation at its annual meeting in Sorrento, Italy, it was announced in London.

Mr. Huskisson is a director of Shaw Savill Line overseas containers and container fleets.

He has been chairman of the British Shipping Federation for almost two years. The vice-presidents are **E. Brovig** (Norway), **S. Morarjee** (India) and **J.A. Warning** (Netherlands).

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Barge Construction

Avondale Shipyards, Inc., New Orleans, La., has an order from the Canal Barge Company, Inc., New Orleans, La., for four tank barges. Two will be 295 feet long and have been designated Hull Nos. 1931 and 1932; two will be 220 feet long and have been designated Hull Nos. 1933 and 1934. All will have a beam of 50 feet, a depth of 12 feet 10 inches, and produce a total of 11,400 dwt.

Diamond Manufacturing Co., Inc., Savannah, Ga., has undertaken the construction of a deck barge for S.C. Loveland Co., Inc., Philadelphia, Pa. The 1,600-dwt barge, designated Hull No. 335, is to be 143 feet 9 inches long, have a beam of 43 feet 6 inches, and a depth of 10 feet 9 inches. It will be named Loveland 29.

Diamond also has a \$166,700 contract for the construction of two steel oil barges for the Corps of Engineers, Mobile, Ala. Bids for the 120-foot barges were received on May 28 by the Corps of Engineers, Philadelphia, Pa., under IFB DACW61-70-B-0057.

Hillman Barge & Construction Co., Pittsburgh, Pa., has a contract for the construction of a 1,500-dwt tank barge for the First National City Bank of New York. The barge is to have a length of 195 feet, a beam of 35 feet, and a depth of 11 feet. It has been designated Hull No. 7009.

Ingalls Iron Works Co., Birmingham, Ala., is to build four oil barges for Canal Barge Co., Inc., New Orleans, La. Two of the barges are to have a length of 295 feet and have been designated Hull Nos. 1764 and 1765; one is to have a length of 228 feet and has been designated Hull No. 1767; and one, designated Hull No. 1766, will be 212 feet long. The latter is a box-type barge of an integrated tow. All will have a beam of 54 feet, a depth of 13 feet, and a total of 15,800 dwt.

Also under construction at Ingalls Iron Works are four independent tank, box-type propane barges for Union Carbide Chemical Corporation, New York. Each 2,400-dwt barge is to have a length of 195 feet, a beam of 52 feet 6 inches and a depth of 12 feet 6 inches. They have been designated Hull Nos. 1775 through 1778.

Sea Shipyards, Inc., Jennings, La., has been awarded a contract by Sun Oil Company, Philadelphia, Pa., for the construction of two oil barges. Each 2,600-dwt barge is to measure 245 feet by 54 feet by 16 feet 3 inches. They have been designated Hull Nos. 208 and 209.

St. Louis Ship, Division of Pott Industries, Inc., St. Louis, Mo., has an order from undisclosed interests for two oil barges. One barge will be 236 feet long and one 180 feet long. Both will have a beam of 52 feet 6 inches and a depth of 12 feet 6 inches. The larger barge will be of 2,800 dwt and the smaller of 2,000 dwt.

Also under construction at the same yard are six double-skin chemical tank barges for Union Carbide Chemical Corporation, New York. Each 1,400-dwt barge is to have a length of 118 feet, a beam of 52 feet 6 inches, and a depth of 12 feet 6 inches. They have been designated Hull Nos. 2774 through 2779.

Paducah Marine Ways, Inc., Paducah, Ky., is building five oil barges for undisclosed interests. Two barges will be 118 feet long and have been designated Hull Nos. 2780 and 2781; three will be 236 feet long and have been designated Hull Nos. 2782, 2783 and 2784. All will be 52 feet 6 inches in beam, have a depth of 12 feet 6 inches, and produce a total of 11,200 dwt.

Paducah Marine Ways also has an order for two double-skin tank barges for Brent Towing Co., Inc., Greenville, Miss. Each 2,800-dwt barge is to be 290 feet long, 52 feet 6 inches in beam, and have a depth of 12 feet. They have been designated Hull Nos. 2769 and 2770.



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Seven Steamship Lines Form European Unit Load Council

Seven steamship lines in Europe have announced the formation of the European Unit Load Council to promote the unit load system in Europe. The Council will also collect and exchange information on the unit load system and exchange information on the tech-

niques and economics of unit loads. A joint advertising program will be implemented.

The members to date are: Concordia Line, Haugesund; Finnlines, Helsinki; Independent Gulf Line, Amsterdam; Royal Netherlands Steamship Co., Amsterdam; Maersk/Kawasaki Line, Copenhagen; Meyer Line, Oslo; and Fred. Olsen & Co., Oslo. The council secretary

is Capt. M. Markussen, Aslakveien 14, Oslo 7, Norway.

In the fall of 1969 a unit load council consisting of seven lines was formed in New York, and early this year the Pacific Unit Load Council was formed in San Francisco, Calif., composed of Fred. Olsen Interocean Line, Knutsen Line, and States Steamship Co.

"We are delighted with the formation of the European Unit Load

Council as it means there will be a sustained and coordinated program both here and in Europe to inform shippers and receivers about unitization," said J. Monroe Sullivan, vice-president, Interolsen Agencies, Inc., and general agent for Fred. Olsen Interocean Line in San Francisco. "We are in the transportation business and unitization is one of the methods of handling cargo which should be considered by all shippers because in many cases it provides the lowest total cost transport," he added.



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Nat McClure Joins Kelso Marine Inc.



N.D. McClure

Harry Fiegel, vice-president and general manager of Kelso Marine, Inc., Galveston, Texas, has announced the appointment of N.D. (Nat) McClure as sales manager.

Mr. McClure was formerly with St. Louis Ship, and is a United States Navy veteran of World War II and the Korean conflict. He was released to inactive duty in 1963. He is a native of Mobile, Alabama and will be returning with his family to the Gulf Coast after an absence of many years.

Mr. Fiegel stated that his newly appointed sales manager will be expected to devote his efforts to increased sales of new barges for both ocean-going and inland waterways service. He will also be responsible for keeping the yard's extensive repair facilities and personnel busy.

Kelso's barge construction capacity, particularly in super jumbo ocean barges, is being significantly expanded this year with the addition of new automated equipment and facilities.

McCarty Named To Managerial Post By Celanese Coatings

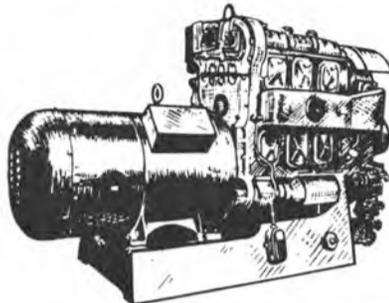
Laurence R. McCarty has been named planning manager of Celanese Coatings Company. He will be headquartered in Louisville, Ky.

Mr. McCarty joined the Coatings Company from Celanese Plastics, where he was a senior planning analyst. He started with the Celanese Corporation in 1963 and has held positions in sales, manufacturing, and planning. Previously he worked with Frontier Chemical Co., Enjay Chemical Co., and Dow Chemical Company in various sales and marketing positions.

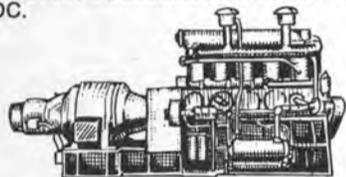
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HERCULES DOOC, 10 KW, 120 DC, Radiator cooled.
CATERPILLAR, radiator cooled, 15 KW, 120/240 Volts DC.
GM, 4-71, 60 KW, 220/440 AC.
HERCULES, DJXC, 25 KW, 120 DC.
CUMMINS A1, 30 KW, 120 DC.
MURPHY, Model ME 66, radiator cooled, 75 KW, 120/240 Volts DC.
CATERPILLAR DIESEL ENGINE, Model D13000, 167 HP, 900 RPM, with Louis-Allis Generator, 85 KW, 220 AC.
LORIMER F5SS, 75 KW, 120/240 DC, radiator cooled.
COOPER-BESSEMER, JS-5, 250 KW, 240 DC.

GM-3-268A, 100 KW, 240/120 Volts DC.
SUPERIOR, Model 1DB-8 100 KW, 450/3/60.
GM, 8-268, 300 KW, 260/345 DC.



GENERAL MOTORS Model 3-268A, 152 BHP, 1200 RPM, with 100 KW Generators, 450 Volts AC, 3 phase, 60 cycles.
GM 8-268A, radiator cooled, air start with Westinghouse Generator, 250 KW, 440/3/60, complete with switchboard.
FAIRBANKS-MORSE, 38 E 5 1/4, 300 KW, 260/345 DC.



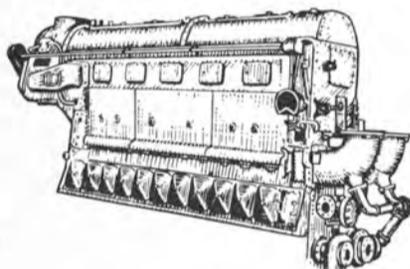
LORIMER 100 KW, 450/3/60 Volts DC.
BUDA 6DHG691, 60 KW, 120 Volts DC.
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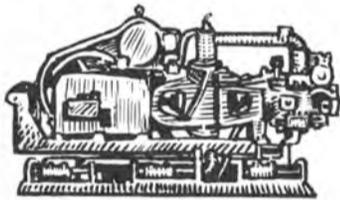
INGERSOLL-RAND, 150 CFM, 50 PSI, 20 HP, 440/3/60.

INGERSOLL-RAND, 150 CFM, 600 PSI, Model 75, with Westinghouse Motors, 75 HP, 230 DC.

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STEAM AIR COMPRESSORS Westinghouse Air Brake Co., Size 9 1/2 x 9 x 10 Vertical.

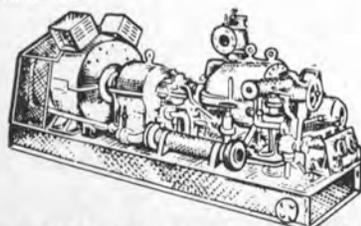
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JOSHUA HENDY Turbines, 300 PSI, temperature 550° F with Westinghouse Generators, 300 KW, 120/240 Volts DC.

WORTHINGTON Turbines, Form S-4, 440 PSI, 740° F, driving on same common shaft a 250 KW Generator, 440/3/60, and a 90 KW Generator, 125 Volts DC.

WORTHINGTON Turbines, Form S-4, 440 PSI, 740° F, with Crocker-Wheeler Generators, 300 KW, 120/240 Volts DC.

GENERAL ELECTRIC, DORV 325, 300 KW, 440/3/60.



DE-LAVAL Turbines, 450 PSI, 750° F, with Crocker-Wheeler Generators, 300 KW, 120/240 DC.

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

TERRY Turbines, Type TM5, 440 PSI, 750° F, with Crocker-Wheeler Generators, 300 KW, 120/240 DC.

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1—**250 HP, G.E.**, Type CY, Form HJ, Model 24G, 1200 RPM Horizontal, 2 B.B., Shunt Wd.

2—**220 HP, G.E.**, Type CDM—1348S, Form HA, Model 25G 339, 1800 RPM, Stab. Sh. Wd. Horizontal, 2 B.B.

6—**100 HP, Westinghouse**, Type SK, FR. 163, Style 1B4631 1150 RPM, Shunt Wd. Horizontal, 2 B.B.

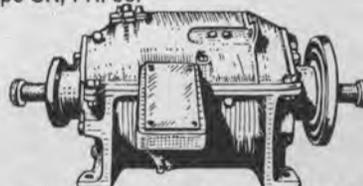
2—**55 HP, Electro-Dynamic**, FR 25-SL, 550 RPM, Compound Wound, Single Ball Bearing. Originally for high pressure Air Compressor.

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4—**9.3 HP, Westinghouse**, 640/852 RPM, Type SK, FR. 93.



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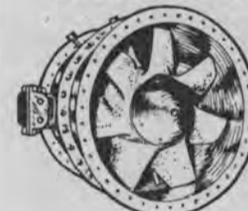
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M.J. Batty & Co. (Singapore) Names Director Of Operations And New Director Of Finance



M. J. Heasman



I. G. Stewart

Don Killom, managing director of M.J. Batty & Co. (Singapore) Pte. Ltd., has announced that Capt. M.J. Heasman has been elected to the board of directors. His official title will be director of operations. He will serve along with I.G. Stewart, who has been promoted to director of finance.

Captain Heasman has extensive knowledge of salvage, as he has personally been involved in a considerable number of cases of salvage caused by fires, collisions, breakdowns and sinkings. Some of his activities include the command of tugs, varying in horsepower, which have towed on ocean passages, dredges, ships, large tankers and oil rigs, and multiple tows of up to seven vessels at a time. His experience comprises heavy lift floating cranes, repairs and dry-dockings, underwater operations, dredging reclamation, and various aspects of marine undertakings. He will be based in Singapore.

Mr. Killom also stated that the company

will continue to expand its marine activities and carry out diversified marine services which include: support facilities for the offshore oil exploration work; marine consulting; marine salvage; and dredge building and repairs. (The company is now acting as agent for one of the world's largest manufacturers of portable dredging equipment.)

The company operates its own fleet of vessels for berthing, towing and salvage, covering the entire region including Vietnam, Thailand, Malaysia, Indonesia, Hong Kong, Japan and Australia.

The company's specialized support vessel, the Clive 'B', underwent a \$300,000 refitting in Singapore a few months ago. This 4,000-ton floating workshop was the first vessel of her kind to come into the Republic, and is now operating in South Vietnam, supporting the company's fleet of vessels on charter to the United States Government.

Johnson Publishes New Folder On Marine Propulsion Products

The Marine Division of The Johnson Rubber Company has published a four-page, two-color brochure describing several of its marine products.

Included is the company's Precision Fitted Demountable Rubber Stave Bearing. Its design combines the performance of precision fitted bearings with the inherent advantages of water lubricated bearings. Also shown are typical bearing systems.

The Johnson Torque-Journal Hub Propeller, a new concept in the design of marine propellers is described and additionally, a series of Air-Seal Stuffing Boxes for heavy commercial marine service are illustrated.

For a copy of folder LST 170, write to Marine Division, The Johnson Rubber Company, 16025 Johnson Street, Middlefield, Ohio 44062.

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Chessco Industries, Inc. Appoints Marjet International



Marjet officials shown above, left to right: **John T. Lemily**, consultant; **Thomas M. Finnican**, vice-president of sales; and **D.J. MacDougall**, president.

Marjet International Inc. has been appointed worldwide marine agent for Chessco CH-22, the most widely used fuel oil additive for overcoming the serious operational problems in high pressure boilers due to the presence of sulphur, vanadium and sodium in Bunker "C" residual fuel oil.

Louis Radler, president of Chessco Industries, Inc., Fairfield, Conn. announced the appointment, stating that "Chessco CH-22 is presently being used in almost 100 high pressure boilers of the major electric utilities. We therefore feel very fortunate having representation in the marine field by a knowledgeable and experienced organization familiar with all facets of marine boiler operation."

D.J. MacDougall, president, and **Thomas M. Finnican**, vice-president of sales at Marjet International Inc., stated that CH-22, a fuel oil ash-modifier, would be marketed under the name Marchess CH-22 which is a micron-sized particle dispersion of the highest purity magnesia and alumina in various ratios for the creation of a dry, self-removing type of boiler deposit. It is available in the United States and Europe. The sales office of Marjet International Inc. is at 705 Fourth Avenue, Brooklyn, N.Y., telephone: (212) 788-6974.

National River Academy Names Sheldon G. Held Advisory Board Chairman

Sheldon G. Held of New Orleans, has been elected chairman of the National River Academy Advisory Board. The announcement was made in Tampa, Fla., by Capt. **Noble Gordon**, chairman of the Education Committee of the academy.

About 20 persons representing the inland waterways industry, the Coast Guard, Corps of Engineers, marine insurance, marine surveying and related fields are members of the Advisory Board.

The group has responsibility for developing a curriculum to train personnel for work on the nation's river system. The Advisory Board will submit its recommendations to the Education Committee and the board of directors of the National River Academy.

Mr. Held, a 42-year-old marine surveyor for Bachrach & Woods, New Orleans, La., was formerly a marine instructor with the United States Army Transportation Corps. He conducted feasibility and curriculum studies for the National River Academy for three months in 1969 on a full-time basis. "The National River Academy is one of the most exciting proposals to come along in many years because it offers the chance for up-to-date modern training to persons in all phases of the inland

waterways industry," Mr. Held said.

Captain **Gordon** said he was very pleased with the selection of **Mr. Held** as chairman of the Advisory Board. "I have followed **Mr. Held's** activities in behalf of the National River Academy for the past several months and have been impressed with his dedication to this proposal," he stated. "Working with the other outstanding members of the Advisory Board, I am certain that they can and will develop an outstanding program."

The next board of directors meeting for the academy will be held at the Holiday Inn Rivermont in Memphis, Tenn. At that time, the board will act on reports of the Advisory Board, Education, Finance and Rules Committees. Offices for the National River Academy are located at 608 Cherry Street, Helena, Ark. 72342.

Milne Named VP-Engineering Of Specialty Ships Unlimited

Specialty Ships Unlimited, Inc., 1000 Vermont Avenue, N.W., Washington, D.C. 20005, has announced that **Edward G. Milne** has joined the firm as vice-president in charge of engineering. He has previously worked for the company as a consultant on the design of its mechanical oil-skimming equipment. He will continue as chief designer on this project. In addition, he will handle sales of certain marine products.

Mr. Milne was previously employed by Atlantic Research Corporation as a program manager and design engineer. He holds an M.E. degree from Cornell and is presently continuing his studies at George Washington University.

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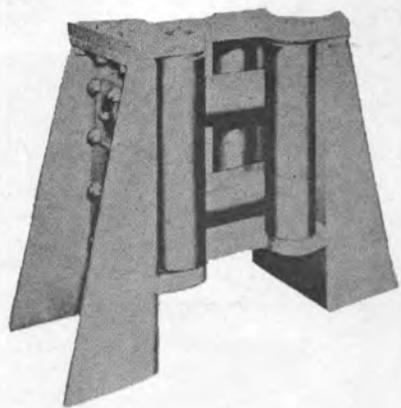
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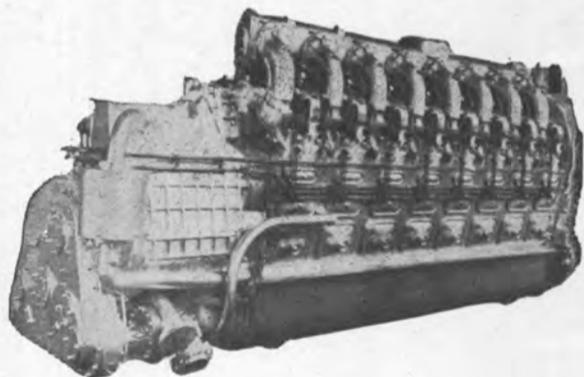


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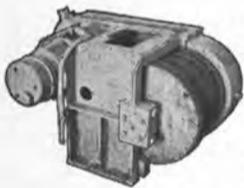
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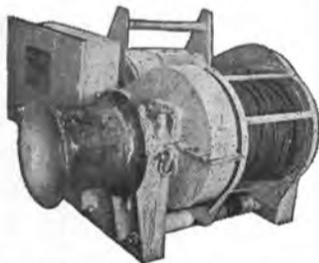
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Amercoat Corp., 201 N. Berry St., Brea, Calif. 92621
Enjoy Chemical Company, 60 West 49th St., New York, N.Y. 10020
Farboil Company, 90 West St., N.Y., N.Y. 10006
Norton Co., Protective Div., Worcester, Mass. 01606
Patterson-Sargent, P.O. Box 494, New Brunswick, N. J.
Sherwin Williams, 101 Prospect Ave. N.W., Cleveland, Ohio 44101
ISS Chemicals (Div. of U. S. Steel), P. O. Box 86, Pittsburgh, Pa.
Zinc-Lock Co., 6460 Hollis St., Emeryville, Calif. 94608

CONTAINERS—CONTAINER HANDLING SYSTEMS
Amercoat Corp., 201 N. Berry St., Brea, Calif. 92621
Dorsey Trailers, Elba, Alabama 36323
Lighter Aboard Ship, Inc., 225 Baronne St., New Orleans, La. 70112
Paceco, Div. Fruehauf Corp., P.O. Drawer E, Alameda, Calif. 94501
RPC Corp., Marine Sales, 200 Park Ave., New York, N.Y. 10017
Star Iron & Steel Co., 326 Alexander Ave., Tacoma, Wash. 98421
York Trailer Ltd., Corby, Northants, England

CONTAINER LASHINGS & COMPONENTS
American Engineered Products Co., Box 74, McKees Rocks, Pa. 15136
W. W. Patterson Co., 830 Brockett St., Pittsburgh, Pa. 15233
Pro Par Div. Fruehauf Corp., 10940 Harper Ave., Detroit, Mich. 48232

CONTROL SYSTEMS
Barber-Colman Co., Marine Prod. Div., Rockford, Ill.
General Electric Industry Control Dept., Salem, Virginia
Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
Todd Products, Div. of Todd Shipyards Corp., Brooklyn, N.Y. 11231

CORROSION CONTROL
Amercoat Corp., 201 N. Berry St., Brea, Calif. 92621
Corrosion Dynamics, 1100 Walnut St., Roselle, N.J. 07203
Radiator Specialty Co., 1400 Independence Blvd., Charlotte, N.C. 28205

CRANES—HOISTS—DERRICKS—WHIRLEYS
ASEA Marine, Rep. in U.S.A. by Stal-Laval, Inc., 147 E. 50th St., N.Y. 10022
Hoffman Rigging & Crane Service, 560 Cortlandt St., Belleville, N.J. 07109
Kocks Pittsburgh Corp., Four Gateway Center, Pittsburgh, Pa. 15222
Lidgerwood Mfg. Co., (Superior Lidgerwood Mundy Corp.), 7 Dey Street, N.Y., N.Y. 10007
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany
Paceco, Div. Fruehauf Corp., P.O. Drawer E, Alameda, Calif. 94501
Hensen-Rotterdam, P.O. Box 5040, Rotterdam, Holland
Star Iron & Steel Co., 326 Alexander Ave., Tacoma, Wash. 98401

DECK COVERS (METAL)
Lockstad Co., Inc., 179 W. 5th Street, Bayonne, New Jersey 07002
Marine Moisture Control Co., 39 Redfern Ave., Inwood, L.I., N.Y.

DECK MACHINERY—Cargo Handling Equipment
ASEA Marine, Rep. in U.S.A. by Stal-Laval, Inc., 147 E. 50th St., N.Y. 10022
Beebe Bros., Inc., 2724 - 6th Avenue So., Seattle, Wash. 98134
Blackburn Marine Equipment, 6105 England St., Houston, Tex. 77021
Lidgerwood Mfg. Co., (Superior Lidgerwood Mundy Corp.), 7 Dey Street, N.Y., N.Y. 10007
Markey Machinery Co., Inc., 79 S. Horton St., Seattle, Wash. 98134
Nashville Bridge Co., P.O. Box 239, Nashville, Tenn. 37202
Red Fox Machine & Supply Co., P.O. Drawer 640, New Iberia, La. 70560
Smith-Berger Mfg. Corp., 3236 16th Ave. S.W., Seattle, Wash. 98134
Howard Turner Mfg. Co., 2545 Palm Drive, Signal Hill, Calif. 90806
A. G. Weser, Seebeckwerft, 285 Bremerhaven 1, Germany
Western Gear Corp., Heavy Machinery Div., Everett, Wash. 98201

DIESEL ACCESSORIES
Golfen Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231
Kiene Diesel Accessories, Inc., P.O. Box 216, Franklin Park, Ill. 60131

DIESEL ENGINES
Alco Engine, Inc., Auburn, N.Y.
Bruce GM Diesel, Inc., U.S. Route 46 at Savoy St., Lodi, N.J. 07644
Caterpillar Tractor Co., Industrial Div., 100 N.E. Adams St., Peoria, Ill. 61602
Colt Industries Inc., Fairbanks Morse Power Systems Div., Beloit, Wisc. 53511
Electro-Motive Division General Motors, La Grange, Illinois 60525
Fiat, Turin, Italy, U.S.A. 375 Park Ave., New York, N.Y. 10022
Golfen Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany
Stark Dieselmotoren, Kromhout Motoren, P.O. Box 4196, Amsterdam, Holland.

DIESEL ENGINE MUFFLERS
Marine Products & Engineering Co., 20 Vesey St., New York, N.Y. 10007

DOORS—Watertight—Bulkhead
Cornell-Carr Co., Inc., Monroe, Conn. 06468
Overbeke-Kain Co., 209 Aurora Rd., Bedford, Ohio 44014
Walz & Krenzer, Inc., 20 Vesey St., New York, N.Y. 10007

ELECTRICAL EQUIPMENT
Arnessen Electric Co., Inc., 335 Bond St., Brooklyn, N.Y.
Galbraith-Pilot Marine Corp., 600 4th Ave., Brooklyn, N.Y. 11215
L. F. Gaubert & Co., 700 So. Broad St., New Orleans, La. 70150
Oceanic Electrical Mfg. Co., Inc., 148 Perry Street, N.Y. 10004
Pauluhn Electric Mfg. Co., Inc., 422 Broome St., New York 10013

EVAPORATORS
Aqua-Chem, Inc., 225 N. Grand Ave., Waukesha, Wis. 53186
Bethlehem Steel Corp., Shipbuilding, 25 B'way, N.Y., N.Y. 10004
Drew Chemical Corp., Marine Div. sub. Slick Corp., 522 Fifth Ave., N.Y. 10016
Mechanical Equipment Co., Inc., 861 Carondelet St., New Orleans, La. 70130

FITTINGS & HARDWARE
H. M. Hillman Brass & Copper, Inc., 2345 Maryland Road, Willow Grove, Pa. 19090
hi-shear Corp., 2600 Skypark Drive, Torrance, Calif. 90509
Nashville Bridge Co., P.O. Box 239, Nashville, Tenn. 37202
Robvon Backing Ring Co., 675 Garden St., Elizabeth, N.J. 07207

FLOATING EQUIPMENT—Steel—Aluminum Pontoons
Dravo Corporation, Neville Island, Pittsburgh 25, Pa.

GALLEY RANGES
Elisha Webb & Son Co., 136 So. Front St., Philadelphia, Pa. 19106

HEAT EXCHANGERS
Aqua-Chem, Inc., 225 N. Grand Ave., Waukesha, Wis. 53186

HEATERS—Ship
Todd Products, Div. of Todd Shipyards Corp., Brooklyn, N.Y. 11231
Valad Elec. Heating Co., 71 Cortlandt St., Tarrytown, New York

HYDRAULICS
Bird Johnson Co., 883 Main St., Walpole, Mass. 02081
Bond Hydraulics Equipment Service Inc., 9264 Kennedy Blvd., North Bergen, N.J. 07047

INSULATION—Marine
Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Brklyn, N.Y. 11231

LININGS
Amercoat Corporation, Brea, Calif. 92621

MACHINE SHOP—TROUBLE SERVICE
Golfen Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231

MARINE DRIVES—GEARS
Hydro Drive Corp., 4420 - 14th Ave. N.W., Seattle, Wash. 98107
Philadelphia Gear Corp., Schuykill Expressway, King of Prussia, Pa. 19406
Western Gear Corp., Industrial Products Div., P.O. Box 126, Belmont, Calif. 94003

MARINE NAVIGATION EQUIPMENT & AIDS
American Hydromath Co., 2020 Jericho Tpke, New Hyde Park, N.Y. 11040
Dyne Electronics Corp., 75 Maxess Road, Melville, N.Y. 11746
ITT Decca Marine, Inc., 386 Park Ave. South, New York, N.Y. 10016
ITT Mackay Marine, 133 Terminal Ave., Clark, N.J. 07066
Marquardt Corp., 16555 Saticoy St., Van Nuys, Calif. 91406
National Marine Service, 1750 So. Brentwood Blvd., St. Louis, Mo
Radiomarine Corp., 20 Bridge Avenue, Red Bank, N.J. 07701
RCA Service Co., A Division of RCA, Marine Communications and Navigation Equipment Service, Bldg. CHIC-225, Camden, N.J. 08101
Satellite Positioning Corp., 16033 Ventura Blvd., Los Angeles, Calif. 91316
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

MARINE EQUIPMENT
Adco Div., 34 Milburn St., Buffalo, N.Y. 14212
Beaver Tool & Machine Co., P.O. Box 94717, 525 S.E. 29th St., Oklahoma City, Okla. 73109
Chas. Lowe Co., 6340 Christie Ave., Emeryville, Calif. 94608
Nicolai Jaffe Corp., P.O. Box 2445, 445 Littlefield Ave., So. San Francisco, Calif. 94080
Kearfott Marine (Div. of The Singer Co.) 21 West St., New York, N.Y. 10006
Marine One, P.O. Box 1657, Morgan City, La. 70380
Pacific Coast Eng. Co., P.O. Drawer E, Alameda, Calif. 94506
Sky Climber, Inc., Div. Western Gear, 17311 S. Main St., Gardena, Calif. 90247
Stow Mfg. Co., 225 Shear St., Binghamton, N.Y. 13902
Vokes Filter Div. (Cardwell Machine Co.), Cardwell and Castlewood Rd., Richmond, Va. 23221
Thomas C. Wilson, Inc., 21-11 44th Ave., L.I.C., N.Y. 11101

MARINE FURNITURE
Bailey Joiner Co., 115 King Street, Brooklyn, N.Y. 11231
Rex Cabinet Co., 531 23rd St., Union City, N.J. 07087

MARINE INSURANCE
Adams & Porter, Cotton Exchange Bldg., Houston, Texas
Midland Insurance Co., 29 Broadway, New York, N.Y. 10006

MARINE PROPULSION
Combustion Engineering, Inc., Windsor, Connecticut 06095
De Laval Turbine, Inc., 853 Nottingham Way, Trenton, N.J. 08602
Murray & Tregurtha, Inc., 2 Hancock St., Quincy, Mass. 02171
Port Electric Turbine Div., 155-157 Perry St., New York 10014
Stal-Laval, Inc., 147 E. 50th St., New York, N.Y. 10022
Western Gear Corp., Precision Products Div., P.O. Box 190, Lynwood, Calif. 90262

MARINE RADIO COMMUNICATIONS EQUIPMENT
Collins Radio Co., M/S 416-118, Dallas, Texas 75207
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
E. F. Johnson Corp. Waseca, Minn. 56093
Radiomarine Corp., 20 Bridge Avenue, Red Bank, N.J. 07701
Raytheon Marine Products Operation, 213 East Grand Avenue, South San Francisco, California 94080
RCA Service Co., A Division of RCA, Marine Communications and Navigation Equipment Service, Bldg. CHIC-225, Camden, N.J. 08101

NAVAL ARCHITECTS AND MARINE ENGINEERS
BG Marine Services, Div. of Gange Industries, Inc., 4419 Van Nuys Blvd., Sherman Oaks, Calif. 91403
Breit Engng. Inc., 441 Gravier St., New Orleans, La. 70130
Jock Casey, Drawer Q, Lake Arthur, La. 70549
Commercial Radio Sound Corp., 652 First Avenue, N.Y., N.Y. 10016
Crandall Dry Dock Engineers, Inc., 238 Main St., Cambridge 42, Mass
Cushing & Nordstrom, 50 Trinity Place, New York, N.Y. 10006
Design Associates, Inc., 3308 Tulane Ave., New Orleans, La. 70119
Designers & Planners, Inc., 114 Fifth Ave., New York, N.Y. 10011
M. Mack Earle, 103 Mellor Ave., Baltimore, Md. 21228
Christopher J. Foster, 17 Battery Place, New York, N.Y. 10004
14 Vanderventer Ave., Port Washington, N.Y. 11050
Friede and Goldman, Inc., 225 Baronne St., New Orleans, La. 70112
Gibbs & Cox, Inc., 21 West St., New York, N.Y. 10006
Morris Gurolnick, Associates, Inc., 583 Market St., San Francisco, Calif. 94105
W. R. Henderson & Co., 3611 Revere, Houston, Texas 77006
J. J. Henry Co., Inc., 90 West St., New York, N.Y. 10006
L. K. Homer, Box 408, Corona Del Mar, California 92625
James S. Kroger, 1460 Brickell Ave., Miami, Fla. 33131
Littleton Research and Engineering Corp., 95 Russell Street, Littleton, Mass. 01460
Robert H. Macy, P.O. Box 758, Pascagoula, Miss. 39567
Marine Applications Co., Inc., P.O. Box 167, Mineola, N.Y. 11502
Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, Ohio 44114
Marine Design Inc., 1180 Ave. of Americas, N.Y., N.Y. 10036
Maritech, Inc., 38 Union Sq., Somerville, Mass. 02143
Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225
John J. McMullen Associates, Inc., 100 Wall St., New York, N.Y. 10005
George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
Metritape, Inc., 77 Commonwealth Ave., West Concord, Mass. 01781
Robert Moore Corp., 350 Main St., Port Washington, N.Y. 11050
Gunnar Nelson, 2185 Lemoine Ave., Ft. Lee, N.J. 07024
Pearson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida 33156
Philip L. Rhodes, Inc., 369 Lexington Ave., New York, N.Y. 10017
M. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013 and 45 Second St., San Francisco, Calif.
George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007

T. W. Spaetgens, 156 West 8th Ave., Vancouver 10, Canada
 Philip F. Spaulding & Associates, 65 Marion St., Seattle, Wash. 98104
 Specialty Ships Unlimited Inc., 1000 Vermont Ave., N.W., Wash-
 ington, D.C. 20005
 The Stanwick Corporation, 1401 Wilson Blvd., Arlington, Va. 22209
 R. A. Stearn, Inc., 100 Iowa St., Sturgeon Bay, Wisc. 54235
 Richard R. Taubler, 44 Court St., Brooklyn, N.Y. 11201
 H. M. Tiedemann & Co., Inc., 74 Trinity Pl., New York, N.Y. 10006

OIL PURIFIERS—Repair
 Peck Equipment Co., 3500 Elm Avenue, Portsmouth, Virginia 23704

OILS—Marine—Additives
 Esso International Inc., Esso Bldg., 15 West 51 St., New York, N.Y.
 Gulf Oil Trading Co., 1290 Ave. of the Americas, New York, N.Y.
 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

PAINT—Marine—Protective Coatings
 Amercoat Corp., 201 N. Berry St., Brea, Calif. 92621
 Devco & Reynolds, Subsidiary Celonese Coats Co., 224 E. Broadway,
 Louisville, Ky. 40201
 Enjay Chemical Co., 60 West 49th St., New York, N.Y. 10020
 Farball 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

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

PLASTICS—Marine Applications
 Amercoat Corp., 201 N. Berry St., Brea, Calif. 92621
 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
 Specialty Ships Unlimited Inc., 1000 Vermont Ave., N.W., Wash-
 ington, D.C. 20005

PROPELLERS—New and Reconditioned
 Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
 Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
 Bird-Johnson Co., 883 Main Street, Walpole, Mass. 02081
 Federal Propellers, 1501 Buchanan Ave. S.W., Grand Rapids, Mich.
 49502
 Marine Propulsion Engr. Inc., Statler Office Bldg., Boston, Mass.
 02116

PUMPS
 Colt Industries, Inc., Fairbanks Morse Pump & Electric Div., 3601
 Kansas Ave., Kansas City, Kansas 66110
 Gilbarco, Inc., Greensboro, N.C. Carolina 27420
 Gaulds Pumps, Seneca Falls, N.Y. 13148
 Worthington Corporation, Harrison, New Jersey 07029

RATCHETS
 American Engineered Products Co., Box 74, McKees Rocks, Pa. 15136

REFRIGERATION—Refrigerant Valves
 Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
 Frigtemp Corp., 329 Herzl St., Brooklyn, N.Y. 11212
 York Corp., Grantley Road, York, Pa. 17405

ROPE—Manila—Nylon—Hawser—Wire
 American Mfg. Co., Inc., Noble & West Sts., Brooklyn, N.Y. 11222
 Cating Rope Co., 309 Genesee St., Auburn, N.Y. 13022
 Columbian Rope Co., 309 Genesee St., Auburn, N.Y. 13022
 Jackson Rope Corp., 9th & Oley, Reading, Pa. 19604
 Tubbs Cordage Company, P.O. Box #709, Orange, Calif. 92669
 Wall Rope Works, Inc., Beverly, N. J. 08010

RUBBER PRODUCTS—Dock Fenders, Hoses, Life Preservers
 Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
 La Favorite Rubber Mfg. Co., 275 Wagaraw Rd., Hawthorne, N. J.
 07507

RUBBER ANGLE INDICATORS
 Electric Tachometer Corp., 68th & Upland Street, Phila., Pa. 19142
 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
 Giffen Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231
 La Favorite Rubber Mfg. Co., 275 Wagaraw Rd., Hawthorne, N. J.
 07507
 Syntron, a division of FMC Corp., 398 Lexington Ave., Homer City,
 Pa. 15748

SEARCHLIGHTS
 Portable Light Co., Inc., 67 Passaic Ave., Kearny, N.J. 07032
 Snelson Oilfield Lighting Co., 1201 E. Daggett St., Forth Worth,
 Texas 76104

SEWAGE DISPOSAL
 Youngstown Welding & Engineering Co., 3708 Oakwood Ave.,
 Youngstown, Ohio 44509

SHAFT REVOLUTION INDICATOR EQUIP.
 Electric Tachometer Corp., 68th & Upland Sts., Phila., Pa. 19142

SHIPBREAKING—Salvage
 The Boston Metals Co., 313 E. Baltimore, Md. 21202
 National Metal & Steel Corp., 1251 New Dock St., Terminal Island,
 Cal. 90731

SHIP BROKERS
 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

SHIPBUILDING—Repairs, Maintenance, Drydocking
 Albina Engine & Machine Works, 2100 N. Albina Ave.,
 Portland, Ore. 97227
 Armo 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
 Beillard Murdoch S. A., Kattendijkdok Westkaai 21, Antwerp, Belgium
 Bender Ship Repair, Inc., 265 So. Water St., Mobile, Ala. 36602
 Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
 Blount Marine Corp., P.O. Box 360, Warren, Rhode Island 02885
 Conrad Industries, P.O. Box 790, Morgan City, La. 70380
 Detyens Shipyards, Inc., Route 2, Box 180, Mt. Pleasant, So.
 Carolina 29464
 DeVries Lentsch-Leopold, Inc., 275 Via Rosada, Royal Palm Plaza,
 Boca Raton, Fla. 33432
 Dillingham Corp., P.O. Box 3288, Honolulu, Hawaii 96801
 Dravo Corporation, Neville Island, Pittsburgh 25, Pa.
 Equitable Equipment Co., Inc., 410 Camp St., New Orleans, La. 70130
 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 6, N.Y.
 Groggnard 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
 Harbor Boat Building Co., 258 Cannery St., Terminal Island, Calif.
 Hillman Barge & Construction Co., Grant Bldg., Pittsburgh 19, Pa.

Hitachi Shipbuilding Co., 25 Nakanoshima 2-chome Kitaku, Osaka-Japan
 Industrial Steel & Mach. Works, Inc., P.O. Box 2217, Gulfport,
 Miss. 39501

Ishikawajima-Harima Heavy Industries Co., Ltd., 50 Broad Street
 New York, N.Y. 10004
 Jacksonville Shipyards, 644 E. Bay St., Jacksonville, Fla.
 Jeffboat, Inc., Jeffersonville, Ind. 47130

Kawasaki Dockyard Co., 8 Kaigan-dori, Ikuta-ku, Kobe, Japan
 Kockums Malmo, Fack, Malmo, Sweden
 LISNAVE, P.O. Box 2138, Lisbon, Portugal
 Litton Industries, 9920 W. Jefferson Blvd., Culver City, Calif. 90230
 Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W.,
 Seattle, Wash. 98134

Marine Industries, Ltd., 1405 Peel St., Montreal 2, Quebec
 Matton Shipyard Co., Inc., P.O. Box 428, Cohoes, New York 12047
 Mitsui Shipbuilding & Eng. Co., Ltd., Nihonbashi-Muromachi, Chue-
 ku, Tokyo, Japan

Nashville Bridge Co., P.O. Box 239, Nashville 1, Tenn.
 National Steel & Shipbuilding Corp., San Diego 12, Cal.
 Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
 Nippon Kokan Kabushiki Kaisha, 2, 1-chome, Otemachi, Chivoda-ku,
 Tokyo, Japan

Northwest Marine Iron Works, P.O. Box 3109, Swan Island, Port-
 land, Oregon 97208
 O.A.R.N. (officine Allestimento e Riparazioni Navi) Genoa, Italy
 Paceco, Div. Fruehauf Corp., P.O. Drawer E, Alameda, Calif. 94501
 Pearson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Fla. 33156
 Perth Amboy Dry Dock Co., Perth Amboy, N.J.
 Rodermond Industries, Foot of Henderson St., Jersey City, N.J. 07302
 L. Rodriguez Shipyard, 24 Mole Norimberga, Messina, Italy.
 St. Louis Shipbuilding—Federal Barge, Inc.
 611 East Marceau, St. Louis 11, Mo.

Sasebo Heavy Industries Co., Ltd., New Ohtemachi Bldg., Chiyoda-
 ku, Tokyo, Japan
 Sumitomo Shipbuilding & Machy. Co., Ltd. 2-1 Ohtemachi 2-chome,
 Chiyoda-ku, Tokyo, Japan
 Tampa Ship Repair & Dry Dock Co., Inc., P.O. Box 1277,
 Tampa, Florida 33601

Todd Shipyards Corp., 1 Broadway, New York City
 Zigler Shipyards Inc., P.O. Box 492, Jennings, Louisiana 70546

SHIP MODELS
 Boucher-Lewis Precision Models, Inc., 36 E. 12 St., N.Y., N.Y. 10003
 Yankee Shipwrights, Route 4, Wayzata, Minn. 55391

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
 Lidgerwood Mfg. Co., (Superior Lidgerwood Mundy Corp.), 7 Day
 Street, New York, N.Y. 10007
 Maritech, Inc., 38 Union Sq., Somerville, Mass. 02143
 John J. McMullen Associates, Inc., 17 Battery Pl., N.Y., N.Y. 10004
 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
 Hose McCann Telephone Co., Inc., 524 23rd St., N.Y. 10011

TOWING—Lighterage, Transportations, Barge Chartering
 American Waterways, 1250 Connecticut Ave., Washington, D.C.
 20036
 M. J. Batty & Co., P.O. Box 2316, Singapore, 1
 Bay-Houston Towing Co., 805 World Trade Bldg., Houston,
 Texas 77002
 Curtis Bay Towing Co., Mercantile Bldg., Baltimore 2, Md.
 G & H Towing Company, 509 Texas Building, Galveston, Texas 77550
 Henry Gillen's Sons Lighterage, 140 Cedar St., New York, N.Y. 10006
 James Hughes, Inc., 17 Battery Pl., New York, N.Y.
 Jackson Marine Corp., P.O. Box 1087, Aransas Pass, Texas 78336
 McAllister Bros., Inc., 17 Battery Pl., New York, N.Y.
 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, N.Y.
 L. Smit & Co., 11 Broadway, New York 4, N.Y.
 Suderman & Young Towing Co., 329 World Trade Center, Houston,
 Texas 77002
 M. & J. Tracy, Inc., 1 Broadway, New York, N.Y.
 Turcaco Coastal and Harbor Towing Corp., 1752 Shore Parkway,
 Brooklyn, N.Y.
 Vancouver Tug Boat Co., Ltd., 10 Pemberton Ave., No. Vancouver,
 B.C., Canada

VALVES AND FITTINGS—Hydraulic—Safety Flanges
 Empire Machinery & Supply Co., 3550 Virginia Beach Blvd., Nor-
 folk, Va. 23501
 Hooper Valve & Engineering Corp., 24th St. & Virginia Ave.,
 Newport News, Va.
 Hubeva Marine Plastics-Lining, 435 Hamilton Ave., Brooklyn 31, N.Y.
 Hydrosarch Co., Inc., Rive Rd., Annapolis, Md. 21401
 Marine Moisture Control Co., 39 Redfern Ave., Inwood 96, L.I., N.Y.
 Mechanical Marine Company, 45-15 37th St., Long Island City, N.Y.
 Todd Products, Div. of Todd Shipyards Corp.,
 Halleck St., Brooklyn, N.Y. 11231

WINCHES
 Skagit Corp., Box 151, Sedro Woolley, Wash. 98284

WIRE ROPE
 Armo Steel Corp., 703 Curtis St., Middletown, Ohio 45042
 Bethlehem Steel Corp., Bethlehem, Pa. 18018
 Don R. Hinderliter, Inc., 1240 No. Howard, Tulsa, Okla. 74104
 United States Steel Corp., P.O. Box 86, Pittsburgh, Pa. 15230

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

M.G. SETS



UNUSED SURPLUS 1 KVA SETS

INPUT: 1.75 HP—115 Volts DC—17 amps—
 1800 RPM. OUTPUT: 1 KVA—115 volts—8.7
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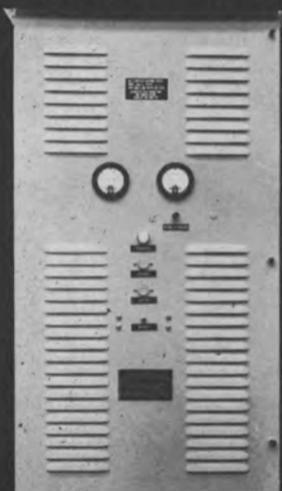
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March, 1970. San Francisco's big drydock is being fabricated in quarter-sections. Here, the first two have been mated, and the half-dock unit is ready to be joined by the remaining two sections after their completion and launching. The finished dock will then be moved to its mooring basin, now being dredged at the site of the yard's old Pier Six. Bay Bridge is in background.

America's Largest Floating Drydock will be ready in September

Bethlehem's San Francisco Yard is now scheduling dock time on its new, super-size floating drydock. With a length of 900 ft over the aprons, a breadth of 150 ft between wing-walls, and a lifting capacity of 65,000 tons, the dock will be big enough to handle most tankers in the 150,000-dwt class, and some as large as 230,000-dwt—a capability unmatched by any other floating dock in America.

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San Francisco Harbor— San Francisco Yard	450	402	80	6,500
	542	472	84	11,400
	654	584	100	22,250
Ready in September:	900	800	150	65,000
Los Angeles Harbor— San Pedro Yard	516	460	90	15,000
	659	587	97	22,000

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