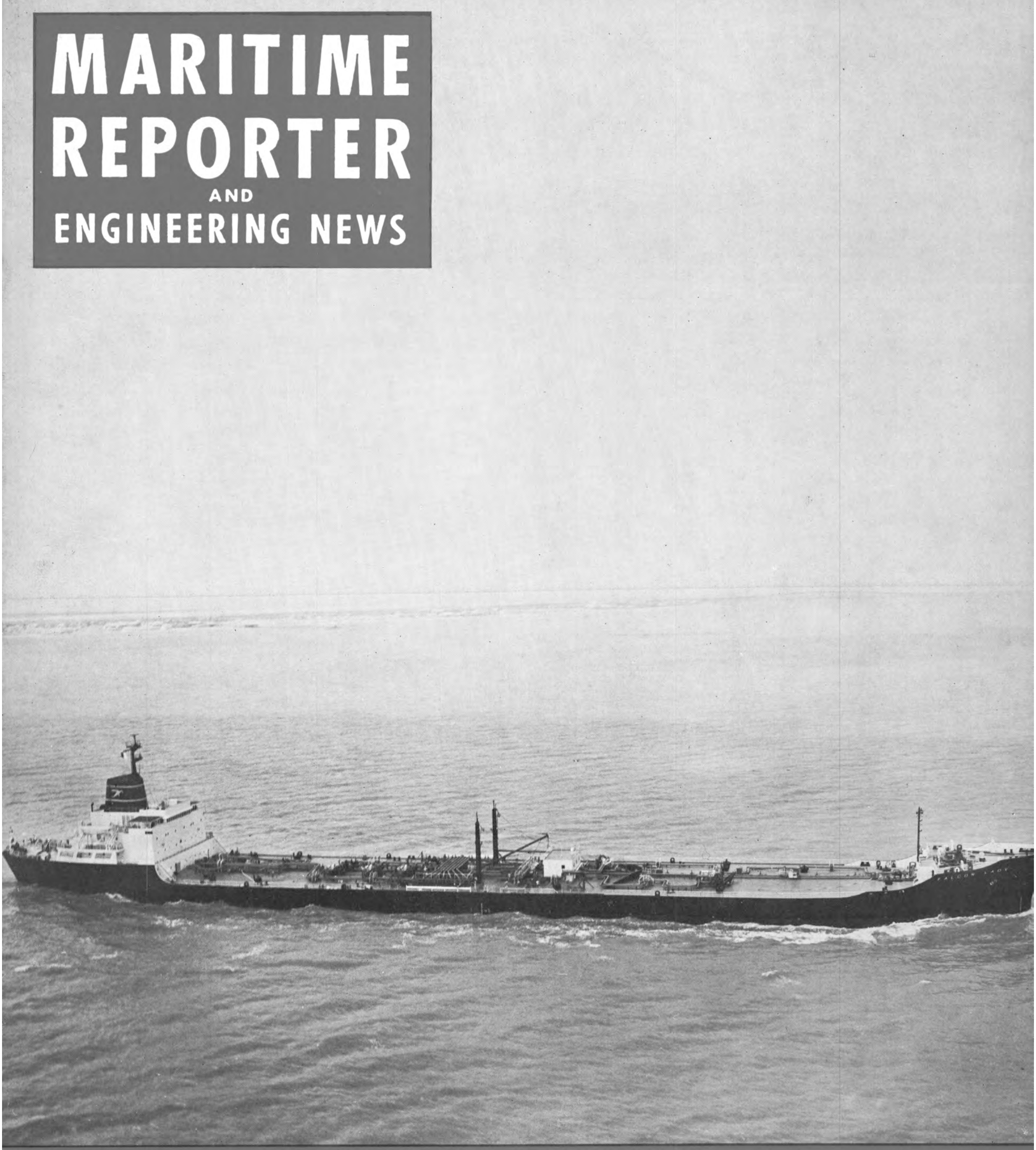
MARITIME REPORTER
AND
ENGINEERING NEWS



Ingalls Delivers First Of Four Falcon Tankers Powered By Colt Pielstick Diesel Engines —Largest U.S.-Built Oceangoing Diesel Ships
(SEE PAGE 7)

SNAME Spring Meeting Program
(SEE PAGE 24)

MAY 1, 1971

1800 miles on a sheet of ice.

Early in 1914, Sir Ernest Shackleton set out to cross the South Pole on foot. He planned to march two thousand miles with men and supplies after leaving his ship, the *Endurance*, in the Weddell Sea.

But the ship caught in the ice, broke up, and Shackleton, stranded now, had to find some other way to get back to civilization, at this point more than a thousand miles away.

Solution: He transferred his men to the largest available ice floe, hoping it would drift far enough, fast enough.

They drifted for a year and a half and covered 1800 miles, reaching Elephant Island just when the ice floe was breaking up.

Most of the men could travel no further but Shackleton, after constructing a makeshift lifeboat, took five volunteers on an eight-hundred-mile journey across the Scotia Sea, arriving on the island of South Georgia on May 10th, 1916.

The explorer then led rescue expeditions back to Elephant Island and not a single man under his command perished.

This advertisement, prepared by Gulf Oil, a leading supplier of quality marine fuels and lubricants, is one of a series paying tribute to the great explorers of the sea. It is published in the interest of the shipping industry and those associated with it.

Gulf

GULF OIL TRADING COMPANY,
NEW YORK, N.Y. U.S.A.

Three mighty important ladies in New York Harbor affairs.

The one in the background needs no introduction. The two in front can introduce new speed and efficiency to your towing, docking, and undocking. They're the Jane McAllister and Grace McAllister, two of the newest supertugs in the Balanced Fleet. McAllister Brothers, Inc., Towing and Transportation, 17 Battery Place, New York, N. Y. Serving the ports of New York, Norfolk, Philadelphia, Montreal, Victoria, Vancouver, and San Juan, Puerto Rico.

Bouchard Orders 100,000-BBL Barge From Gretna Machine

Bouchard Transportation Co., New York, N.Y., has ordered a 100,000-bbl barge from Gretna Machine and Iron Works, Harvey, La. The vessel will measure 340 feet by 70 feet by 27 feet 6 inches and is scheduled for delivery late this summer.

Title XI Approved For Central Gulf's Ships And Barges

The Maritime Adminstration has approved in principle the application of Central Gulf Steamship Corporation, New Orleans, La., for Title XI insurance to assist the financing of three LASH-type vessels and approximately 600 related barges.

Corps Of Engrs. Asks Bids For Construction Of 3 Steel Oil Barges

On or about May 25, 1971, the Corps of Engineers, 2nd and Chestnut Streets, Philadelphia, Pa., will open bids for the construction of three steel oil barges. Interested bidders should refer to IFB DACW61-71-B0084.

The vessels, measuring 195 feet by 35 feet by 11 feet each, are to be delivered to the U.S. Army Engineer Service Base, St. Louis, Mo., within 180, 210 and 240 days.

NSSC Sends Particulars On Patrol Escort Ships To Nine Shipyards

Alabama Dry Dock & Shipbuilding Co., Defoe Shipbuilding Co., General Dynamics-Quincy Shipbuilding Division, Levingston Shipbuilding Co., Newport News Shipbuilding & Dry Dock Co., Peterson Builders, Inc., The American Ship Building Co., Todd Shipyards-Seattle, and Willamette Iron & Steel Co. have been sent specifications (IFB N00024-71B-0561) by the Naval Ship Systems Command, Washington, D.C., for the construction of patrol escort F-PF-108-class vessels.

Harvey Gamage Ship Building Steel Dragger For Dorothy M. O'Hara

Dorothy M. O'Hara, Inc., Rockland, Maine, has had a construction subsidy application approved by the Maritime Administration. This application in the amount of $229,547 will aid in the construction of a steel dragger. Harvey Gamage Shipbuilders, Inc. of South Bristol, Maine, have been awarded the contract for building the vessel.

MARITIME REPORTER AND ENGINEERING NEWS
No. 9 Volume 33

107 EAST 31st STREET
NEW YORK, N. Y. 10016

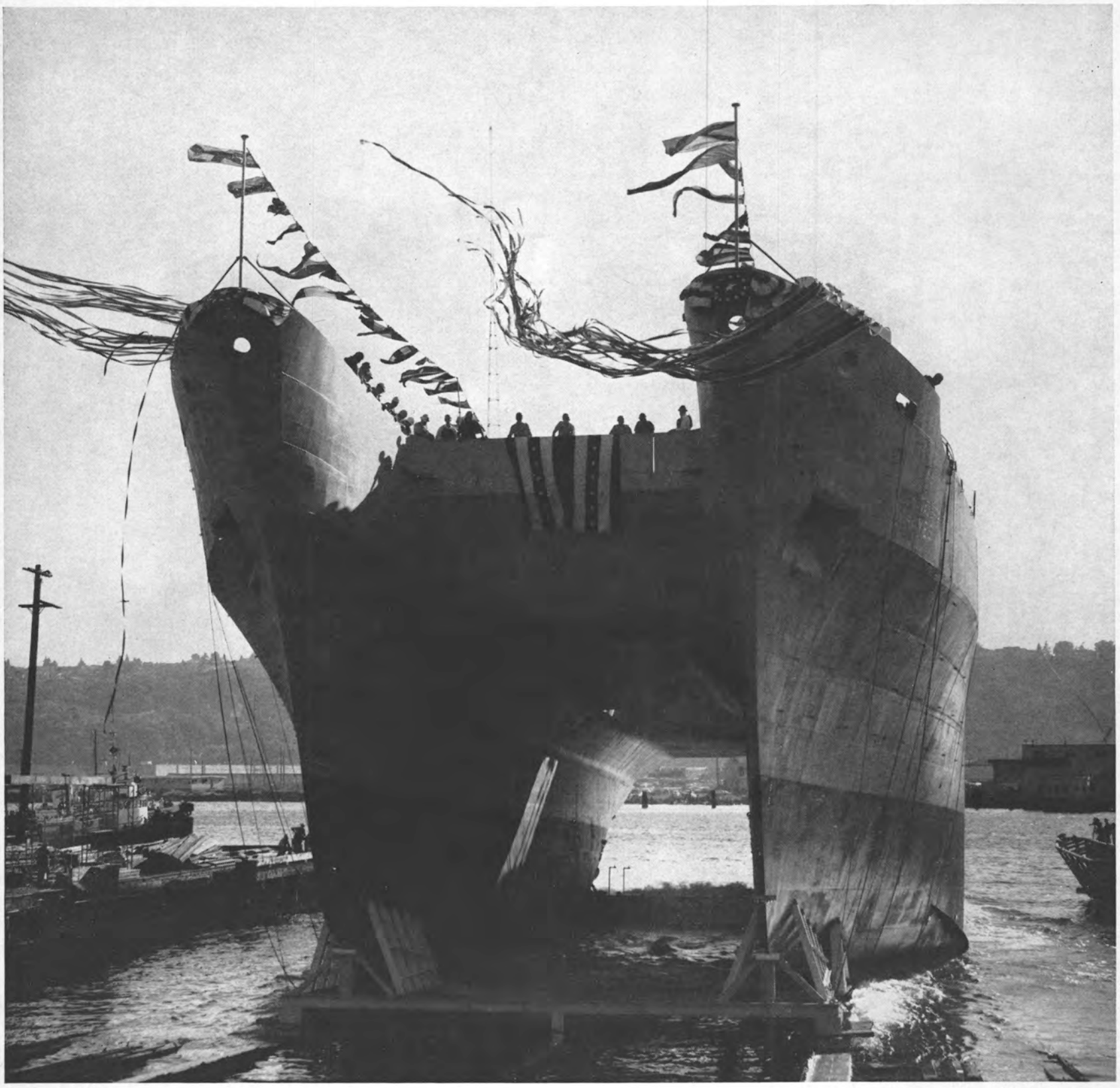
MUrray Hill 9-3266, 3267, 3268, 3269

ESTABLISHED 1939

Maritime Reporter/Engineering News is published the 1st and 15th of each month by Maritime Activity Reports, Inc., with executive, advertising and editorial offices at 107 East 31st Street, New York, N. Y. 10016; publishing office at 41 First Street, Hoboken, New Jersey 07030

Controlled Circulation postage paid at Hoboken, New Jersey 07030

Member BPA
Business Publications Audit of Circulation, Inc.



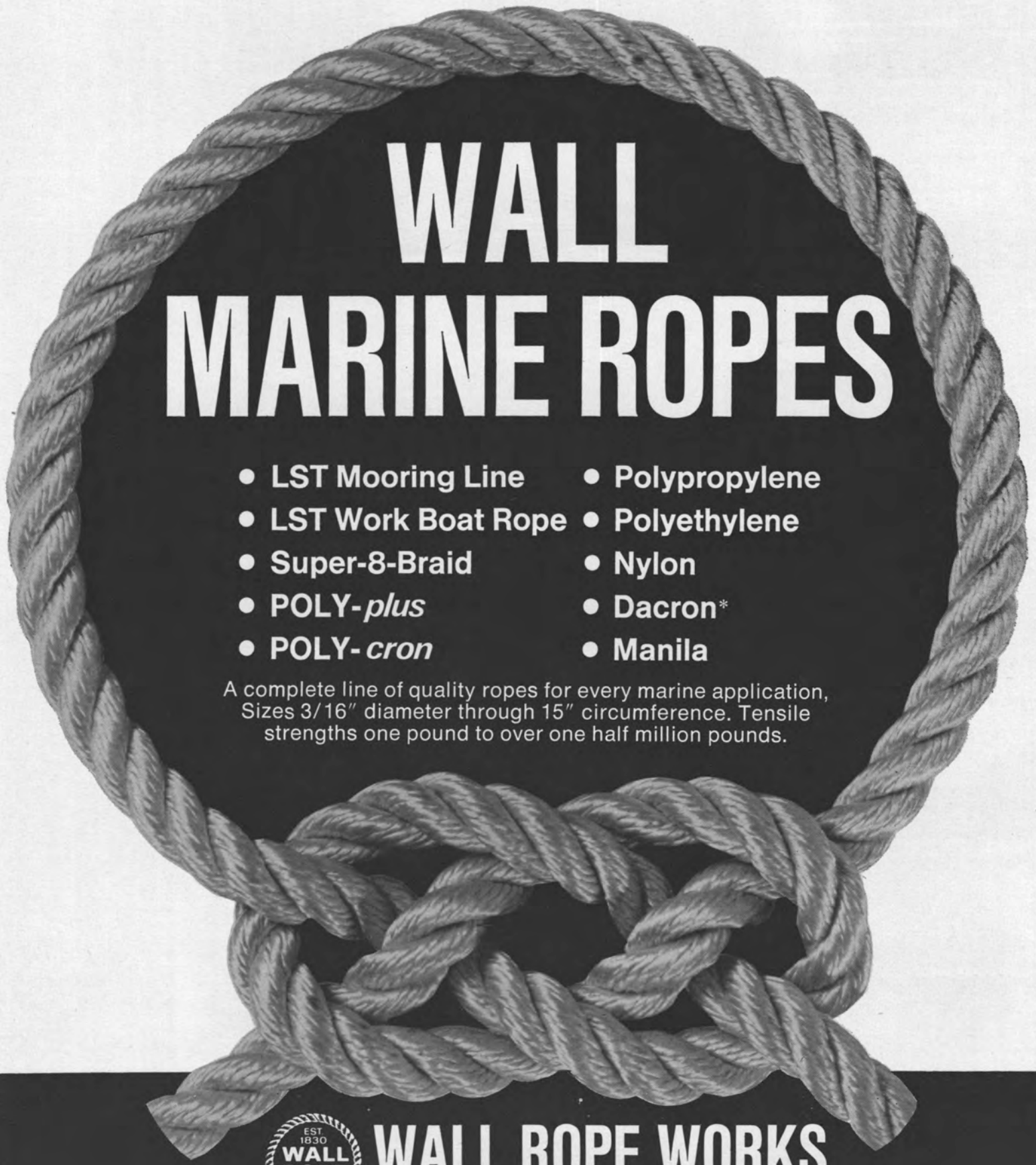
This vessel is brand new... it's also 1,000 years old

The double-hull principle used by early Polynesians is now being applied to the new T-AGOR-16 catamaran you see above. Built for the Navy by Todd, she is the largest, most technologically advanced of America's oceanographic research vessels.

The shipbuilding business is one of the oldest in the world . . . but the importance of ships is still so great that they participate in the most modern ventures of man. Todd is proud to play a part in the conquering of inner space . . . a world even more unknown to us at present than the moon.

Executive offices: One Broadway, New York, N. Y. 10004. (212) 344-6900. Cable "Robin" New York.

TODD
SHIPYARDS CORPORATION
SHIPYARDS: Brooklyn • New Orleans • Galveston
Houston • Los Angeles • San Francisco • Seattle



WALL MARINE ROPES

- LST Mooring Line
- LST Work Boat Rope
- Super-8-Braid
- POLY-*plus*
- POLY-*cron*
- Polypropylene
- Polyethylene
- Nylon
- Dacron*
- Manila

A complete line of quality ropes for every marine application, Sizes 3/16″ diameter through 15″ circumference. Tensile strengths one pound to over one half million pounds.

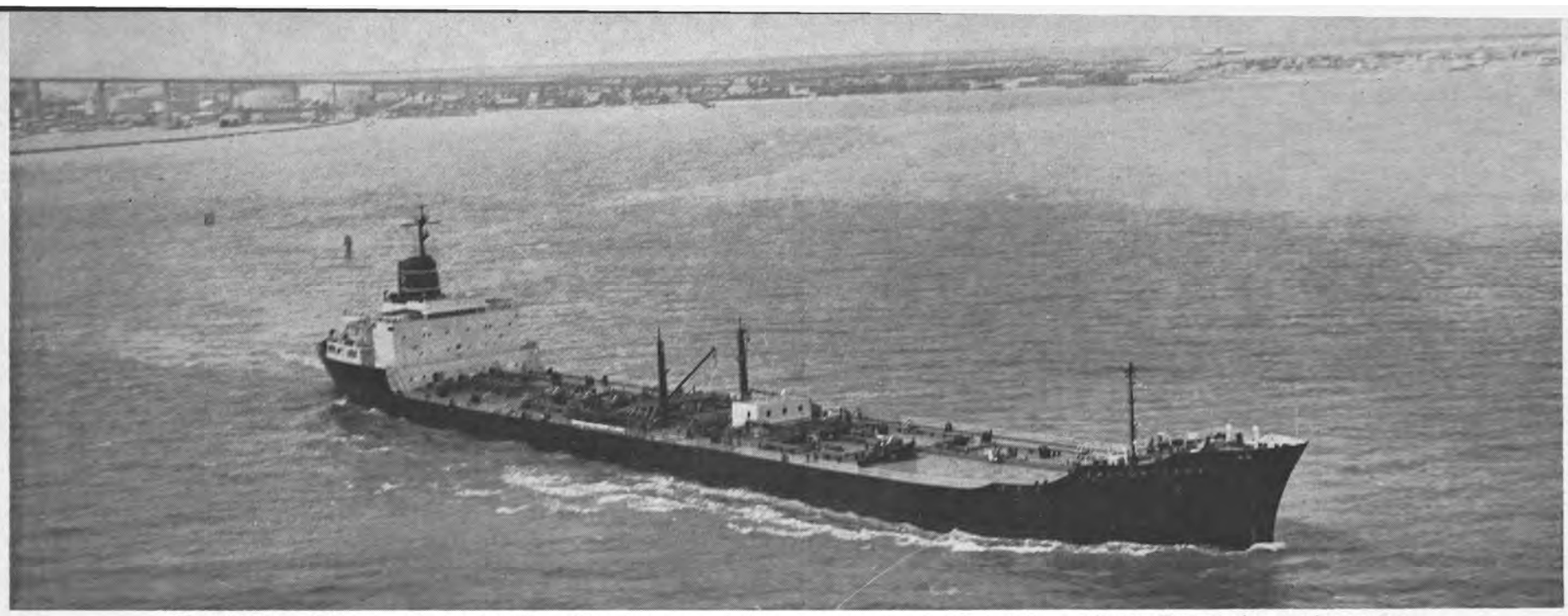
EST. 1830 WALL ROPE

WALL ROPE WORKS

Beverly, New Jersey 08010

Leadership in Rope Research and Development

*DuPont polyester fiber



The MV Falcon Lady, down to her load line with a full cargo of oil, is shown leaving the Port of Corpus Christi, Texas on her maiden voyage.

Largest U.S.-Built Oceangoing Diesel-Powered Ship

The MV FALCON LADY

Ingall's Designed And Built 37,276-DWT Tanker Brings Diesel Propulsion To U.S. Merchant Fleet. Two Pielstick Engines, Supplied By Colt Industries, Develop 15,000 BHP.

The largest diesel-propelled ship ever built in the United States for unrestricted ocean service, the 37,276-dwt tanker MV Falcon Lady, has entered service under long-term charter to the Military Sealift Command. The Falcon Lady is the first of four sisterships being built by Ingalls Nuclear Shipbuilding Division of Litton Industries, Inc., Pascagoula, Miss., for Falcon Tankers, Inc. of New York. The other three ships will be the Falcon Duchess, Falcon Countess and Falcon Princess.

These ships, besides having diesel propulsion, have many innovations and modern concepts that provide for efficient operation. The owners worked closely with the design divisions of Litton Industries from concept to final design and the seagoing labor unions who will man the ships (the SIU, MEBA and AMO) to provide ships that represent a breakthrough from the traditional design but still retaining tried-and-proven marine technology.

With the delivery of the Falcon Lady, Ingalls has built and delivered its 115th vessel for the merchant marine fleet. The company has constructed more than 300 ships since 1938.

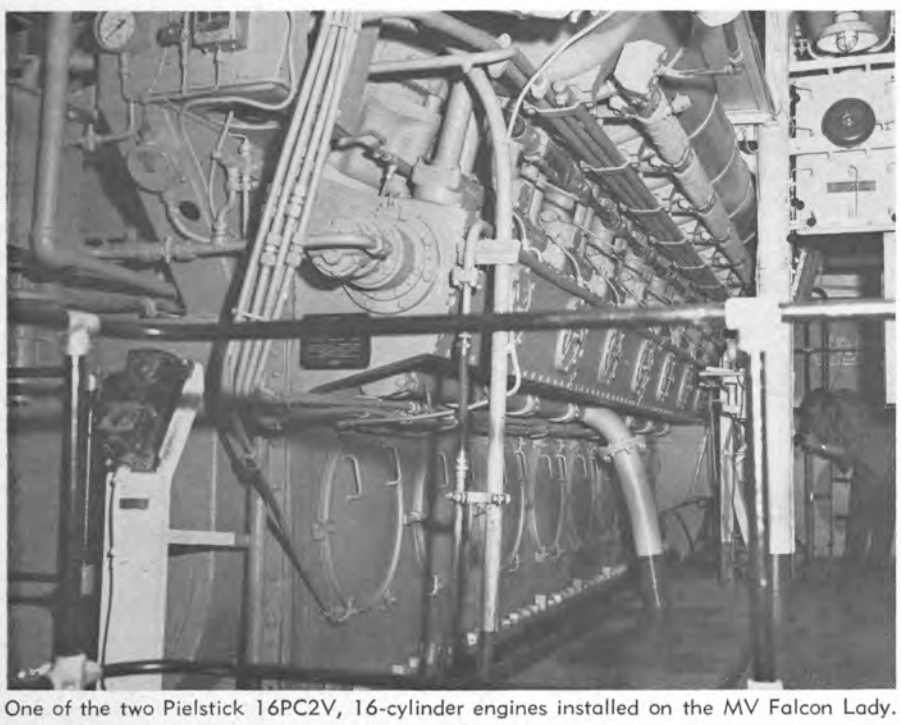
The Falcon Lady is a single-deck vessel with a raked stem and square stern. The cargo section of the hull is divided into nine center tanks and six wing tanks port and starboard, giving a total capacity of 303,315 barrels.

The Flume Stabilization System designed by John J. McMullen Associates, Inc. located in No. 3, 4 and 5 cargo tanks port, starboard and centerline, will keep roll motion to a minimum. Model tests indicate roll reductions of between 75 and 90 percent, depending on wave conditions.

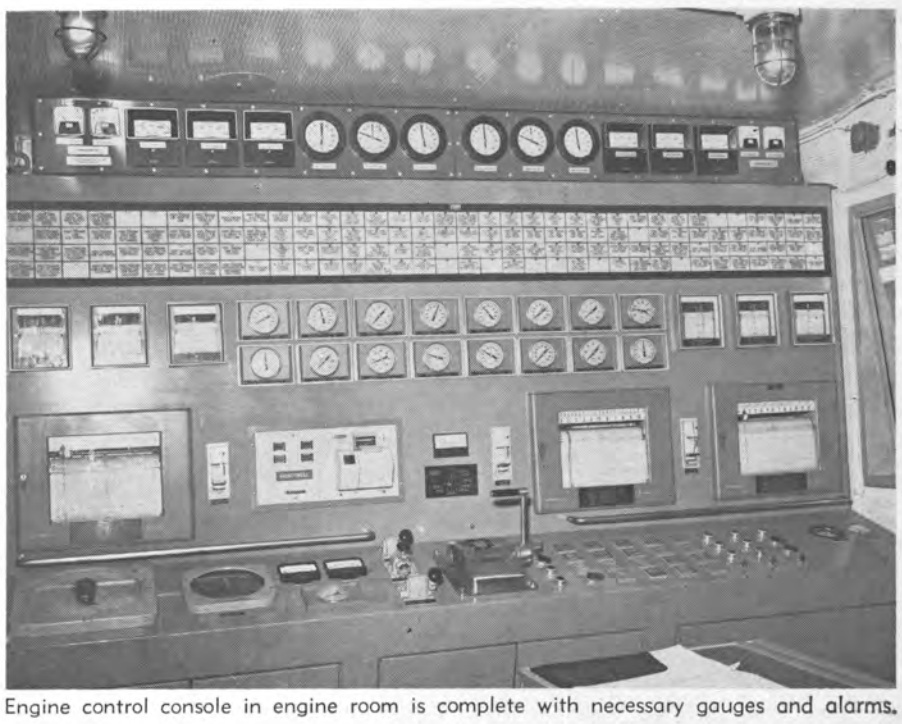
Over 100 tankers, ranging from small 20,--000-dwt feeder tankers to 254,000-dwt supertankers, have been fitted with this system since 1963. The principal motivation for installation has been operating economy. The elimination of bilge keels and the reduction in rolling due to the Flume system decreases hull resistance. This results in a substantial increase in sustained sea speed of the vessel or a considerable reduction in fuel oil costs, not to mention the major time savings due to reduced at sea delays. With present-day cargo rates, the reduction in heavy weather delays associated with the stabilized vessel is considered a major benefit.

Each ship is being built under special survey of the American Bureau of Shipping and is classed for unrestricted ocean service. The

(Continued on page 9)



One of the two Pielstick 16PC2V, 16-cylinder engines installed on the MV Falcon Lady.



Engine control console in engine room is complete with necessary gauges and alarms.

More new tug power from Moran to meet the needs of tomorrow's ships. New tugs flow constantly from Moran's drawing boards to join the largest and most powerful tug fleet in the world. Well over a century of experience in all phases of towing and transportation means that you get the best when you call

MORAN

The Best in the Business

MORAN TOWING & TRANSPORTATION CO., INC.
17 Battery Place, New York, N. Y. 10004

MV FALCON LADY—

(Continued from page 7)

U.S. Coast Guard has certified the ships for one-man engine-room operation.

Further subdivision of hull provides tankage for 14,640 barrels of fuel oil and 2,500 barrels of diesel oil.

All of the cargo tanks and the cargo piping, interior and exterior, and all fixtures in the cargo tanks are coated with a Devran epoxy coating system. The entire ship, exterior and interior steel surfaces, are also coated with a Devran epoxy coating supplied by Devoe & Raynolds Co., Inc., subsidiary of Celanese Coatings Company.

PRINCIPAL CHARACTERISTICS

Length overall	672 feet 3½ inches
Length bet. perps.	638 feet 0 inches
Breadth, molded	89 feet 0 inches
Depth, molded	46 feet 9 inches
Full load keel draft	36 feet 2⅝ inches
Deadweight	37,276 tons
Displacement	45,877 tons
Light ship weight	8,601 tons
Gross tonnage	20,751.96 tons
Net tonnage	16,954.49 tons
Horsepower	15,000 bhp
Speed, trials	16½ knots
Fuel consumption per day	400 bbls
Crew	27

Main Propulsion

The main propulsion system consists of two SEMT Pielstick 16PC2V, "V" arrangement, 16-cylinder, reversing, turbo-charged, solid-injection, four-cycle, medium-speed marine diesel engines. Each engine is rated at 7,500 bhp at 520 rpm. The engines are designed to burn high viscosity fuel but the owner chose to burn fuel with a viscosity not in excess of 1,500 seconds Redwood viscosity.

The Pielstick Type PC medium-speed diesel engine, designed by the French firm Societe D'Etudes de Machines Thermiques, has been manufactured since 1951. It is the world's most widely used medium-speed, high-horsepower diesel engine with over 1,000 units sold. The PC2-400 series is rated at 500 bhp per cylinder at 514/520 rpm. The "V" type PC2 engines are being manufactured in the United States by the Power Systems Division of Colt Industries.

Each engine is connected to a pinion through a "Geislinger" damping flexible coupling, and a Falk marine airflex clutch, to a Falk Model 81 x 33 twin-pinion marine reduction gear. The propeller revolutions-per-minute is 111.3. One Falk shaft brake is mounted on each pinion. The stern-tube bearings are of the Simplex type, oil-lubricated, white-metal-lined bearings.

All of the moving parts are totally enclosed and pressure lubricated. The cylinder liners are splash lubricated from the moving parts.

The engine is cooled by fresh water in a closed circuit. The individual water jackets prevent any contact and corrosion between the jacket cooling water and the fabricated crankcase.

The lubricating-oil, water and fuel-supply pumps are driven by the intermediate cam-drive gears and are arranged either side of the gear train at the drive end of the engine.

The main features of this type engine are:

1. Fabricated steel frame with individual cylinder castings.
2. One-piece forged crankshaft for underslung bearing design.
3. Side-by-side forged connecting rods.
4. Lube-oil-cooled, floating piston pins, trunk-type pistons.
5. Four-valve cylinder heads.
6. Gear-driven crankshafts and governing systems.
7. Exhaust-gas turbo-charging.

Propulsion Control

The main-propulsion control system provides for automatic, remote propulsion control from the pilot house or from the central engine room station. The direction and speed of engine rotation can be selected by positioning the maneuver control lever at either station. The sequence of events necessary to start the engine in the right direction, bring it to the required speed, and to control the clutch and shaft brake is preset and automatic. The maneuvering functions can be observed by indicator lights. Any failure in the control system is indicated by lights and by an audible alarm system.

The intermediate and interlocking devices associated with the pilot house to engine room control-station transfer and the control are installed on the control-station transfer panel and the engine selector panel which are mounted in the control-room console. The automatic maneuver control unit, which is located in the engine room on the 20-foot flat, contains the automatic sequencing controls for engine starting, reversing, and clutch and brake operations. The direct clutch and brake actuating devices are mounted on two clutch and brake control panels located adjacent to the automatic maneuver control panel and directly above the reduction gear.

Two engine-actuating panels are installed adjacent to each engine. These include devices required to apply the high-pressure 250-psi actuating supply for shifting the engine cam, and starting and stopping control functions. A pneumatic valve, mounted near the engine, provides for transferring the control either to the remote-control system or nullifying the remote-control system and energizing the local clutch and brake actuating valves. Under local control operation, all engine functions are manually actuated at the engine and local control valves provide for selective clutch and brake control operations.

The control system receives air pressure from a separate compressor. An air dryer provides for automatic drying of the air before it enters the control system and for draining the control system. The clutch and brake air is supplied from the starting air system through a 125-psi reducing valve.

An engine-mounted speed sensor provides a feed-back signal into the automatic maneuver control unit to sequence the automatic starting, and clutch and brake control operations.

(Continued on page 11)

Philip Wallach

Philip Wallach, president of Colt Industries' Power Systems Division in Beloit, Wis., commenting on the delivery of the MV Falcon Lady stated: "We're proud to have engineered and furnished the prime movers for the first application of a diesel propulsion system in a U.S.-flag commercial vessel of this size and horsepower. The Falcon Lady brings the growing trend toward diesel propulsion systems in the world's maritime operations to the U.S. merchant fleet. This trend is stimulated by lower initial cost of the equipment and lower operating costs." In discussing the Pielstick engines Mr. **Wallach** continued, "We spent many months investigating engines and engine builders around the world before we agreed to be the licensee for this diesel power unit. We selected the Pielstick because of its outstanding experience record and the availability of a worldwide service organization. On a worldwide basis, it is the most widely used, medium-speed, high-horsepower engine with over 1,100 sold." In conclusion he stated, "We are now manufacturing the Pielstick engine and can offer the marine market the most complete horsepower range of any American diesel-engine manufacturer."

The Falcon Lady's pilot house has engine controls located along the forward bulkhead.

View of the main deck clearly shows three of the deep-well pumps on the starboard side.

Shell Melina® Oil is main system oil, auxiliary diesel oil, air compressor oil, gear oil, stern tube bearing oil, steering gear oil, turbocharger oil, variable pitch propeller oil, and so on.

You are probably using one oil for motorship main system lubrication, another oil for auxiliary lubrication.

Shell MELINA Oil can take care of both.

You are probably using an assortment of oils for other shipboard machinery.

Shell MELINA Oil can take care of most other shipboard machinery.

Result: MELINA Oil may cut your lube oil inventory more than 50 percent. Give you buy-in-bulk opportunities. Simplify paper work. Relieve headaches in warehousing and shore-to-ship transfer. Reduce motorship design costs and tank costs.

You get these benefits because Shell MELINA Oil meets requirements like these:

Shell MELINA Oil protects main systems under many operating conditions on a no-change basis.

Shell MELINA Oil gives excellent protection to new-type diesels with high specific power outputs—whether high; medium, or slow speed.

Shell MELINA Oil exceeds Supplement I performance level to meet requirements of gasoline and diesel auxiliary units designed for this quality level oil.

Shell MELINA Oil possesses gear anti-wear properties superior to those of most gear oils used aboard ship.

Shell MELINA Oil satisfies most shipboard applications that call for SAE 20, 30, or 40-weight oil.

Shell MELINA Oil. Approved by leading manufacturers of marine equipment. Available worldwide. Including all major U.S. ports.

Shouldn't you have all the facts on this remarkable oil for motorships? To call the nearest Shell Marine Representative, dial 800-231-1928 from anywhere in the U.S. except Texas. In Texas, dial 501-288-7511. Or write Shell Oil Company, Dept. MC/G, P.O. Box 1890, Trenton, N.J. 08607.

SHELL

MV FALCON LADY—

(Continued from page 9)

Normally, both engines run in the same direction, and are operated from the bridge. When required, one engine can run ahead, one astern, by engaging the clutches to move the ship ahead or astern in maneuvering, operated at the local station. The remote controls were supplied by WABCO and the mountings by Honeywell.

Auxiliary Machinery

A Maxim waste-heat boiler, Model MFT 4000-32, utilizing the heat from the engines' exhaust can supply 5,000 pounds per hour of steam at 50 psi.

An Aqua-Chem flash-type evaporator, with a capacity of 8,000 gallons per day, utilizes the steam from the waste-heat boiler to provide potable and make-up fresh water.

A Foster Wheeler packaged marine boiler, Type AGP, with Monowall-Waterwall construction is installed to provide steam for tank cleaning. It is fitted with a Coen Fyr-Utilipak packaged steam-atomizing oil burner and automatic combustion controls. This boiler is rated at 70,000 pounds per hour at 600 psi.

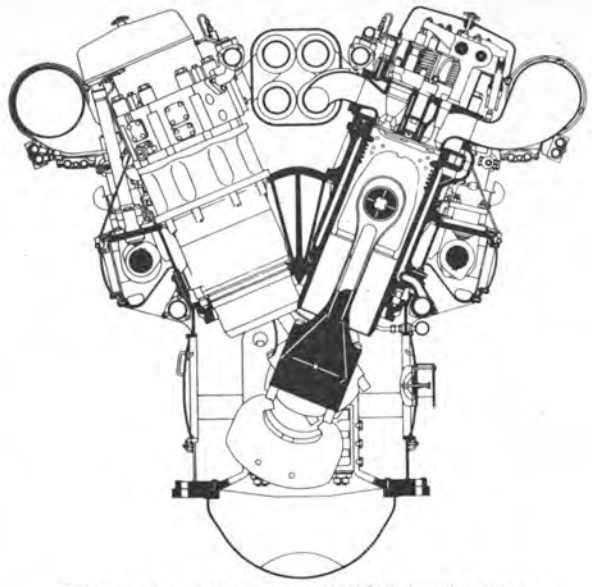
Ship's service electric power is supplied by two Caterpillar, Model-D398B, turbo-charged, air-starting, marine diesel engines, rated at 795 bhp at 1,200 rpm, driving EM-700-series, 500-kw alternators. Emergency electric power is handled by one Caterpillar, Model D334, turbo-charged, battery-starting, marine diesel engine, rated at 200 bhp at 1,800 rpm, driving an EM alternator, rated at 150 kw.

The deck machinery includes a Clarke-Chapman anchor windlass with two vertical wildcats and two vertical winch drums above deck. It is driven by a steam reciprocating engine located under the deck. The Falcon Lady is also equipped with steam-driven, automatic-tensioning mooring winches. The steering gear is of the four-ram, electro-hydraulic type.

Cargo System

The cargo system is subdivided into five groups of tanks in order to handle the split cargoes that MSC ships are required to transport. There is no central pump room—cargo pumping is handled by five deep-well pumps with the drive units mounted on the deck.

The deep-well cargo pumps, supplied by Worthington, are self-priming, three-stage, vertical turbine pumps, rated at 5,000-gpm each against a head of 334 feet when operating at 1,760 rpm. They are driven by Worthington steam turbines through Philadelphia Gear



Cross section of Pielstick 16PC2V diesel engine.

reduction gears. The drive shafts have couplings so that the pumps can be withdrawn by the ship's crew for servicing.

A Worthington, self-priming, single-stage turbine pump is installed for handling ballast. It is rated at 4,600 gpm at 1,760 rpm, against a head of 63 feet. The pump is driven by a vertical electric motor. The forward ballast tanks are served by a separate, independent system which has a submerged electric-motor-driven ballast pump.

Cargo handling is controlled from a cargo-control room in a separate deckhouse amidships. A console is provided with a mimic diagram showing all cargo piping and valves. All the major valves are remotely operated from this console. Included in the console are gages which indicate the cargo pumps' speeds, discharge pressures, cargo level, etc.

Accommodations

The owners of the Falcon Lady devoted a great deal of effort in the arrangement and outfitting of the accommodation spaces in order to provide above average quarters for the crew. In this regard, the operating unions provided worthwhile inputs to the design.

All quarters are air-conditioned by a Carrier-Transicold packaged air-conditioning plant. The staterooms, lounges and offices are fully air-conditioned with individual mechanical controls for each vent. Carrier-Transicold also supplied packaged ships stores refrigeration equipment. All the joiner bulkheads are vinyl-covered marinite. Each room has wall-to-wall carpeting. The furniture is of the hotel type with plastic tops. The concept followed in using this type of furniture was to provide more comfort for the crew. Also, the owners intend to refurbish each room every five years instead of repairing and patching existing furniture. A harmonious color scheme has been adopted to make the accommodations more "homelike."

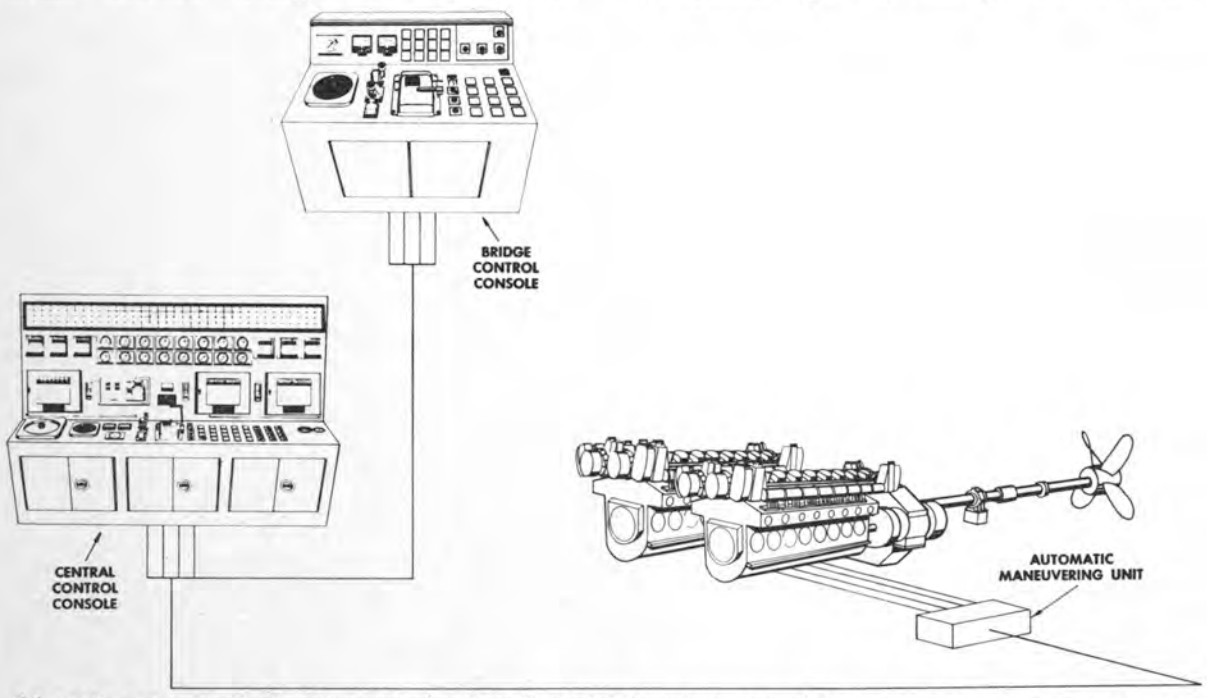
All officers' accommodations have double beds and individual showers and toilets. The unlicensed personnel have individual staterooms with adjoining showers and toilets.

There is an officers' lounge and a crew's lounge, each outfitted with color TV, AM/FM radio and a tape recorder.

There are two separate cafeteria-style mess rooms—one for the officers and one for the crew. All hands, from the captain to the messboys, carry their own trays instead of being served. The food is of the pre-prepared type, assembled by the cook, heated in electronic ovens and kept warm with infrared lamps.

The commissary storage facilities consist of commercial-type reach-in freezers and refrigerators with a total capacity of 4,607 cubic feet and dry storage with a capacity for 90 days of supplies.

The pilot house and chart room are combined in one space, thus providing for full all-around vision. It is equipped with the latest navigational equipment, including radar, Loran, fathometer, auto-pilot, course recorder and radio direction finder.



Schematic arrangement of engine control system illustrates the relationship of the bridge and engine room consoles.

PRINCIPAL SUPPLIERS

Equipment	Vendor
Main Propulsion Engines	Colt Industries
	Fairbanks-Morse
	Pielstick
Propeller	Sumitomo Shoji
Propulsion Shafting	Ampower Corp.
Galley Equipment	Blickman Inc.
Anchor & Chains	Baldt Anchor
Steering Gear	Sumitomo Shoji
Anchor Windlass	Clarke Chapman
Watertight Doors	Marhil Mfg.
Lifeboats & Davits	Marine Safety Inc.
Lifeboats	Switlik Parachute
Air-Conditioning Plant	Carrier Air
Stern Tube Bearing & Seals	Roland Marine
Deep Well Pumps	Worthington Corp.
Main Condensate Pumps	Aurora Pump
Main Steam Generators	Foster Wheeler
Distilling Plant	Aqua-Chem
Ships Service Generator	Ohio Machinery
Emergency Diesel Generator	Ohio Machinery
Switchboards, Main & Emergency	Empire Electric
Panel Boards	Empire Electric
Telephone System	Young Engineering
Stores Cranes	Equitable Equip.
Fans-Ventilation	Joy Mfg.
Heaters	Dunham Bush
Cooling Coils	H.K. Porter
Lube Oil Purifiers	De Laval
Centrifugal Pumps & Fire Pumps	Aurora Pump
Boiler Feed Pumps	Coffin Turbo Pump
Rotary Pumps	Warren Pumps
Control Valves	Leslie Co.
Relief Valve	J.E. Lonergan
Valve Controls	Limitorque Inc.
Gate Valves	Velan Valve
Globe Valves	Walworth Crane Supply
Deck Drains	Prier Brass
Check Valves	Velan Valve
	Combination Pump & Valve
Y Strainers	Yarway Inc.
Hose Assemblies	Aeroquip Inc.
Pipe Hanger	Grinnell Inc.
Cable & Conduit	General Cable
	Anixter—New York
	Seacoast Electric
	Anixter Owesen
	Mitsubishi International
	L.F. Gaubert, Inc.
Gyrocompass	Griffith Marine
Radiotelegraph & Antenna System	Radiomarine
Life Boat Portable Radios	Radiomarine
Radio Direction Finder	Radiomarine
Loran	Radiomarine
Echo Depth Sounder	Raytheon
Gyro-Pilot System	Griffith Marine
Engineer Call System	Young Engineering
Docking Announcing System	Galbraith-Pilot Marine
S.P. Telephone System	Hose McCann

API Tanker Conference To Be Held May 10-12

Subjects ranging from safety, to new and novel types of vessels for carrying petroleum, will be discussed at the 16th Annual Tanker Conference at Ponte Vedra Beach, Fla. The conference, sponsored by the American Petroleum Institute's Division of Transportation, will be held May 10-12 at the Ponte Vedra Club. The schedule of events will be as follows:

Monday, May 10—**R.E. Howe,** New York, manager of the Evironmental Protection Division of the Logistics Department, Standard Oil Co. (N.J.) and chairman of the API's Central Committee on Transportation by Water, will give the opening address and present API Certificates of Appreciation to marine leaders. **R.S. Little,** vice president, and **S.G. Stiansen,** research and development surveyor, both of the American Bureau of Shipping, New York, will make a presentation on large tanker stress measurements. **Wessel C. Brodhead,** vice president, Gulf Oil Corporation's marine department, New York, will discuss tanker safety. **Adrian S. Hooper,** president of the Interstate Oil Transport Company, Philadelphia, Pa., will talk on deepsea barges.

Tuesday, May 11—Capt. **A.F. Dickson,** director of Shell International Marine Limited, London, will discuss the single buoy mooring system. A panel discussion on salvage will have as members Capt. **E.B. Mitchell,** USN, Director of Diving, Salvage and Ocean Engineering, Washington, D.C.; Capt. **F.D. Heyward,** USCG, Chief of the Law Enforcement Division of the Coast Guard, Washington, D.C.; Capt. **S.A. Madsden,** nautical adviser to logistics, Standard Oil Co. (N.J.) New York, and Capt. **H.J. Spicer,** fleet operations coordinator, Mobil Tankers Co. (Liberia) Limited, New York.

Wednesday, May 12—Adm. **Chester R. Bender,** U.S. Coast Guard Commandant, will discuss relations between the Coast Guard and industry. **R.J. Wheeler,** director of marine operations for Phillips Petroleum Co., Bartlesville, Okla., and **E.B. Emery II,** manager, Natural Gas Division of Marathon Oil Co., Findlay, Ohio, will address the group on operation of LNG carriers. **A.M. Lissenden,** vice president, and **P.C. Dahan,** manager, project development and design, both of Mobil Tankers Co. (Liberia) Limited, and both of New York, will present a paper on novel vessels for carrying petroleum. The final paper, which will be on the economic considerations concerned with preserving the environment, will be presented by **E.M. Hood,** president of the Shipbuilders Council of America, Washington, D.C.

Mangone Texas Yard Building Tugs For Firm In Norway

The Sea Pearl, shown above on the ways at Mangone Shipbuilding just prior to her launching, is scheduled for operation in the North Sea.

The first offshore tug and supply vessel built in this country for Bugge Supply Ship and Company A/S of Norway, was launched in March at Mangone Shipbuilding Company in Houston. The 185-foot vessel, named the Sea Pearl, is the first of two tugs being built by Mangone for the Norwegian firm. It is scheduled for completion May 15. A second vessel, also 185 feet, will be completed in June.

Both vessels being constructed by Mangone are scheduled to operate in the North Sea. **Finn Bugge,** who is a director of N.R. Bugge, said negotiations are also under way for additional vessels which will be used to serve offshore petroleum operations in the Far East.

The Sea Pearl is powered by 4,000-hp GM-EMD 645 E2 engines, which will give the vessel a speed in excess of 15 knots. The engines were supplied by Stewart and Stevenson Services, Inc. The Sea Pearl is capable of an approximate 45-ton bollard pull. It is equipped with cement tanks, towing winch, bow thruster, and anchor handling equipment. Both vessels will have the most modern navigational equipment.

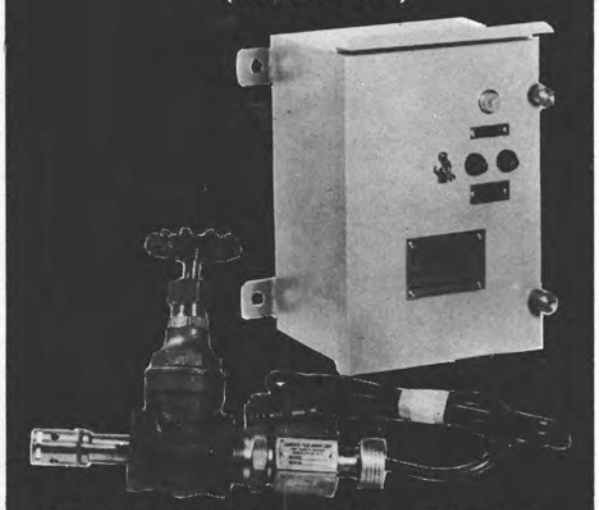
Capt. **John Hesselberg,** marine superintendent for Bugge, said the Sea Pearl is designed and constructed to operate in seas all over the world. "The construction and outfitting of the vessel will permit the Sea Pearl to work effectively in the roughest waters in any offshore operation."

An unusual aspect of the design is the living quarters which have been constructed to meet Norwegian regulations. Cabins are single and double. Other requirements provide for additional mess hall, pantry, and laundry facilities.

Bugge Supply Ship and Company A/S is a subsidiary of N.R. Bugge Skibs A/S, a well-known shipping firm in Norway. The Bugge family, originally in the whaling industry, has owned and operated vessels for more than 100 years.

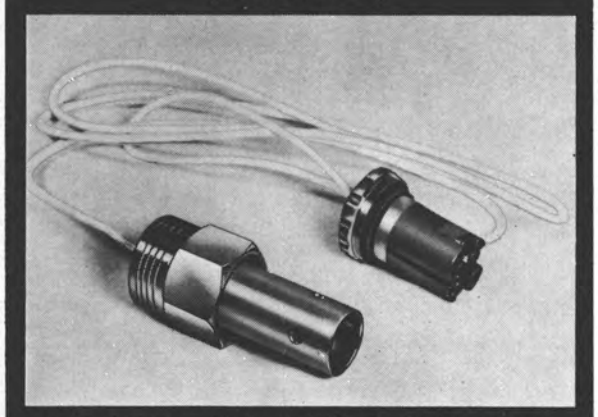
QUALITY ENGINEERED PRODUCTS by GALBRAITH-PILOT MARINE

OIL IN OVERBOARD DISCHARGE CONTROL (Model OWD-2)



This sensor-probe and panel module will control oil-laden overboard discharge down to 5,000 ppm (½% by volume). The sensor-probe and valve are placed directly in the overboard discharge pipe ahead of the check valve gate. The control panel incorporates the latest in design circuitry and is designed to detect oil and oil-based fluids such as accumulate along the top of bilgewater or ballasted fuel tanks.

MONITORING SYSTEM FOR DIESEL ENGINE JACKET WATER (Model BDC-T)



A diesel engine protector that detects, from one sensor probe point, excessive temperature, raw water leakage from the heat exchanger and jacket water loss. System consists of a control module and multiple-function detector sensor having the ability to detect temperature and conductivity solids concentration. The control module includes a dual scale meter with single pointer, two meter-scale selector switches for temperature and conductive solids concentration; a signal-alarm light, an acknowledgement switch and power supply fuses.

OIL IN OVERBOARD DISCHARGE CONTROL • MONITORING SYSTEM FOR DIESEL ENGINE JACKET WATER

Selected because of their engineered construction and proven performance, electronic marine equipment by Galbraith-Pilot Marine Corporation can be found aboard merchant ships and naval vessels throughout the world.

- Salinity Indicating Systems
- Marine Alarm Panels
- Automatic Battery Chargers
- Marine Loudspeaker Systems
- Electrical Safety Equipment
- Electric Waterlights
- Navigation Light Panels

GALBRAITH-PILOT MARINE CORPORATION

600 FOURTH AVENUE • BROOKLYN, N. Y. 11215

TELEX: 12-5201 Tel.: (212) 768-8300 CABLE: GALPILOT

Two Papers On Oil Pollution Presented At SNAME Chesapeake Section Meeting

Principals of the Chesapeake Section meeting are shown above. Five authors **seated** left to right are: Cmdr. **W.E. Lehr,** USCG; **E. Scott Dillon,** U.S. Maritime Administration; **W.T. Lindernmuth,** Hydronautics, Inc.; Cmdr. **R.N. Abrahams,** USCG, and **E.R. Miller,** Hydronautics, Inc. Shown left to right **standing: F. Ebel,** U.S. Maritime Administration, moderator; **J.J. Henry,** J.J. Henry Company, Inc., past president of SNAME; Capt. **D. Starr Jr.,** USCG, moderator; Rear Adm. **R.C. Gooding,** USN, Naval Ship Systems Command, and **P. Eisenberg,** Hydronautics, Inc., chairman of the Chesapeake Section.

Over 130 members and guests attended the March 17 meeting of the Chesapeake Section of The Society of Naval Architects and Marine Engineers during which two papers on oil pollution were presented.

The scene of this meeting was the Officer's Club of the U.S. Naval Medical Center in Bethesda, Md. Included among the guests were **J.J. Henry,** president of J.J. Henry Company, Inc. and past president of SNAME, and Rear Adm. **R.C. Gooding,** USN, of the Naval Ship Systems Command.

The first paper was presented by its author **E. Scott Dillon** of the Maritime Administration. Titled "Ship Design Aspects of Oil Pollution Abatement," the paper presented an overview of measures which can be taken in basic designs of ships to facilitate elimination of intentional oil discharges and minimize accidental oil spills in event of collision or stranding. It also discussed the economic impacts of alternative solutions for coping with oily ballast and oily wash water disposal, as well as the various tanker compartmentations and their contribution to the reduction of probable oil outflow in the event of collision or grounding inquiry. In his paper the author finds that certain arrangements yield dual benefits of protection against accidental spills, as well as clean ballast capacity to partially or completely eliminate the oily water disposal problem.

Comments on this paper, which was moderated by **F. Ebel** of the Maritime Administration, were given by **H. Benford** of the University of Michigan; Capt. **R. Price,** USCG; **J.J. Henry** of J.J. Henry Company, Inc.; **W. Gray** of Esso International, and **T. Wilkinson** of the Trinidad Corporation.

The second paper, titled "Experimental Procedures Used in the Development of Oil Retention Boom Designs," was authored by **E.R. Miller** and **W.T. Lindernmuth,** both of Hydronautics, Inc., and Comdr. **W.E. Lehr** and Comdr. **R.N. Abrahams** of the U.S. Coast Guard. In this paper, the experimental procedures used in the development of oil retention boom design criteria are presented in detail. Emphasis is placed on the procedures used to determine the oil containment ability and structural loads on the boom as a function of environmental conditions. The critical scaling parameters for oil containment tests are presented, and the test procedures which have been developed are described. The paper notes that while tests to determine structural loads can be conducted using standard ship towing tank procedures, there are uncertainties with respect to some parameters. Thus, full scale trial results are required, and the paper presents the procedures and current plans to obtain full scale data.

Capt. **D. Starr Jr.,** USCG, acted as moderator during the presentation of the second paper.

Penn Navigation Asks Construction Subsidy For 2 Planned OBOs

Application for a construction subsidy in connection with two planned 160,000-dwt ore/bulk/oil carriers has been filed with the Maritime Administration by Penn Navigation Co., a subsidiary of U.S. Industries. The estimated total cost for the ships is $82 million. Each vessel would be 998 feet long, with a 143-foot beam and a 57-foot draft.

The company stated that one vessel could be delivered early in 1974 and the other late in that year, but it declined to name the yard with which it is negotiating for construction of the OBOs. The delivery dates, however, depend on how fast MarAd acts on the application.

Penn Navigation will use the ships in worldwide trading.

Equitable Awarded $27 Million For 246 Lykes Barges

Officials of Lykes Bros. Steamship Co., Inc. of New Orleans, La., have announced the award of a $27,000,000 contract to another New Orleans firm, Equitable Equipment Co., Inc., for the construction of 246 barges for service with Lykes' new barge and intermodal Seabee Class cargo transports. The announcement was made shortly after Lykes and Equitable officials signed the necessary documents in Equitable's conference room on France Road. **Cecil Keeney,** president of Equitable, penned his signature to the contract, and Lykes officials signing were **Joseph T. Lykes Jr.,** chairman of the board of directors, and **Solon B. Turman,** chairman of the executive committee.

The barges are to be fabricated and constructed at Equitable's New Orleans shipyard on the Industrial Canal, and at its second shipyard in Madisonville, La. In New Orleans the vessels are to be built under cover, and at the peak of production, 16 barges a month will be delivered. Mr. **Keeney** said the Lykes contract will make possible the employment of an additional 1,000 shipyard workmen during the term of the contract, thus easing the unemployment situation in New Orleans and providing for long-term employment of highly-paid skilled craftsmen.

Mr. **Lykes** said the Lykes staff was extremely pleased that the responsive bid from Equitable made it possible to accept their proposal for the huge barge-building program. "As a Louisiana corporation domiciled in New Orleans," he said, "we have a keen interest in doing business with other New Orleans companies whenever this is economically possible."

The highly-sophisticated Seabee barge units are slated for a vital role in the operation of Lykes' revolutionary Seabee system between its terminals on the U.S. Gulf and terminals in the United Kingdom and Continental Europe. The service is to be inaugurated in January 1972.

First of the barges, a prototype, is now nearing completion at Equitable's New Orleans shipyard, and it and one other barge is to be delivered to the Quincy, Mass., shipyard of General Dynamics Corporation on or before June 1, for use in testing the loading and discharge facilities of Lykes' new Seabees now under construction at Quincy.

The Seabees, the largest common carriers ever built for the American merchant marine, and the Seabee barges, were designed by the naval architectural firm of J.J. Henry Company, Inc., New York, N.Y. The Seabees are 875 feet long—the equivalent of three city blocks—and 106 feet wide. Designed with a top speed of 22 knots, they can transport 24,500 long tons of cargo in 1,900,000 cubic feet of cargo space, and they will have a heavy lift capacity of 2,000 tons. Each Lykes Seabee can transport 38 fully-loaded barges, or 1,800 containers, or vehicles on three-and-a-half miles of single-laned highway on three decks that run unobstructed the length of each ship, or any combination of these cargoes, including liquids in tanks, unitized cargoes, or break-bulk cargoes.

The Seabee barges to be built by Equitable are also huge when compared with other ship-carrying barges now in operation or planned for operation. Seabee barge units are 97½ feet long and 35 feet wide, have a bale capacity of 40,000 cubic feet and can load 850 long tons of cargo, while other barge units are only 61 feet long and have only 19,900 bale cubic feet of stowage space.

Equitable, one of the world's largest builders of marine equipment, will use its new $1,000,000 semi-automated blast and paint facility at its New Orleans shipyard in blasting and painting the new Lykes Seabee barges. This is the only one of its size, type, and capability in the U.S. shipbuilding industry. The new facility is capable of blasting steel surfaces to any desired surface preparation and applying the most sophisticated coating systems that may be required. The Lykes barge surfaces will all be specially coated.

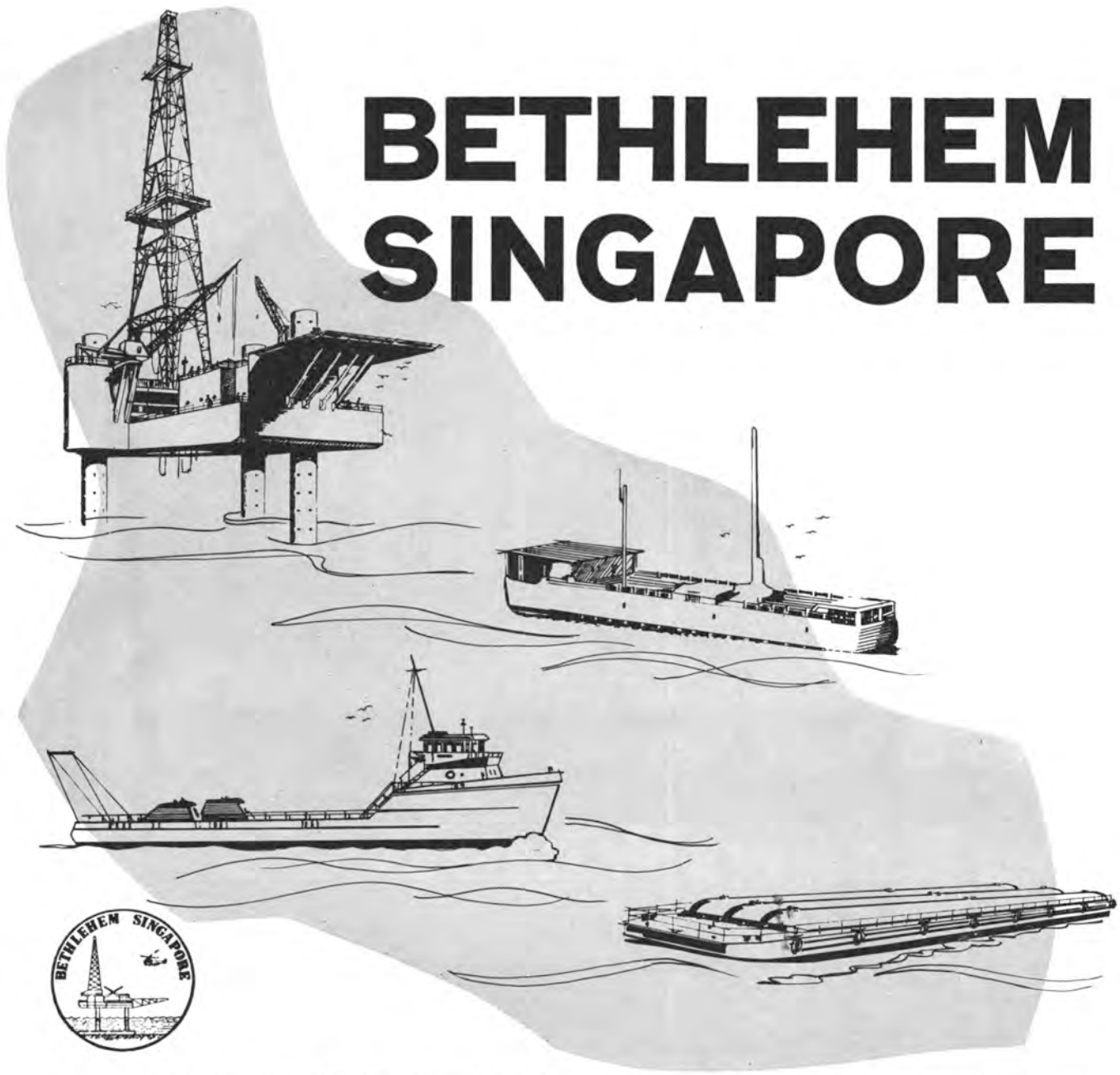
First of the three Lykes Seabees, the S/S Doctor Lykes, is scheduled to be launched in July and will enter service in January, followed in April by the S/S Almeria Lykes, and the S/S Tillie Lykes in July. Together they will provide a sailing from the U.S. Gulf every 10 days.

The new Lykes Seabee system will link two of the world's greatest waterway systems, the Mississippi and the Rhine. New Orleans-built Seabee barge units may be loaded anywhere on the Mississippi and its tributaries, loaded aboard the Seabee transport in the Gulf and transported across the Atlantic where the operation is reversed as the barges are discharged at terminal areas and sent deep into the interior of Europe via the Rhine and its connecting canals and rivers.

Corrosion Dynamics Names Distributor In Jacksonville, Fla.

Corrosion Dynamics, Inc., of Roselle, N.J., has announced the appointment of Ships Supply Inc., 812 Hendricks Avenue, Jacksonville, Fla., to be the exclusive distributors in that area for Arnessen Chipping Hammers and high performance Deck Scalers.

In line with Corrosion Dynamics' policy of having stocking distributors in every key port, Ships Supply will stock hammers as well as spare parts for all Corrosion Dynamics equipment. They will supply the Port of Jacksonville and the east coast of Florida from its northern state line south, including Riviera Beach.



BETHLEHEM SINGAPORE

OPEN FOR BUSINESS

Our newest shipyard—in the heart of the offshore oil industry activity in Southeast Asia—is ready for business. Right now, we're in a position to build the equipment you need: mobile drilling rigs, offshore platforms, barges, small coastal vessels, work and crew boats. And we invite inquiries on miscellaneous fabrication of any kind.

The new yard will continue to draw on the long-term engineering experience of our Beaumont, Texas, yard, one of the pioneers in designing and building equipment for offshore oil. Beaumont also serves as the new yard's United States sales representative.

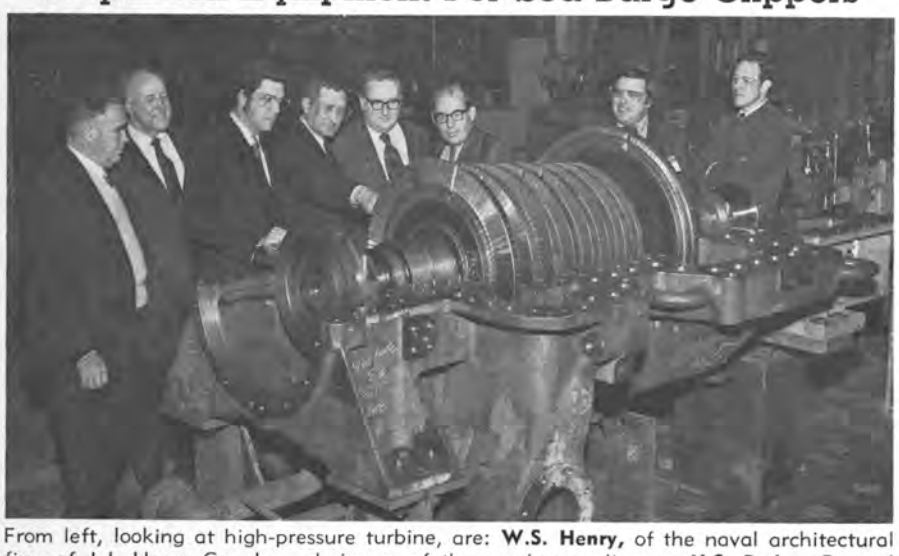
You'll be hearing a lot about our Singapore Yard in the coming years; its services, as well as its facilities, are all set to grow on demand.

BETHLEHEM STEEL *Shipbuilding*

BETHLEHEM SINGAPORE PRIVATE LTD.
P.O. Box 41, Sembawang Post Office, Singapore 27
Phone: 592111 Cables: BETHSING

BEAUMONT YARD: P.O. Box 3031, Beaumont, Texas 77704
Phone: (713) 832-8411 Cables: BETHSHIP

Lykes Officials See Manufacture Of GE Propulsion Equipment For Sea Barge Clippers



From left, looking at high-pressure turbine, are: **W.S. Henry,** of the naval architectural firm of J.J. Henry Co., Inc., designers of the sea barge clippers; **H.S. Ryder,** General Dynamics Quincy Shipbuilding Division; **W.D. Thomas,** naval architect; **Fred Eisenbiegler,** General Electric MT&GD marketing; **R.S. Campbell,** Lykes resident inspector at Quincy; **S.W. Thayer,** Lykes vice president engineering; **H.F. Oleaga,** Lykes engineering, and **F.W. Mitchell,** of GE's M&DFSO New Orleans office.

Officials of Lykes Bros. Steamship Co., Inc., New Orleans, La., toured General Electric's marine turbine and gear department in Lynn, Mass., recently, where they saw geared marine steam propulsion equipment taking final shape for three Lykes barge-carrying cargo ships. Accompanying them were representatives of the Quincy Division of General Dynamics, which is building the sea barge clippers. Heading the group from Lykes was vice president of engineering **S.W. Thayer.**

The marine turbine and gear department is supplying the geared steam turbine power plant of 36,000 horsepower for each of the three ships. The ships will be capable of speeds of 20 knots or better, and are scheduled to start entering service in 1972.

Being built in General Dynamics' Quincy, Mass., yards, the sea barge clippers are 875 feet long and 106 feet wide. They will carry either 38 fully-loaded barges, or more than 1,800 containers.

General Electric's MST-14 nonreheat type propulsion equipment will power the ships. Some 50 of these proven marine propulsion units are already being supplied by the company.

Mechanical Marine Appoints Coleman Marketing Manager

Daniel Coleman

Mechanical Marine Company, Inc. has announced the appointment of **Daniel Coleman** to the new position of marketing manager. He is based at the company plant in Elizabeth, N.J.

Mr. **Coleman,** a graduate of the Merchant Marine Academy at Kings Point, N.Y., brings to this new position more than 20 years of varied industrial sales and marketing experience. He will direct marketing plans for the line of marine products, including valves, strainers, ullage plates, and marine equipment related to liquid cargo handling for the marine industry.

Mechanical Marine Company, Inc. was recently acquired by Hayward Manufacturing Company, Inc. of Elizabeth, N.J., a prominent manufacturer of fluid control equipment. Mr. **Coleman** is also marketing manager for Hayward's industrial products.

Matson Promotes Christopher Kane

Matson Navigation Company has promoted **Christopher A. Kane** to manager of market development for the Hawaii intermodal freight container service, it was announced by **Eugene R. Swanson,** general sales manager.

Mr. **Kane** started with Matson in San Francisco in 1966, and later served in Matson's Los Angeles and Washington, D.C. offices. He has been market development representative at San Francisco headquarters since September.

SNAME Pacific NW Section Hears Paper On Inspection Of Gears For Wear

Members and guests who participated in the program are shown, left to right: **Henry A. Schwartz,** chief mechanical engineer of Gear Works, Seattle, who authored and presented a paper entitled "Inspection of Gears for Wear"; **Adam Heineman,** assistant director, Port of Portland, guest speaker; **Paul Diehl,** of Diehl and Lundgaard, discussor; **George Salisbury,** secretary-treasurer, Pacific Northwest Section; **John Cauduro,** chairman Columbia River Area, and **Lou D. Chirillo,** vice chairman, Pacific Northwest Section.

One of man's oldest inventions was the topic of a paper presented to members and guests of the Pacific Northwest Section of The Society of Naval Architects and Marine Engineers gathered for their regular meeting on March 26, 1971, in Portland, Ore.

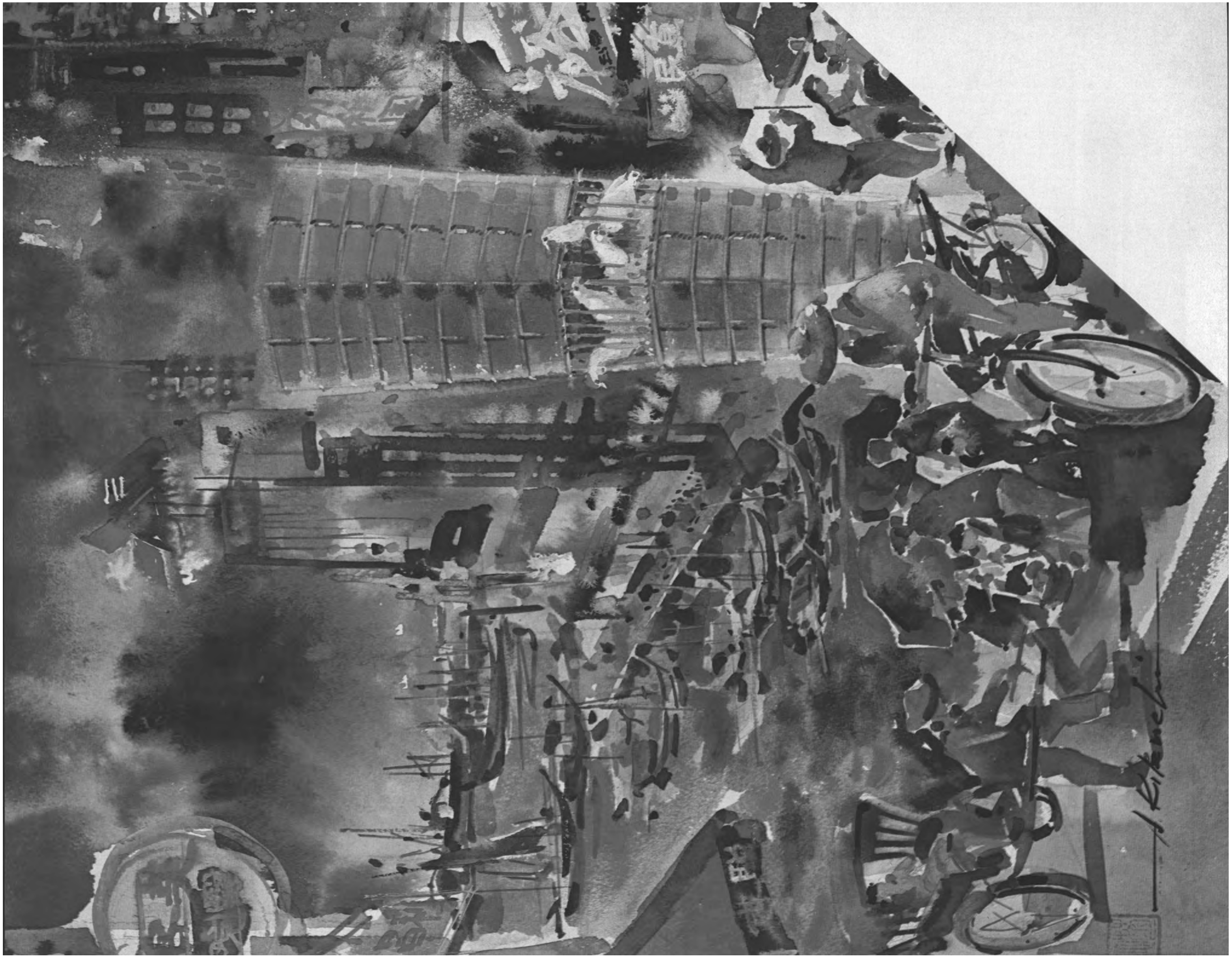
Prior to presenting a paper entitled "Inspection of Gears for Wear," **Henry A. Schwartz,** chief mechanical engineer at Gear Works, Seattle Division of Mantel Gear, gave a brief history of gears dating back to 3,000 years B.C., and a showing of various slides depicting primitive gearing arrangements.

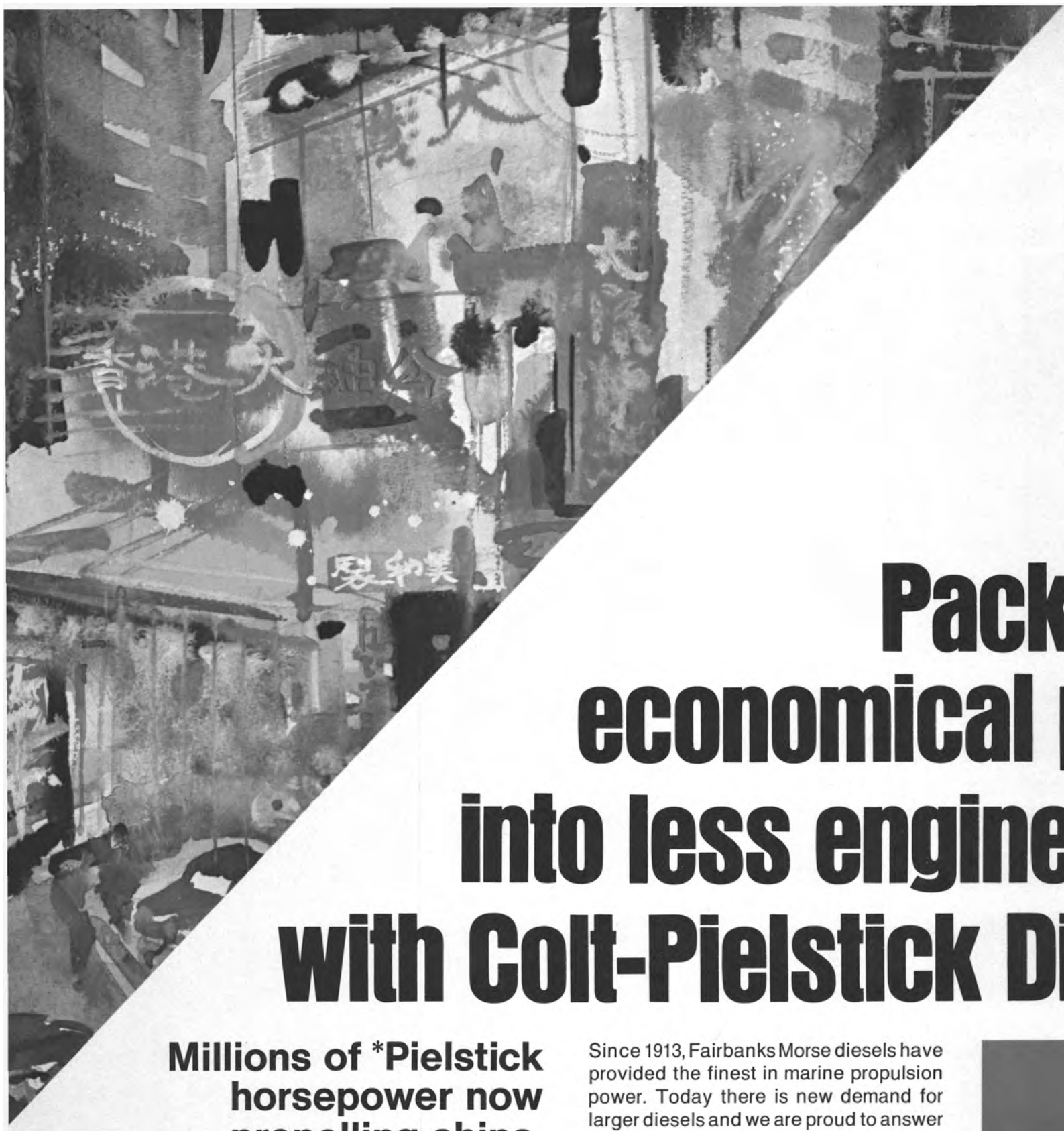
Mr. **Schwartz's** paper dealt mostly with marine gears, noting that they are some of the largest gears made, and operate at tremendous horsepower, both smoothly and whisper-quiet. Defining the word "gear," Mr. **Schwartz** explained that in reality, a gear is a series of cams, which means it has both rolling and sliding on the surfaces that are in contact. The cam, or involute curve, is expected to give uniform motion with little or no loss of power.

Concluding his paper, Mr. **Schwartz** emphasized the importance of using the proper grade and quantity of lubricant, and liaison between engineering, manufacturing, assembly and installation to present a gear box capable of carrying necessary loads for satisfactory service.

Formal discussion by **Paul H. Diehl,** of Diehl and Lundgaard, was generally in agreement with Mr. **Schwartz's** paper and Mr. **Diehl** believed greater attention should be given at time of gear inspection, stating that once the tooth material has pitted or worn away, it cannot be put back on.

Following the presentation and discussion of the evening's paper, **John Kohler,** secretary-treasurer, Columbia River Area, introduced the evening's guest speaker, **Adam Heineman,** assistant director, Port of Portland. Mr. **Heineman** spoke of a recent merger between the Port of Portland and the Dock Commission, to enable better competition for current and future business.





Pack more economical power into less engine room with Colt-Pielstick Diesels.

Millions of *Pielstick horsepower now propelling ships, the world over.

Since 1913, Fairbanks Morse diesels have provided the finest in marine propulsion power. Today there is new demand for larger diesels and we are proud to answer that demand as the exclusive U.S. manufacturer of the world's most widely used medium speed, high horsepower diesel, the Pielstick PC-2. Ratings from 4000 to 9000 hp, and in 8 to 18 cylinder "V" engines.

The PC-2 is more economical than steam or gas turbines. These facts are proven by the merchant marine the world over. Because it's more compact and lighter than steam turbine plants, the PC-2 allows you to design for greatly increased payloads through smaller engine rooms, far aft installations and greater flexibility of machinery arrangements. And every unit is backed by a worldwide licensee organization with service in most major ports.

Write today for the new Colt-Pielstick color brochure. Colt Industries, Power Systems Division, Beloit, Wisconsin 53511.

S.E.M.T.-Pielstick is a registered trademark of Societe d'Etudes de Machines Thermiques, Paris, France

For a full-size print of this original Kikuchi, without advertising, write on your company letterhead to Phil Wallach, President, Colt Industries Power Systems Division, Beloit, Wisconsin 53511.

Colt Industries

United States Lines Appoints Roger Nicolini

The appointment of **Roger Nicolini** as manager of corporate administration of the United States Lines has been announced by **John G. Baka,** vice president, management services, for the company.

Mr. **Nicolini** obtained his elementary education in Port Jefferson, Long Island, N.Y., until his family moved to Germany. He completed his pre-college courses at the Herder Paedagogium High School in Dusseldorf, and was graduated from the Otto Kuehne College in Bad Godesberg in 1961. He joined the company in Germany the same spring and for several years divided his time between documentation of freight shipments in Bremen and cargo handling and the scheduling of company vessels at the ports of Bremen and Hamburg.

Mr. **Nicolini** was transferred to the New York office four years ago as a special assistant to the vice president of freight traffic, and most recently was administrative assistant to the president of the company before being promoted to his new position.

The United States Lines operates a fleet of 16 high-speed, high-capacity containerliners in a "Tri-Continent" service connecting Europe, the East and West Coasts of the United States, Hawaii, and the Far East.

Marconi International Appoints John Older

John Older

The Marconi International Marine Co., Ltd., announces the appointment of **John Older** as its representative in North America. He succeeds **David Bowker** who is returning to the United Kingdom on leave before taking up another assignment.

Born in London, Mr. **Older** was educated at the Royal Grammar School, Colchester. He joined the seagoing radio officer staff of Marconi Marine in 1956 and served on a variety of vessels until 1964, when he was appointed to the staff at Hull Depot as a marine technical assistant.

During his 18-month stay at Hull Depot, Mr. **Older** gained invaluable practical administrative experience of the company's equipment and affairs. The following five years he used his knowledge to good effect while serving at various company depots both at home and overseas.

Mr. **Older's** last appointment was as the company's representative in Nigeria. He recently spent two months at Chelmsford preparing for his new position in the United States.

New York Firm Orders 262,000-Dwt Tanker From Sumitomo Yard

Sumitomo Shipbuilding and Machinery Co., Ltd., has received an order for a 262,000-dwt tanker from Charter Tankers Inc., a subsidiary of Fairfield Maxwell Ltd., 866 Third Avenue, New York, N.Y.

The vessel will be about 1,095 feet long, with a 179-foot beam, and a 69-foot draft. She is scheduled to be delivered in July 1974, and will have a 16.5-knot operating speed.

USS Names Ranson General Manager Of Lake Shipping

William R. Ranson has been named general manager of lake shipping for United States Steel Corp., it was announced by **C.F. Beukema,** vice president, ore, limestone and lake shipping.

Mr. **Ranson,** who previously served U.S. Steel as manager of operations of lake shipping, succeeds Capt. **J.J. Parrilla,** who has retired.

every hour of sailing time lost...costs

No matter how rough the weather, the Flume Stabilization System makes for smooth sailing. That means faster sailing speeds, regularity of schedules and the ability to handle more fragile, more profitable cargo. The Flume System is installed quickly and inexpensively. It practically guarantees increased profits by increasing the efficiency of your ship and crew. Call your local Flume representative to find out why over 700 installations have made Flume Stabilization Systems preferred with shipowners everywhere.

STABILIZATION FLUME SYSTEM

Designed & Engineered by

John J. McMullen Associates, Inc. • 110 Wall Street, New York, N.Y. 10005

NAVAL ARCHITECTS • MARINE ENGINEERS • CONSULTANTS

MADRID: McMullen Iberica
Avenida Generalisimo, 12
Madrid (16), Spain

HAMBURG: John J. McMullen, G.m.b.H.
Glockengiesserwall 20
Hamburg, Germany

OTHER OFFICES WORLDWIDE:
Write for the address of
the office nearest you

"Oceanics Hawaii"

SNAME Spring Meeting Program

The Society of Naval Architects and Marine Engineers has announced the program for the 1971 "Oceanics Hawaii" Spring Meeting to be held in Honolulu, Hawaii, on May 26 through 28. The meeting, which is being hosted by the Hawaii Section of the Society, will be held in the Princess Kaiulani Hotel, 120 Kaiulani Avenue.

All technical sessions will be held in the Likelike Room of the Princess Kaiulani Hotel so that members will have the opportunity to hear the presentation and discussion of each paper. In addition, a technical field trip and an enjoyable social program have been arranged.

The meeting will start at 9 a.m. on Wednesday, May 26, with the Welcome and President's Report, followed by the presentation of technical papers Nos. 1 and 2. After lunch, papers Nos. 3, 4 and 5 will be read. Papers Nos. 6, 7, 8 and 9 will be presented on Thursday morning, and papers Nos. 10, 11 and 12 on Friday morning.

Technical Papers

Paper No. 1. "Problems of Ocean Platforms" by **M. St. Denis** and **E. Allmendinger.**

Synopsis—Ocean platforms are subject to greater perils and experience more problems with fewer solutions than ships. The paper covers only nautical problems, including: the prediction of the environment of sea, wind and currents; proper stability; minimization of drag; course-keeping ability of towed platforms; dynamical positioning of autonomous platforms; provision of adequate seakeepability; primary strength of hull; danger of dynamic response of the legs of jack-up platforms; plastic collapse under impact loading; and dynamic stress in drill string and riser of drilling platforms. Projections are made as to future missions for ocean platforms and new problems likely to be encountered.

Paper No. 2. "Seakeeping Characteristics of a Multi-Unit Ocean Platform" by **M.K. Ochi** and **R.M. Vuolo.**

Synopsis—This paper presents results of a study that theoretically predicts seakeeping characteristics such as motions, hydrodynamic forces and moments of a floating multi-unit ocean platform by solving the equations of motion in waves. The platform consists of elements of relatively small size supported by vertical columns (floats). The equations of motion of a platform having six degrees of freedom in oblique seas are discussed as are the design forces required to join element platforms at their edges. As an example of practical application, computations were carried out on a multi-unit platform. Effects of varying the float's waterplane area, depth, and configuration are discussed.

Paper No. 3. "The Design and Operation of a Prototype Deep-Ocean Mining Ship" by **R. Kaufman** and **J.P. Latimer.**

Synopsis—The paper describes in detail the design features of a prototype deep-ocean marine mineral mining dredge, R/V Deepsea Miner. This ship, the first of its kind, is a converted C1-M-AV1 machinery aft motor vessel and is equipped to dredge manganese nodules from depths to 3,000 feet in an actual marine ocean environment. Test data and results from a 30-day operation on the Blake Plateau in the summer of 1970 are presented. The effectiveness of air-lift pumping utilizing large diameter conduit associated with long pipe runs, under three phase flow conditions, is discussed.

Paper No. 4. "Fishing Vessel Development" by **D.J. Doust.**

Synopsis—The paper describes the development of fishing vessels over the past 15 years, including the transition from side to stern trawling. Various designs evolved are discussed in detail, together with some recent designs incorporating radical departure from existing practice. A new system of propulsion "YPASS" is presented which provides a material improvement in towing capability and improved steering qualities. Noise and vibration considerations are enumerated, and it is shown that with the new system of propulsion "YPASS" fitted, the noise levels emanating from a fishing vessel can be significantly reduced compared with a conventional exposed propeller system.

Paper No. 5. "The Construction Assistance Vehicle (CAV), an Underwater Pickup Truck" by **S. Halpern** and **S.A. Black.**

Synopsis—The Construction Assistance Vehicle (CAV) is a free-flooding, electro-hydraulically powered "wet" submersible. It is an experimental craft designed to provide free-swimming SCUBA divers with an "underwater pickup truck" capable of delivering up to 2,000 pounds of wet-weight cargo, equipment and divers to and from underwater construction sites. It has been designed to be simple, reliable, and uses only commercially available components. The CAV was completed in October 1970, and testing and evaluation began in November 1970 at the Naval Civil Engineering Laboratory, Port Heuneme, Calif. The design of the CAV is described and discussed.

Paper No. 6. "An Underwater Buoyancy Transport Vehicle (BTV)" by **N.B. Estabrook** and **A.T. Strickland.**

Synopsis—This paper describes the development of the Buoyancy Transport Vehicle, a diver-operated undersea vehicle capable of lifting and transporting loads up to 1,000 pounds at ocean depths to 850 feet. This underwater "forklift" was designed and built to alleviate many of the difficulties experienced by working divers during underwater operations. Results from shallow water testing of the BTV, both in Hawaii and California, have demonstrated its value as a tool for the working diver. Additionally, information gained through experience with its many subsystems, such as hydraulic propulsion, monopropellant gas generation, and pressurized electronics, has provided significant inputs into the design of future undersea systems.

Paper No. 7. "Propulsion and Maneuvering Systems for Deep Submersibles" by **R.W. Peach** and **F.C. Munchmeyer.**

Synopsis—This paper relates to propulsion, maneuvering, trimming and ballasting systems for deep submersibles. It describes the purposes of these systems and the characteristics of those used on a range of submersibles, including Trieste II, Aluminaut, and the series of Deepstar, Star and Pisces vehicles. Recent deep submersibles are taken as a basis for systems design analyses. In order to yield optimum vehicle performance, these designs employ unique concepts. Present and future capabilities are presented, with emphasis on a omni-directional thruster called Varivec, a combined trim and ballast system, and a gas deballasting system.

Paper No. 8. "Analysis of Jet Propulsion for Deep Submergence Vessels" by **T.P. Torda** and **D.W. Kos.**

Synopsis—Analytical work is presented on flow control by suction and blowing as it applies to submerged vessels. Distributed surface suction and suction through slots are included, but emphasis is placed on flow control by blowing through wall jets and slots in turbulent flow regimes. Drag reduction and increase of overall efficiency are aims of the analytical work. Deep submergence vessels of various types operate in greatly different Reynolds number regimes. For some types of vessels and some missions, maintenance of laminar flow over most of the body, as well as reduction of the wake, would be beneficial. For other submersibles which operate in turbulent regimes, prevention of turbulent separation as well as wake reduction would be appropriate.

Paper No. 9. "Lightweight Syntactic Foam as Buoyancy Material for a 20,000-Ft Deep-Sea Vehicle" by **H. Bernstein** and **M. Krenzke.**

Synopsis—Present investigations of syntactic foam (hollow glass microspheres dispersed in a resin matrix) are the result of extensive tradeoff studies of candidate buoyancy systems for a small manned vehicle capable of operating to ocean depths of 20,000 feet. Fine and coarse microspheres manufactured specifically for this purpose were combined with various resin systems to produce experimental foams. These were then subjected to extensive testing. Results indicate that this approach should reduce the present density of 42 lb/ft^3 to at least 34 lb/ft^3, with a saving of more than 30 percent in vehicle weight. Successful completion of this development will dramatically improve the performance of deepsea vehicles.

Paper No. 10. "Rapid Analysis of Marine Structures" by **P.Y. Chang** and **W.D. Pilkey.**

Synopsis—The line-solution technique for the static, stability, and dynamic analysis of an array of marine structures is described. This approach differs from classical techniques in the efficiency of the method used in eliminating unknowns. The number of unknowns, and hence the size of a matrix to be manipulated does not increase with the complexity of the structure. As a result of its speed, even for dynamic responses, a line-solution analysis is suitable in design, optimization, and sensitivity schemes. The generality of the method permits its application to the analysis of more realistic models of marine structures than has been possible previously. The technique is demonstrated by application to grillages, submarine piping systems, submerged piles, whole hulls of surface ships and submersibles, rotating shafts, all-tensile membrane underwater habitats, and thin shells.

Paper No. 11. "The Design of Thick-Walled Unstiffened Cylinders Subjected to Uniform External Pressure" by **S.R. Heller Jr.**

Synopsis—The available technical literature dealing with the biaxial and triaxial stress in closed, unstiffened cylinder under uniform external pressure is evaluated. Only those formulations which have been confirmed experimentally are recommended for use in design. Similar treatment is given to a clamped circular plate under combined lateral and radial loading. The recommended formulations are then combined into a step-by-step design procedure which is demonstrated by a numerical example. Also included are sets of curves to ease the numerical work of design.

Paper No. 12. "Structural Analysis of Deep Submergence Pressure Hulls" by **L.N. Gifford Jr.** and **R.F. Jones Jr.**

Synopsis—Computers have enabled the finite

(Continued next page)

element method of structural analysis to become widely known and accepted for solving structural problems of extreme complexity. The application of this method to the analysis of deep submersible vehicles is discussed. Included are deep submersible structures comprised of different materials and structures employing anisotropic materials, requiring study in the inelastic range, exhibiting nonlinear geometric behavior, affected by fabrication imperfections or material flaws, and having joints or mating faces along which contact, gap, or relative slip may occur. Also included are remarks pertinent to finite element computer programs, automated preparation of input data and graphical display of computed results.

Technical Field Trip

On Friday, May 28, at 12 noon there will be a field trip to the Oceanic Institute to view a live demonstration of their "Man in the Sea" project and other technical aspects of modern marine experiments conducted in Hawaii. The ladies, who will join the men for this trip, will tour the adjacent Sea Life Park. Luncheon will be served for all upon arrival at the park.

Social Events

Early Bird Aloha Reception—Although the technical program does not commence until Wednesday morning, all registrants and their ladies are invited to gather in the Robert Louis Stevenson Room of the Princess Kaiulani Hotel at 6 p.m. Tuesday, May 25, for a get acquainted "no host" Early Bird Aloha Reception.

Men's Luncheon—All registrants are invited to attend the Men's Luncheon on Wednesday, May 26, at 12 noon in the Cleghorn Room of the Princess Kaiulani Hotel. Dr. **John P. Craven,** dean of the marine programs at the University of Hawaii and the state of Hawaii's executive director for marine affairs, will speak on "The Naval Architect and the Design of Cities on the Sea."

Ladies' Paradise Park Tour, Luncheon and Fashion Show—Promptly at 9:45 a.m. on Wednesday, May 26, the ladies will depart by bus for a morning at Paradise Park, a lush tropical bird aviary unique to the Islands. Time will be spent touring the park and lunching in the Polynesian Dining Room. During luncheon there will be a fashion show of Hawaiian and Polynesian attire. Door prizes will be given.

President's Reception—SNAME President **Daniel D. Strohmeier** will be host to all registrants and their ladies at this social event on Wednesday, May 26, from 6 to 7:30 p.m. in the Second Floor Tower Lobby of the Princess Kaiulani Hotel. Beverages and hors d'oeuvres will be served.

Luau Banquet—The closing event of the 1971 Spring Meeting will be a traditional Hawaiian Luau (banquet). It will be held on the terrace overlooking Waikiki beach at the Royal Hawaiian Hotel. Registrants and their ladies will gather for this affair at 6:30 p.m. on Friday, May 28. This promises to be a most enjoyable evening and, as the sun sets over Waikiki, a majestic finale to the meeting.

The steering committee for the 1971 "Oceanics Hawaii" Spring Meeting, under the chairmanship of **Ian M. Smith,** consists of the following: papers, **Manley St. Denis,** chairman, assisted by **Guy W. Slaughter;** finance, **Frederick C. Munchmeyer,** chairman, and **Sueo Hayashida;** technical sessions, **E. Alvey Wright;** hotel arrangements, **Ken Yee;** budget, **Roy W. Ahrens** and **Michael D. Farmer;** transportation and field trips, **J. Grant O'Donnell;** social activities, **Theodore M. Otero;** publicity, **Dale T. Trenhaile;** printing and publications, **Harry C. Lewis;** liaison, **Hugh W. Kaiser;** at large, **Herman Hastrup,** and registration, **Clinton W. Kreitner.**

Pine Tree Engineering New Rice Barton Subsidiary

The entire assets of Pine Tree Engineering, Brunswick, Maine, have been acquired by Rice Barton Corporation, leading designer and manufacturer of papermaking machinery and accessories, it was announced jointly by **Winship B. Moody Sr.,** president of Rice Barton, and **Roger M. Luke,** president of Pine Tree Engineering.

Established in 1968, Pine Tree Engineering is a Maine corporation which provides engineering and services for marine on-deck equipment, such as winches, windlasses, and steering gear for ships. Now a subsidiary division of Rice Barton, Pine Tree Engineering has recorded a profit each year since its incorporation and has been responsible for sales of equipment in excess of $3,000,000.

Mr. **Moody,** commenting on the new acquisition, stated: "With the current emphasis on increased expenditures for military and nonmilitary vessels and combined engineering, purchasing, and production capabilities available due to our merger, we believe this joint effort will contribute greatly to our corporate growth and profit." Under the new arrangement, Mr. **Luke,** president of Pine Tree Engineering, and **Matthew R. Fandetti,** vice president, engineering, will continue to serve in those capacities. Mr. **Moody** becomes chairman of the board and chief executive officer; **Ted Bova,** Rice Barton, becomes vice president, sales, and **Herbert S. Alexander,** Rice Barton, becomes treasurer. The Pine Tree Engineering board of directors will include: **Charles S. Barton, Winship B. Moody Sr., Ted Bova, Roger M. Luke** and **Matthew R. Fandetti.**

Shell Orders Five 256,000-Dwt Tankers From Harland And Wolff

Five 256,000-deadweight-ton crude oil tankers worth $180 million have been ordered from the troubled Belfast yard of Harland and Wolff. The order comes from Shell International Marine and is the largest ever placed with a British shipbuilder.

The vessels will be built in the new giant building dock—the largest in the world—and will be delivered in 1974-75. Each of the tankers will develop a service speed of 16.5 knots from a set of steam turbines making 36,000 horsepower. The turbines will also be built in Belfast under license from Stal-Laval of Sweden.

Alan Watt, the acting chairman and managing director of Harland, said Shell's experience in large tanker construction and operation would be of great benefit.

At present, Harland's building dock, which measures 1,825 feet by 305 feet, has one tanker of 264,000 tons and a bulk carrier of 105,000 tons being constructed. Four more of 264,000 tons must be built before the present order.

Atlantic Container Line Appoints E.J. Camuti

Edmund J. Camuti

The appointment of **Edmund J. Camuti** to the position of vice president marketing and sales, of Atlantic Container Line, Ltd., U.S.A., was announced by **O.I.M. Porton,** president.

At the same time, Mr. **Porton** advised that **A.L. Aberson,** formerly vice president, commercial, has been named vice president, traffic and operations. **Jacques Grevin,** formerly vice president, traffic and operations, has accepted a new position with one of the ACL consortium members, which he will assume later this year.

Mr. **Camuti,** whose responsibilities will include sales, marketing and pricing for ACL in the United States, comes to the company with over 25 years of experience in the steamship business. Prior to his ACL appointment, he had been executive vice president-general manager of Prudential-Grace Lines, Inc., and president of the company's Pacific Division. Before the Prudential-Grace merger, Mr. **Camuti** was vice president-general manager of Prudential Lines, Inc. He began his steamship career in 1944 as a terminal clerk at American Export Lines, Inc., and rose to general traffic manager before leaving that company in 1962.

Two Firms Ask MarAd For Title XI Insurance

Application to the Maritime Administration for Title XI mortgage insurance in connection with the construction of one diesel-powered towboat and 71 open hopper river barges has been filed by Mid-South Towing Co., Tampa, Fla. The total cost of all the vessels is estimated to be $8.9 million.

Interseas Tanker Corp., 511 Fifth Avenue, New York, N.Y., also applied to MarAd for Title XI mortgage insurance to aid in the construction of one 120,000-dwt bulk oil carrier. The estimated total cost of the 883-foot, 16-knot ship is $34.7 million.

Dearborn-Storm Corp. Completes Acquisition Of Marine Service Co.

Dearborn-Storm Corp., Chicago, Ill., announced that it has completed the acquisition of Marine Service Co. of Houston, Texas. The new subsidiary, operating a fleet of 11 vessels, will now be operated in conjunction with the 27 vessels operated by Dearborn Marine Service Corp., another subsidiary of Dearborn-Storm.

The company's fleet services the offshore oil and gas drilling industry, and also conducts geophysical and seismic work on a worldwide basis.

Todd Houston Yard Lays Keels For Four-Barge Tow

Todd Shipyards Corporation (Houston Division) has recently laid the keels for the trailing barge and a box barge for a four-barge integrated tow being constructed for the Alamo Chemical Transportation Company of Houston, Texas. The 295-foot by 52-foot by 12-foot trailing barge and the 150-foot by 52-foot by 12-foot box barge have single skin bottoms and double skin sides, as will the other two barges. The overall length of the four-barge tow will be 1,040 feet and is designed for river service.

CANADIAN MARITIME SECTION MEETS: The Canadian Maritime Section of The Society of Naval Architects and Marine Engineers recently held a meeting on board the Canadian hydrographic vessel C.S.S. Baffin. The technical session consisted of a presentation by Capt. **P. Brick,** C.S.S. Baffin, on "The History of Cable Repair Ships." Apart from the actual history of the repair ships, Captain **Brick** outlined some of the difficulties encountered in locating and repairing a break in the cable. After the presentation, a lively discussion period followed between Captain **Brick** and various members of the Society. Pictured above during the meeting, left to right, are: **W. Aves,** vice president, Canadian Maritime Section; **J. Shepherd,** Section chairman; Captain **Brick,** speaker and author; **E. Hinze,** secretary-treasurer, and **I. Jones,** chairman public relations.

Incres Line Appoints Joseph L. Granquist

Joseph L. Granquist

Sven Hansen, president of Incres Line, New York, N.Y., operators of the cruise ship Victoria, has announced the appointment of **Joseph L. Granquist** as vice president for sales and promotion.

Mr. **Granquist** is a graduate of the University of Pennsylvania, Wharton School of Finance and Commerce, and studied foreign commerce practices on a Fulbright Fellowship at the University of Oslo in Norway. He was connected with the Norwegian-America Line from 1950 to 1969, the last five years of which he held the position of passenger traffic manager with responsibility for passenger sales in North America.

From 1969 to the present, Mr. **Granquist** has been engaged in consultant activities, including important studies in passenger sales and operations for leading steamship companies. He is the newly-elected vice president of the Skal Club of New York, an international organization of travel industry executives.

Mr. **Granquist** succeeds **Gustave L. Bowen** who is retiring to Florida, but will remain closely associated with Incres Line in a consultant capacity. Mr. **Bowen** has been prominently associated with the steamship industry for many years, and has held executive positions in the Bahamas, Washington, D.C., and New York. He is a past president of the Skal Club of New York.

The luxurious air-conditioned Victoria, built exclusively for cruising and operated by Incres Line, maintains a year-round schedule of Caribbean cruises out of New York.

MA Names McNerney Central Region Director

Frank X. McNerney has been named Director of the Maritime Administration's Central Region, with offices in New Orleans, La., it was announced by **A.E. Gibson,** Assistant Secretary of Commerce for Maritime Affairs. In his new assignment, Mr. **McNerney** will supervise MarAd field operations throughout 12 Gulf and central Mississippi River Basin states, plus western Florida.

Until recently, Mr. **McNerney** was Chief of the Central Region's Office of Market Development. Prior to that, he had served in MarAd's Eastern Region Headquarters in New York City from 1964 to 1970 in such activities as ship operations, cargo promotion, operational subsidy administration, and public affairs. In 1966, he opened and supervised the agency's Saigon office during the Southeast Asia sealift build-up.

Mr. **McNerney** began his maritime career with American Export Isbrandtsen Lines, where he was employed from 1954 to 1964. He served successively as deck officer, Singapore branch manager, Far East assistant representative, mobile trade fair project manager, and finally as manager of trade promotion.

Born in Scranton, Pa., Mr. **McNerney** attended Scranton Preparatory School and graduated from the U.S. Merchant Marine Academy with a B.S. degree in 1954. Later, he attended New York University Graduate School and Fordham Law School. His military service included duty with the U.S. Air Force and as a Naval Reserve Officer.

Title XI Approved On 363 Barges For Prudential-Grace

Avondale Shipyards, Inc., New Orleans, La., is constructing 363 barges for Prudential-Grace Lines, Inc., New York, N.Y. The Maritime Administration has approved the line's application for Title XI mortgage insurance on these vessels. The barges will be used on LASH ships and represent the fourth group that will be operated by Prudential-Grace.

Midland Enterprises To Buy 180 Jumbo Barges & Towboat To Handle Barging Contract

Eastern Gas and Fuel Associates, Boston, Mass., has announced that its Midland Enterprises group of barge operations has entered into the largest barging contract in its history. The contract is a long-term one with Southern Services, Inc., Birmingham, Ala., in behalf of Alabama Power Company and Gulf Power Company, all subsidiaries of the Southern Company, for the transportation of large tonnages of coal.

Under the terms of the contract, The Ohio River Company and Orgulf Transport Co., Cincinnati, both Midland subsidiaries, will transport from 2 to 3½ million tons of coal yearly from Shawneetown, Ill. to three Gulf Coast ports near generating plants of Alabama Power and Gulf Power. The term of the contract is for 17 years beginning January 1972, with an option of extending it to 20 years at the election of the customers.

The coal to be transported will be produced by Peabody Coal Company at one of its Eagle mines in southern Illinois. At the choice of the customer, the coal will be delivered to generating plants at Panama City or Pensacola, Fla., or Mobile, Ala.

The shipment route will run about 120 miles on the Ohio River, 850 miles on the Mississippi, and an average of about 200 miles on the Gulf Intracoastal Waterway. The average total haul of nearly 1,200 miles represents about 3.6 billion ton miles yearly, a 40 percent increase in the 9 billion ton miles achieved by Eastern's Midland group of barge operations in 1970. These operations carried a total of 25.6 million tons of cargo in 1970, bringing in revenues of near $34 million.

To carry out the Southern Services contract, Midland plans to augment its present fleet by the purchase of at least one new 5,000-hp pusher towboat, and 180 jumbo, high-coaming barges.

Other barge operating companies of Eastern's Midland Enterprises group are Red Circle Transport Co., operating in the Gulf of Mexico, the Caribbean and along the Atlantic Coast, and Chotin Transportation Co., operating on the Mississippi and Ohio River systems, the Gulf Intracoastal Waterway and in the Gulf of Mexico. The Chotin Company, which is primarily engaged in the liquid barging business and had consolidated revenues of about $14½ million in 1970, was recently acquired by Eastern.

British Firm Supplying Diesels To U.S. Operators Costing Over $2,400,000

Diesel engines worth over $2,400,000 for four more revolutionary twin-engined "pusher-tugs" to operate with giant barges have been ordered by two U.S. companies. The first vessel of this kind, made up of a tug fitting into a slot in the stern of a barge, was ordered last year and is shortly due to be commissioned.

One tug-barge combination is similar to the original vessel now under construction and is a repeat order for the same customer, Ingram Corporation of New Orleans, La. The order, placed with Lister Blackstone Mirrlees Marine, a Hawker Siddeley Diesels subsidiary, is for two 12-cylinder Mirrlees KVMR Major diesels, each rated at 5,564 bhp.

A second order for six 16-cylinder Mirrlees KV Major engines has been placed by the Litton Great Lakes Corporation of Cleveland, Ohio, through the Group's Canadian subsidiary, Hawker Siddeley Diesels and Electrics Ltd., Rexdale, Ontario. These engines will power three units designed to operate on the Great Lakes, and the tugs, each with two 7,420-bhp engines, will be among the most powerful vessels of their kind afloat.

The tug-barge concept keeps the relatively expensive propulsion unit fully employed. The tug brings one barge into port and can take another out without having to wait during unloading and loading. The tug and barge, when joined together, have the same operational speed as a conventional cargo vessel.

Starporter Container Crane Ordered By Overseas Shipping For Terminal Island Facility

A 40-ton capacity Starporter container crane, almost identical to the one pictured above recently completed at Charleston, S.C., for the South Carolina Ports Authority, was ordered by the Overseas Shipping Company for its Terminal Island facility.

The Overseas Shipping Company, a San Francisco, Calif., based firm with offices in Seattle and Los Angeles, has placed an order with Star Iron & Steel Co. of Tacoma, Wash., for a 40-ton capacity Starporter container crane, according to **Chris Blom,** president of Overseas. Mr. **Blom** stated that the contract price for the large crane was approximately $1 million. **Charles Allen,** president of Star, said: "We are extremely pleased to be working with Overseas Shipping. They have been real contributors to the nation's marine industry and their future development on the coast will help strengthen the whole shipping industry."

Overseas Shipping Company is the Pacific Coast agent for Barber Lines and the agent in the Puget Sound area and Los Angeles for ScanStar. They will install the new crane at their Los Angeles Harbor facility at Terminal Island. This will be the second container crane erected at the Overseas Terminal Island facility, and construction is to begin this spring. It is scheduled to be in operation by June 15.

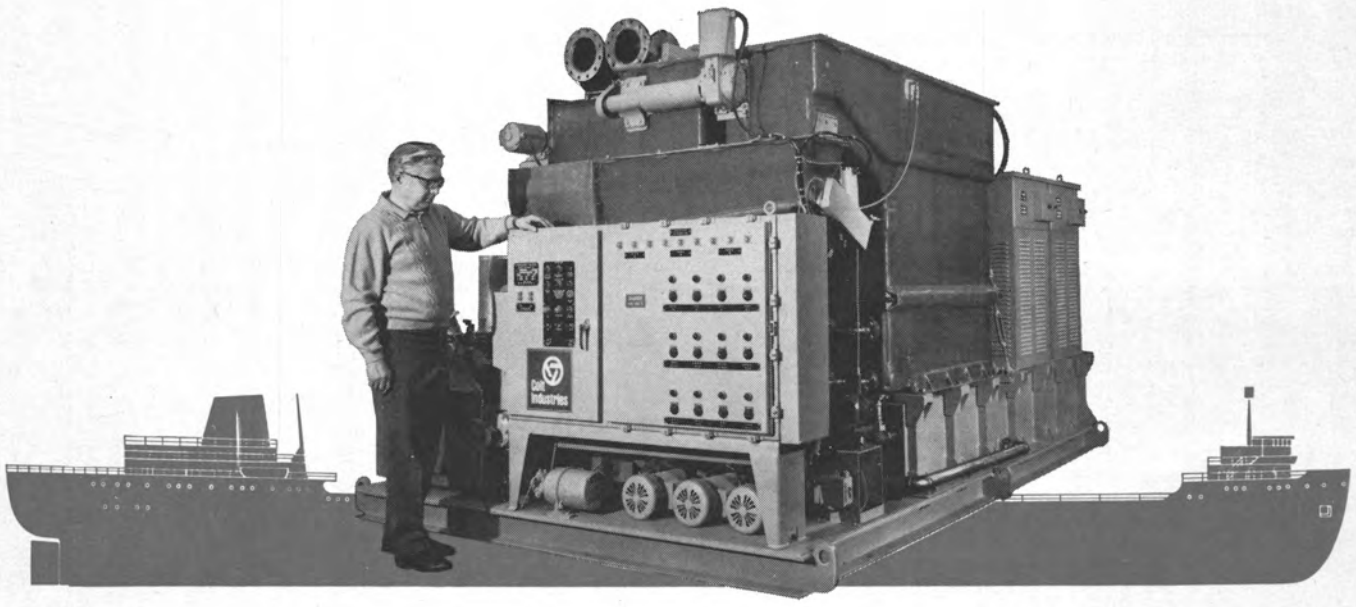
The crane, which weighs over 500 tons, has some new features not found on most cranes of their type. One unique feature is that it can rotate containers 90 degrees for spot loading and discharging. This gives the crane the advantage of being able to work conventional ships and semi-container ships, as well as regular container vessels. It is capable of handling both 20-foot and 40-foot containers and a great variety of general cargo. It can also be adapted to bulk cargo service with the addition of a grab bucket. The crane also has a new type of DC control system, which is completely static and requires no generators.

The reach of the boom will be 113 feet 6 inches. The back reach will be 61 feet, with an additional 50-foot gage which gives the crane a total reach over the dock and water of 224 feet 6 inches. The height of the crane will be 220 feet with the boom in a stowed position. Trolley speeds will reach 410 feet per minute, while the gantry speed will be 150 fpm. Up and down hoist speeds will reach 100 feet per minute with a load and 240 fpm unloaded.

Pulls the dirtiest duty in tightest quarters.

New from Colt Industries! Everything you could ask for in a marine sewage system. Compact and lightweight to save valuable cargo space. Automated for operational efficiency and economy. Design permits easy retro-fitting to existing vessels. Disposes a clean, safe effluent, no storage tanks needed. Solids are reduced to inert ash through an odorless combustion process. Liquids are electro-chemically treated and discharged overboard. Generates its own chlorine from seawater for disinfection. Accepted by the U.S. Navy and Coast Guard. Systems available up to 17,000 gallons of influent per day. For complete information, contact Colt Industries, Power Systems Division, Beloit, Wisconsin 53511.

Colt Industries



KNOWN 'ROUND THE WORLD

THE BOSTON METALS CO.

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

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

TURBO GENERATOR SETS

1

WESTINGHOUSE 440/3/60 200 KW UNIT

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

2

WESTINGHOUSE 60 KW 120 VDC M-20-EH

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

3

300 KW WORTHINGTON-MOORE CROCKER-WHEELER UNITS

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

4

VICTORY 300 KW WESTINGHOUSE TURBO GENERATOR SET

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

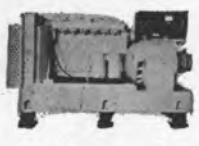
5

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

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

DIESEL GENERATOR SETS

6



G.M. 6-71 DIESEL GENERATOR SET

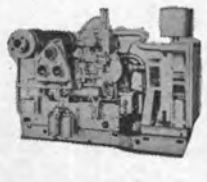
60 KW — 440/3/60 — 1200 RPM—with switchgear.

7

350 KW 120/240 VDC DIESEL GENERATOR SET

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

8



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

4½ x 5¾—BHP 16—RPM 1200—radiator cooled. GENERATOR: Delco 10 KW 120 VDC—83.3 amps—75" OAL—57" OAW—57" OAH.

$1695.

9

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

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

10

UNUSED 100KW SUPERIOR DIESEL GENERATOR SET

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

11

UNUSED 10 KW SUPERIOR DIESEL GENERATOR SET

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

TURBINE ROTORS

MAIN PROPULSION

12

19 STAGE WESTINGHOUSE H.P. ROTOR FOR AP2 VICTORY

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

13

SPECIAL!

COMPLETE TURBINE OR ROTORS

8500 HP G.E. C-3 Victory—Sun C-4's.

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

14

NEW L.P. BLADE RINGS

for large 8500 H.P. Victory

Joshua Hendy Westinghouse

15

NEW 8500 H.P. G.E. TURBINES

Large Victory or C-3

H.P. #72271 L.P. 72272

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

ALSO AVAILABLE

16

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

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

17

8500 H.P. G.E. — C-3 OR VICTORY

H.P.—8-stage—6159 RPM—serial 62043
L.P.—8-stage—3509 RPM—serial 62042
G.E.I. 16263

18

6000 H.P. G.E. — NORTH CAROLINA C-2

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

19

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

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

AUX. GEN. ROTORS

20

250 KW & 300 KW ALLIS-CHALMERS ROTORS

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

21

300 KW 5965 RPM JOSHUA HENDY

Turbine—3H-69 Gear—52269
Turbine—3H-52 Gear—52252
Turbine—3H-62 Gear—52262

T-2 ROTORS, STATORS COOLERS, ETC.

22

ELLIOTT 10-STAGE MAIN PROPULSION TURBINE ROTOR

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

23

LARGE G.E. MAIN PROPULSION SCHENECTADY TURBINE ROTOR

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

24

AUXILIARY GENERATOR ROTORS

DORV—325M—T-2 Tanker Aux. Generator.

25

WESTINGHOUSE MAIN PROPULSION REVOLVING FIELD

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

26

WESTINGHOUSE MAIN GENERATOR STATOR

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

27

G.E. MAIN GENERATOR STATOR

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

28

WESTINGHOUSE MAIN GENERATOR AIR COOLER

Reconditioned with A.B.S.

29

UNUSED G.E. MAIN GENERATOR AIR COOLER

PUMPS

30

VICTORY AP2 MAIN CIRCULATOR

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

31

UNUSED 10x9x12 VERTICAL SIMPLEX FUEL OIL TRANSFER PUMPS

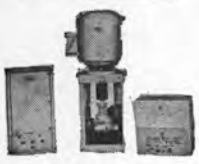
Furnished on some T-2 Tankers. 160 GPM Bunker C —viscosity 70 to 700 SSF 122°F @ 100 lbs. discharge pressure. WP steam 150 lbs.—exhaust 10 lbs. 1¼" steam inlet—1½" exhaust. 4" Pump suction—3½" discharge.

32

WORTHINGTON 16"x14"x18" VERTICAL DUPLEX STRIPPING PUMP

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

33



NEW BLACKMER FUEL OIL TRANSFER PUMP

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

34

UNUSED BLACKMER VERTICAL ROTARY PUMP

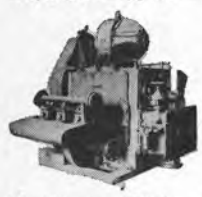
4"—100 GPM—100 PSI—15 HP — 440/3/60 — gear head.

35

R-2418 WATEROUS CARGO PUMP

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

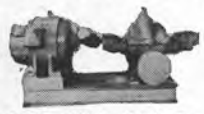
36



UNUSED BOILER FEED PUMP

Worthington Triplex—36.5 GPM—590 PSI—variable stroke—2¾ x 5—P₂—S₂—R₂ vessels. 40 HP—230 VDC—1800/2400 RPM.

37



UNUSED WARREN BRONZE PUMP

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

38

NEW WORTHINGTON VERTICAL SUBMERSIBLE BILGE PUMP

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

39

NEW—UNUSED BRONZE VERTICAL LST BALLAST PUMP

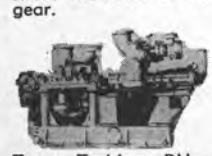
1500 GPM—56' head or 25 lbs. — 8" suction — 6" discharge. MOTOR: Century 30 HP—230 VDC—110 amps—1750 RPM — 40°T rise — stab. shunt—BB drip proof —controls available.

40

EXCELSIOR MOLASSES PUMP—SIZE 5½"

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

41



UNUSED SIZE 4 BUFFALO FEED PUMPS

Terry Turbine—BM—273 HP—550 RPM—exhaust 15 lbs—590 PSI—superheat 0°—425 GPM Buffalo Pump—discharge pressure 750 lbs.—5" x 4"—built for USN DD destroyers.

42

COFFIN MODEL F BOILER FEED PUMP—VICTORY OR T2

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

43

BRONZE 14x14x12 CARGO STRIPPING PUMPS

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

WINCHES AND WINDLASSES

44

VICTORY UNIT WINCHES

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

45

MODEL U-6 DOUBLE DRUM WINCHES WITH GYPSIES

50 HP—230 VDC—reconditioned.

46

HYDE NO. 7 WINDLASS

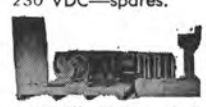
1¾" Chain—Wildcat centers 3'3"—Handles 3000 lb. anchors. MOTOR: 8.7/35 HP—440/3/60—1800/450 RPM.

47

NEW—UNUSED LINK BELT WINDLASS

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

48



IDEAL WINDLASS—UNUSED

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

49

UNUSED 70 HP McKIERNAN-TERRY WINDLASSES

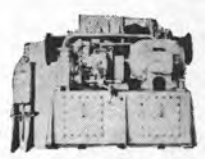
2¾" Chain and two 10640 lb. anchor & 30 fathoms chain @ 30 FPM. 70 HP—230 volts—shunt DC motors—233 amps—550 RPM—55°C rise. Wildcat centers 47½". Base 9'5" wide x 11' long. Weight 36,000 lbs.

50

LCT-6 JAEGER GASOLINE DRIVEN WINCH

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

51



4 SINGLE DRUM ELECTRIC HYDRAULIC WINCHES

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

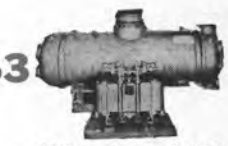
MISCELLANEOUS

52

VICTORY AP2—WESTINGHOUSE MAIN PROPULSION GEAR

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

53



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

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

54

1 PAIR OF 300 HP UNION DIESEL ENGINES

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

55

MODEL O-2-D M&T RECONDITIONED UNITS

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

56

HYDE 30" DOCK CAPSTAN

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

57

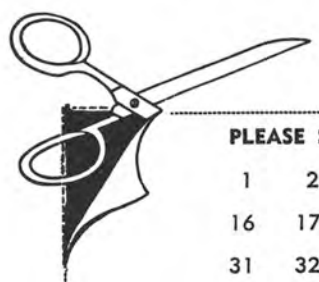
DOUBLE INPUT—SINGLE OUTPUT DIESEL REDUCTION GEARS

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

58

INGERSOLL-RAND MODEL 40 AIR COMPRESSOR

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



PLEASE SEND INFORMATION ON THE FOLLOWING: (Please circle items) 5/1/71

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
46	47	48	49	50	51	52	53	54	55	56	57	58		

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

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

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

D. Ray Miller Elected To Inland Waterways Services Division Of Texas Gas

D. Ray Miller, a veteran employee of American Commercial Barge Line Company (ACBL), has been elected president of one terminal company and vice president of three others in the Inland Waterways Services Division of Texas Gas Transmission Corporation. He has also been made director of terminals for the division.

Announcement of Mr. **Miller's** appointment and his election as president of Port of Louisville Terminal, Inc., and vice president of Memphis River Terminal, Inc., Illinois River Terminal Company, and Transfer Terminal Corporation, was made by **Floyd H. Blaske,** chief executive officer of the Texas Gas Inland Waterways Services Division at the division's general offices in Jeffersonville, Ind.

Port of Louisville Terminal is located on the Ohio River at Louisville, Ky., and the Memphis River Terminal is located on Wolf River, just off the Mississippi River, at Memphis, Tenn. Illinois River Terminal Company operates terminals on the Illinois River at Joliet, Ill., and on the Tennessee River at Guntersville, Ala., while Transfer Terminal Corporation operates terminals on the Ohio River at Huntington, W. Va., and Kenova, W. Va.

Following his graduation in 1949 from the University of Pittsburgh, with a major in transportation, Mr. **Miller** joined the organization that has evolved into the Inland Waterways Services Division of Texas Gas. He was assigned in 1960 to the position of chief dispatcher for American Commercial Barge Line Company, and two years later was made assistant manager of operations. Prior to his being elected to his present positions, Mr. **Miller** had served since 1969 as director of distribution services for ACBL.

New List Of Type Approved Instruments And Control Equip. Available From Lloyd's Register

Lloyd's Register has recently published a new list of type approved instruments and control equipment containing details of those items of control engineering equipment for which the Society has granted its Control Engineering Equipment Certificate of Approval.

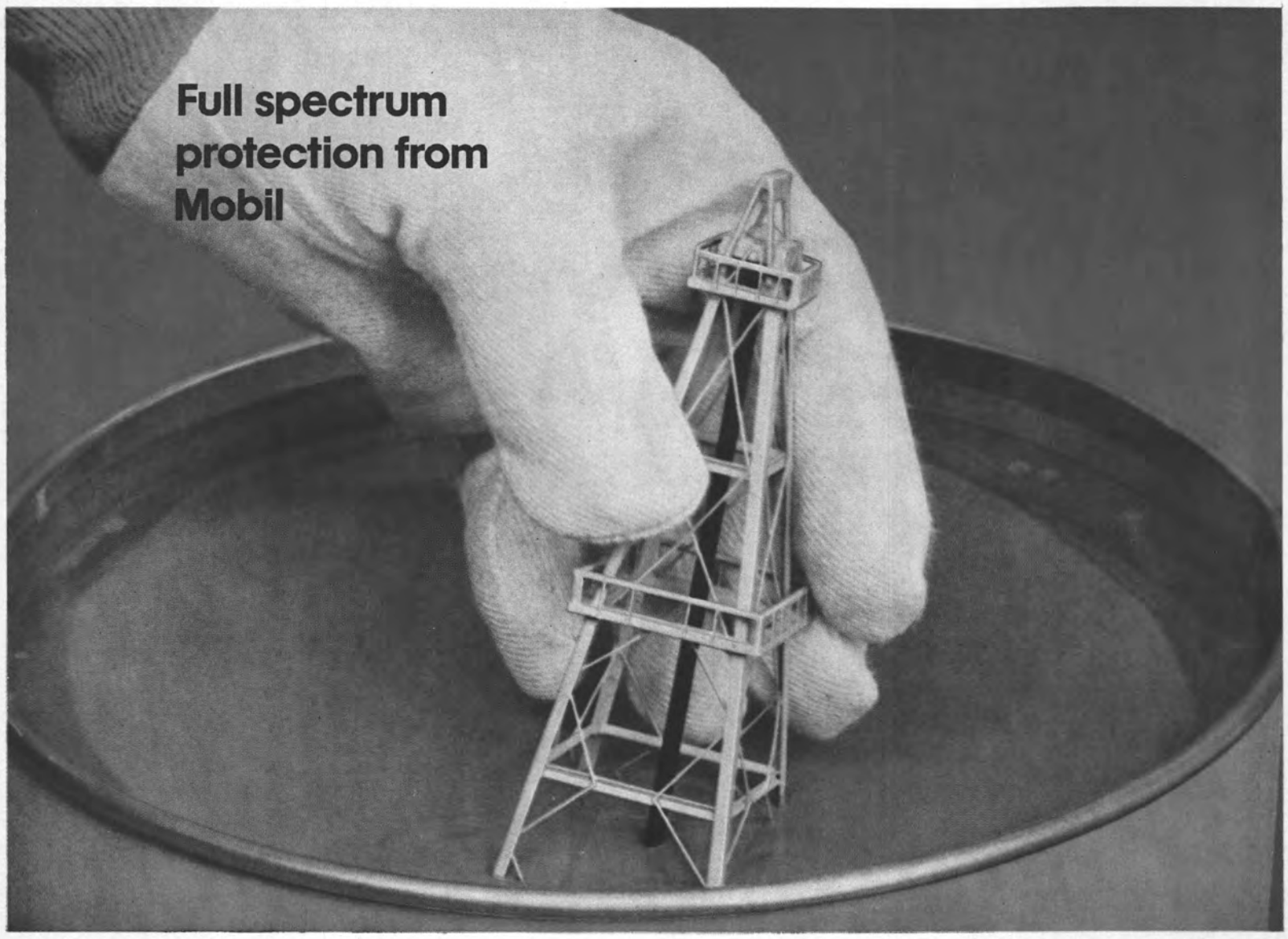
Equipment made by 27 companies in a number of different countries is listed, and this includes alarm, control and fire detection systems, controllers, data loggers, pressure gages, recording and indicating instruments, solenoid valves, transmitters and pressure, temperature and micro switches.

The Control Engineering Equipment Certificate of Approval is granted in accordance with the Society's Environmental Test Specification, which is given in Appendix I of the List. The test levels are recommended minimum standards for type approval of instruments and control equipment intended for installation in control rooms, machinery spaces or other compartments shielded from the weather but exposed to heat, humidity and vibration. The tests simulate conditions encountered in service at sea.

Equipment under test is required to function satisfactorily in specified conditions of power supply fluctuation, vibration, dry heat humidity and inclination. The equipment is also tested to ensure that it conforms with the manufacturer's stated specifications. There are additional tests which may be required depending on the particular use of the equipment.

Copies of the "List of Type Approved Instruments and Control Equipment 1971" are available on request from Lloyd's Register at 71 Fenchurch Street, London EC3, England, and from Lloyd's Register of Shipping, 17 Battery Place, New York, N.Y.

HALTER-BUILT ALUMINUM PILOT BOAT: Halter Marine Services, Inc., New Orleans shipbuilder, has delivered the Rhode Island Pilot (shown above), a 35-foot pilot boat, to the Rhode Island State Pilots Association. The new high-speed boat, which has a speed in excess of 23.5 miles per hour, is powered by a single General Motors 8V71 diesel engine. Its design features a deep V-flared hull for maintaining station in exceptionally heavy seas. The vessel's all aluminum construction is exceedingly heavy for coming alongside ships and for boarding in extreme sea conditions. The boat is further equipped with rubber fendering all around for added protection. Steering is Orbitrol hydraulic. The Rhode Island Pilot carries 350 gallons of fuel oil and 40 gallons of fresh water. It is equipped with a King electric galley unit, head and shower, and has sleeping quarters for two. The design of the vessel permits boarding by pilots off the forward quarter, with the pilothouse positioned aft and amidships for better visibility and control when approaching ships in a seaway. Auxiliary and navigational equipment installed on the boat include a Decca 101 radar, an Onan 5-kw generator, and electric heaters for operation in the excessive cold of New England.



Mobilzinc® coating. Like dipping your steel structures in a galvanic bath.

Brushing or spraying steel with Mobilzinc gives the same protection as dipping it in a galvanic bath. That's why "Zinc-rich" Mobilzinc gives the most effective, longest lasting, easiest applying cathodic protection of any coating.

Mobilzinc leaves a tough coating of zinc on steel substrates. During immersion, or in highly humid environments, the steel becomes cathodic and Mobilzinc becomes anodic. If the steel becomes exposed by damage, the zinc film is sacrificed slowly, protecting the steel.

No demanding application techniques are necessary with Mobilzinc. It brushes or sprays on like ordinary paint. Its eye-appealing green color provides an easy-to-see contrast to unpainted surfaces. Setting time is just twenty minutes.

Extensive testing proved Mobilzinc effective for adverse marine and industrial environments, including bridges, offshore rigs, pulp and paper mills, chemical plants, caustic environments, and areas exposed to heavy abrasion or high temperatures.

For expert advice on the best Mobilzinc coating for you, see your favorite Mobil oilfield supplier, or write to Mobil Chemical, Maintenance & Marine Coatings Dept., Edison, N. J., the largest supplier of maintenance coatings to the drilling industry.

Mobil Chemical

MAINTENANCE & MARINE COATINGS

Edison, N. J. / Kankakee, Ill. / Toronto, Canada
Beaumont, Texas / Los Angeles, Calif.

MARINE FUELS • MARINE LUBRICANTS • MARINE COATINGS
WORLDWIDE MARINE SERVICE

ALSO FROM MOBIL: AUTOMOTIVE FINISHES, INDUSTRIAL METAL COATINGS, PACKAGING COATINGS, SPECIALTY CHEMICALS, WOOD FINISHES

171A

GE And Breda To Build Steam Turbines In Italy

The General Electric Company and Breda Termomeccanica E Locomotive S.p.A. (Breda), Milan, have entered into a manufacturing associate agreement for the production in Italy of geared marine steam turbines. **David S. Bennett,** general manager of GE's marine turbine and gear department, with headquarters in Lynn, Mass., and **Luigi Mariani,** managing director of Breda, announced the signing of the agreement under which Breda will build marine steam turbines and gears to General Electric designs in Italy.

Mr. **Bennett** said the agreement was made to meet the increasing demand for marine steam propulsion equipment throughout the world. He pointed out that most of the supertankers and large containerships now being built, or on order, will be propelled by geared marine steam turbines. Mr. **Bennett** also indicated that the agreement should prove equally beneficial to both Breda and General Electric, particularly in view of the rapid growth rate for liquefied natural gas carriers.

This is the seventh manufacturing agreement General Electric's marine turbine and gear department has established with overseas firms. Under these agreements, GE manufactures the rotating parts of the marine steam turbine, including the high pressure rotor assembly and low pressure rotating assembly, and gear rotating parts, while the manufacturing associate produces the stationary parts and assembles and tests the completed unit.

Breda is a major Italian manufacturer of mechanical machinery.

SNAME New York Hears Paper On Throttle Controlled Steam Propulsion Turbines

Shown above at the Overseas Press Club, left to right, are: **Charles W. Wilson,** secretary-treasurer of the New York Metropolitan Section; **Warren I. Signell,** Section chairman; Dr. **Otto J. Geisler,** author, and **Robert P. Fulton,** member of the Section executive committee.

The New York Metropolitan Section of The Society of Naval Architects and Marine Engineers met on March 25 at the Overseas Press Club, 54 West 40th Street, New York, N.Y.

At the technical session, which was preceded by a social hour, Dr. **Otto J. Geisler,** Leader, Department of Estimating and Development, Steam Division, Blohm & Voss, A.G., Hamburg, Germany, presented a technical paper entitled "Throttle Controlled Steam Propulsion Turbines."

The author, in this paper on throttle controlled steam turbines, reviews the status of this development and presents for the first time test bed data which is used as an evaluation of the concept. The paper presents the advantages as applied to safety, reliability and economy. The tapered spiraled blading design criteria are also discussed.

Copies of the paper may be obtained for $2.50 each by contacting **Charles W. Wilson,** secretary-treasurer of the New York Section, c/o Babcock & Wilcox Co., 161 East 42nd Street, New York, N.Y. 10017.

Norton, Lilly Appoints Thompson And Shipley

Norton, Lilly & Company, Inc., New York, N.Y. has announced the appointment of **H.C. Thompson Jr.** of their New Orleans office as Gulf general manager, and as president of Dixie Stevedores, Inc., a subsidiary company. Mr. **Thompson** succeeds **G. Abaunza Jr.,** who recently retired.

William F. Shipley has been appointed manager of Norton Lilly's Baltimore office. He succeeds **Lawrence M. Blume,** who has retired after 42 years of service with the company.

MARITIME REPORTER/Engineering News is the only one I read . . . it has the best editorial staff and the best editorial content.

There are five good professional editors working for MARITIME REPORTER/ Engineering News . . . with a total of over 60 years' experience in all phases of marine editing, writing and publishing. All engineering and technical articles are reviewed, written and re-written by a registered professional naval architect with years of experience as a practicing naval architect and shipyard manager.

These editors know the maritime industry, inside and out.

MARITIME REPORTER/Engineering News is the only marine magazine issued TWICE a month. Twice as often and twice as fast, I get a fresh package of valuable information that's current enough to be useful.

Carefully selected technical papers, authored by the industry's leading experts, are skilfully condensed and re-written for a clear, concise, fast-reading presentation of the facts. Feature articles and news items provide complete details on up-to-the-minute industry developments, new designs, marine legislation, new vessels, new systems, contracts and appointments.

MARITIME REPORTER/Engineering News gives me all I need the way I want it, and . . . I'm not alone.

MARITIME REPORTER/Engineering News is REQUESTED . . . in writing . . . by thousands more shoreside management and engineering men in vessel operations, shipbuilding, ship repair and naval architecture, than any other commercial marine publication in the world . . . DOUBLE the second magazine in the American Market alone.

Advertising gets results
in the best read marine magazine . . .

MARITIME REPORTER AND ENGINEERING NEWS

107 EAST 31st STREET
NEW YORK, N. Y. 10016
MUrray Hill 9-3266 · 7 · 8 · 9

MEMBER BPA
Business Publications Audit of Circulation, Inc.

Bath Iron Works Lays Keel For The First Of Three Large AEIL Containerships

Shown at the keel-laying, left to right: **S. Wolkow,** Maritime Administration; **R. Bettum,** AEIL; **L. Gilbreath,** BIW executive vice president; **A. Ripley,** president Local 6, I.U.M.S.W.A.; **F. Leighton,** American Bureau of Shipping; Lt. Cmdr. **J.B. Ekman,** U.S. Coast Guard, and **L. Dauphinee,** BIW project manager.

Bath Iron Works Corporation, Bath, Maine, laid the keel on April 5 for the first of three large containerships to be constructed for American Export Isbrandtsen Lines.

The event marks the first keel-laying ceremony at the Bath shipyard in nearly three and one-half years.

Lowry E. Gilbreath, Bath's executive vice president for operations, officiated at the ceremony. He said that work on the three large containerships signals a period of increased activity at BIW and projected a possible requirement for additional people by the end of this year.

In addition to Mr. **Gilbreath,** representatives of the owner, American Export Isbrandtsen Lines, the Maritime Administration, the U.S. Coast Guard, American Bureau of Shipping, and officials of Local 6, Union of Marine & Shipbuilding Workers of America, were present.

Bath officials indicated they were particularly pleased to start work on the $51 million contract at this time because the three new containerships are an excellent lead-in for Bath to the long-range maritime ship replacement program for the 1970s.

The containerships, 610 feet in length with a beam of 78 feet, are follow-ons to three ships of the Sea Witch Class completed at Bath in 1969.

This first ship, designated BIW Hull Number 357, is scheduled to be launched in December of this year. The entire three-ship contract will be completed in February 1973.

Webb Meeting, Homecoming And Dedication Set For June 5

The 1971 Homecoming, and annual meeting of the Webb Alumni Association will be held on June 5, 1971. The meeting is scheduled to start at 3:30 p.m. in the lecture hall on the campus at Glen Cove, Long Island, N.Y.

At 4:30 p.m. there will be a dedication ceremony of the newly-completed Livingston Library. The new library, besides a greatly expanded space for books, reading rooms, etc., includes an auditorium-lecture hall with a capacity for over 150 people.

Preceded by a social hour, a buffet dinner is scheduled to begin at 6:30 p.m. and will be served outdoors, weather permitting.

Delta Line Appoints Thomas W. Harrelson

Thomas W. Harrelson

Thomas W. Harrelson has joined Delta Steamship Lines, Inc., New Orleans, La., as executive assistant, according to an announcement by Capt. **J.W. Clark,** Delta president.

Mr. **Harrelson,** a native of Kinston, N.C. and a 1966 graduate of the United States Merchant Marine Academy at Kings Point, N.Y., served two years at sea as a deck officer with Grace Lines, including intermittent shoreside assignments with that company. He comes to Delta directly from a three-year tour of duty as special assistant to the superintendent of the Merchant Marine Academy at Kings Point.

Upon his graduation from the Academy, Mr. **Harrelson** received the Albert V. Moore Award in Marine Transportation, and the American Bureau of Shipping Award for scholastic achievement and leadership.

Offshore Terminal Study Contract Awarded By MarAd

Soros Associates, a New York City firm of consulting engineers, has been awarded a contract for a study of the feasibility of multipurpose offshore terminals in the United States, Assistant Secretary of Commerce for Maritime Affairs **A.E. Gibson** has announced.

"The purpose of this study," according to Mr. **Gibson,** "is to help pave the way for the introduction of 'supersized' bulk carriers—along with the economies inherent in using these vessels—into U.S. foreign trade."

Mr. **Gibson** pointed out that while there are now over 200 ships of 100,000 deadweight tons and greater in the world fleet, they are barred from using nearly all U.S. ports because of channel depth and width limitations. "Our shippers, who would benefit from lower transportation costs if these ships were used, are being penalized by the fact that we have no facilities to accommodate them," he said.

Aided by Ocean Science and Engineering, Inc., of Bethesda, Md., and Long Beach, Calif., Soros Associates will perform three tasks under the contract. They are: (1) projecting bulk-cargo shipment requirements for U.S. industry over the next 30 years on a geographic basis and the capability of present bulk-cargo distribution systems to handle them; (2) comparing alternative methods of using "supersized" ships to carry these cargoes, including the use of feeder vessels and pipelines, and the possibility of moving user industries to sites where these ships can berth; and (3) formulating advanced concepts in design, construction, and operation of offshore island terminals, including development of economic and technical data, if the first parts of the study indicate the need for such facilities.

This study, which will require about a year to complete at an estimated cost of $197,000, is the first phase in a three-part undertaking, Mr. **Gibson** explained.

Specific privately sponsored development studies, conducted jointly with Federal and state agencies to define contract specifications, necessary legislative proposals, and operating agreements among proposed users, will follow as the second phase. The final part would consist of the construction and testing of one prototype offshore terminal.

In the present study, Soros Associates will explore ways in which activities considered undesirable in populated areas, such as power plants and waste disposal, can be integrated in the design of an offshore terminal island to remove them from inhabited zones and to help defray the cost of the structure.

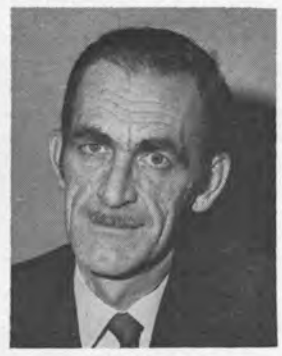
Gordon Furth Elected Exec. Vice President Marcona Corporation

Gordon Furth has been elected to the newly-created position of executive vice president of Marcona Corporation, San Francisco-based resource development, shipping and mining concern. The announcement was recently made at the company's annual shareholder's meeting by **C.W. Robinson,** president.

Mr. **Furth** has served as senior vice president since 1965. Prior to that time, he was president of Ocean Services, Inc., a principal marine operating company of the Marcona group. He first joined the firm in 1956, as administrative manager of the Peruvian subsidiary, Marcona Mining Company. His career also includes 12 years of audit management experience with the accounting firm, Arthur Andersen & Co.

A 1942 graduate of the University of California at Berkeley (A.B. degree in economics), Mr. **Furth** also earned an M.B.A. degree from Harvard Business School in 1947. He is a director of Soule Steel Company and a member of the Pan American Society, World Affairs Council of Northern California, World Trade Club, American Institute of Certified Public Accountants, and American Institute of Mining and Metallurgical Engineers.

ACT Appoints V.R. Vincent Manager Container Services



V.R. Vincent

V.R. (Pete) Vincent has reported for duty as manager of container services for Associated Container Transportation, it has been announced by **Michael B. Northen,** president of ACT in North America.

For ACT, he will be in charge of container booking, positioning, maintenance and repair and accounting control of all equipment within the system.

After wartime duty with the Royal Air Force, Mr. **Vincent** joined Cunard Steamship Company in 1946 and moved through the auditing, cashier's freight sales and freight operations departments in London and New York. In 1966, he was assigned to container service development involving documentation, simplification of paper work, computer data processing and freight planning. In 1967, he joined Atlantic Container Line as executive assistant to the president, and later as terminal administration manager.

Charles H. Black Named Treasurer Of Litton Industries

Charles H. Black has been appointed treasurer of Litton Industries, it was announced by **Joseph T. Casey,** Litton senior vice president.

Mr. **Black** brings to his new position almost 14 years of extensive experience with Litton operating divisions in the defense and commercial areas. For the last five years he has been vice president, finance, for the Professional Services and Equipment group.

Mr. **Black** was graduated from the University of Southern California with a bachelor's degree in business administration. Currently, he is a director of the university's Commerce Associates of School of Business.

Litton Industries, headquartered in Beverly Hills, Calif., is a major multinational corporation specializing in products, systems and services for business, defense, marine, industrial and professional markets.

Babcock & Wilcox Names Arthur Jackson To Managerial Post

Arthur W. Jackson

Arthur W. Jackson has been named to succeed **E.G. Kispert** as general manager of the industrial and marine department of The Babcock & Wilcox Company's power generation division. Mr. **Kispert** is retiring.

Mr. **Jackson,** headquartered in Barberton, Ohio, will be responsible for all industrial and marine operations, including general, paper and steel industries, as well as the division's Wilmington, N.C. manufacturing facility.

Mr. **Jackson** joined B&W in New York City in 1946 and was transferred to Barberton in 1958 as a group supervisor in industrial boiler marketing. He became manager of sales promotion and training in 1964, manager of industrial product sales in 1966 and, since March 1970, has been manager of applications engineering in the industrial and marine department.

Mr. **Jackson** has a B.S. degree in mechanical engineering and an M.S. degree in industrial management from Stevens Institute of Technology. He attended the University of Akron's School of Law. He is the author of numerous technical papers and holds several patents.

Delta Steamship Extends Deadline For LASH Contract Award

The Maritime Subsidy Board has granted permission to Delta Steamship Lines, Inc., to extend the deadline for awarding the contract for building from three to five LASH ships from April 1 to May 12. More time is needed to study several questions relating to making the award, the line explained. The apparent low bidder to build the ships was Avondale Shipyards, Inc.

President Nixon Proclaims May 22 National Maritime Day

By executive proclamation President **Nixon** has designated Saturday, May 22, as National Maritime Day. This day has been set aside to honor the American-flag merchant marine.

The President has requested the dress-up of all U.S.-flag ships on that day, and asks citizens to display the American flag. He called on the maritime industry to move forward in rebuilding the nation's merchant fleet.

Kings Point Fund Receives Two Gifts Totaling $50,000

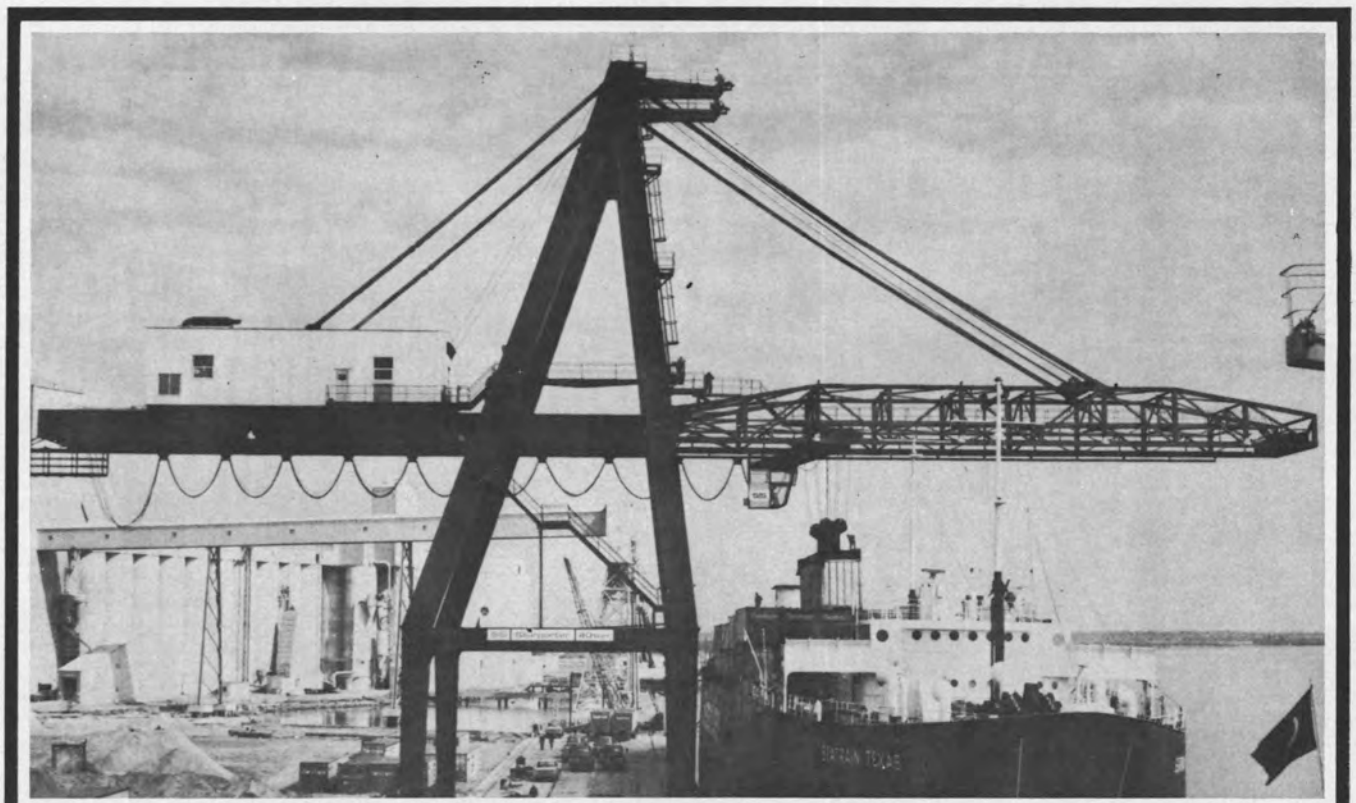
Two anonymous gifts of $25,000 each have been received by the Kings Point Fund, for the benefit of midshipmen in training at the United States Merchant Marine Academy, Kings Point, Long Island, N.Y., it was announced by **Milton G. Nottingham,** fund president.

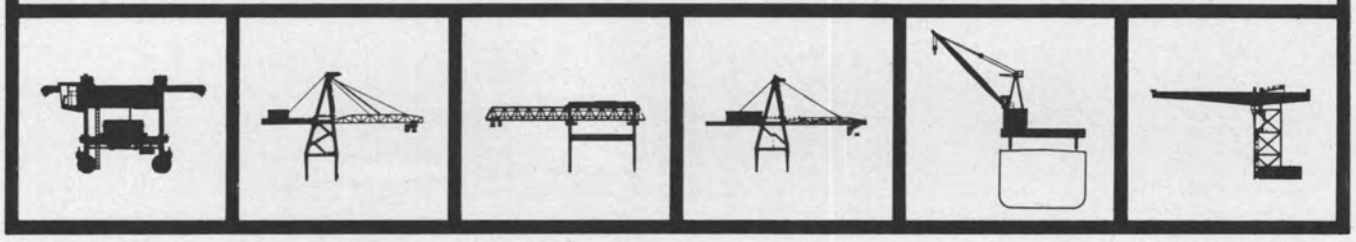
The donations, which mark the launching of the fund's 1971 Annual Giving Campaign, will be applied to a number of new or continuing projects supported by the fund as supplements to the academy's maritime officer training program. Prominent among these is the acquisition of a new eight-man shell for use by Kings Point oarsmen in the academy's newly-established sport of crew racing.

The gift will also defray final production costs of a sound-color film, "The Kings Point Story," produced by the fund in the past year for national release through television and organizational channels.

The Kings Point Fund is a nonprofit corporation which receives and administers contributions from the academy's alumni and friends, corporations, and foundations in the interest of a more effective and individually rewarding officer training program for the American merchant marine.

Starporters® DELIVER





30-Ton, High Speed Star Karricon Straddle Carrier with Telescopic Adjustable Spreader—Will Clear and Stack All Size Containers Three High.

45-Ton Container and General Cargo Crane with Hoist on Trolley—Halifax, Nova Scotia.

40-Ton Container and General Cargo Crane with Horizontally Extendable and Retractable Boom.

40-Ton Container and General Cargo Crane with Extra Back Reach and Load Handling with Apron Luffed—South Carolina State Ports (shown operating in photo above).

30-Ton Ship or Barge Mounted Container and General Cargo Crane.

33.5-Ton Fixed Tower Luffing Boom Container and General Cargo Crane and Handling System for Feeder Port Facility.

Three Starporter container cranes were recently completed and erected for Ports in Vancouver, British Columbia; Charlston, South Carolina; and Halifax, Nova Scotia. Each crane was delivered *on time* and began full operation the day of turnover with little or no down time. We think you'll agree that's quite a record. But that's what our customers have a right to expect and get. If you need specialized cargo handling equipment for container terminals, feeder ports, mini ship, Lash or Seabee lighter cargo facilities, call SIS. We deliver. Always have. Always will.

For immediate action call or write.

SIS

STAR IRON & STEEL CO.

326 Alexander Avenue / Tacoma, Washington 98421 Telephone (Area Code 206) 627-9131 Telex No. 327 453

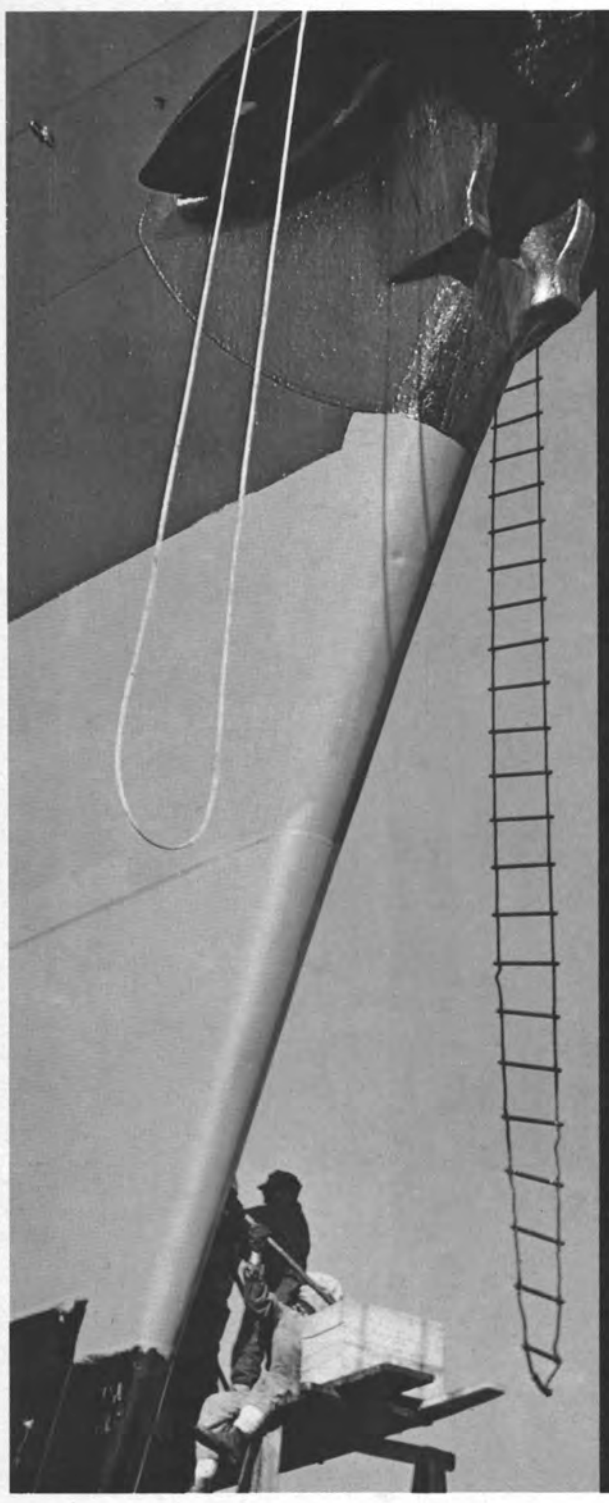
East Coast Representative: Robert Moore Corporation / 350 Main Street, Port Washington, N.Y. (zip code 11050) (Area Code 516) 883-7660

Southeastern Representative: John Blake Engineering & Sales Co. / P.O. Box 23541, New Orleans, La. (zip code 70123) (Area Code 504) 821-4051

STARPORTER Container Cranes are also built by the following licensees:

Canada: Canron, Limited, Western Bridge Division.

Japan: Kawasaki Electric & Machine Co., Ltd.



DEVOE high-performance coatings

...put corrosion out of work wherever you work.

Devoe's Devran® and Catha-Coat® Coating systems provide you with the finest anti-corrosion technology to meet marine environmental problems anywhere — deep-sea, off-shore or inland waterway.

Devran and Catha-Coat coatings may be used separately or combined to give superior systems for the optimum in durability and performance.

Separately, Catha-Coat inorganic zinc coatings give maximum effectiveness in prevention of corrosion. They are available post cured or as a self-curing film, both with high zinc content for extended service. You get ease of application, cathodic protection and superior acceptance of overcoats.

Devran Coatings provide you with the outstanding durability of epoxy — up to three times longer service than conventional coatings. You also get ease of application, using conventional equipment.

Devran Coatings are also available in winter-grade formulations to permit year-round application schedules.

There's a Devoe Marine specialist ready to advise you on the best system for your needs, wherever you work. Write for a copy of our new Tank Coatings Manual or the name of the Devoe Marine specialist in your area.

Devoe high-performance coatings are dockside worldwide.

DEVOE
MARINE
PAINTS & COATINGS

DEVOE & RAYNOLDS CO., INC.
Subsidiary of Celanese Coatings Company

Sales Offices: 414 Wilson Avenue, Newark, New Jersey 07105
500 Mandeville Street, New Orleans, Louisiana 70117 • 311 California Street, San Francisco, California 94104

NAMS To Hold 21st Annual Meeting In New York City

The National Association of Marine Services, Inc., will hold its Twenty-First Annual Meeting at the Summit Hotel in New York City on May 13 and 14.

The maritime service organization, which was incorporated in 1950 as the National Associated Marine Suppliers, changed the name and scope of the association two years ago to the National Association of Marine Services, still retaining their identification as NAMS.

This was done, according to **James C. Taylor,** president of the association, mainly because commercial vessel suppliers do provide service to ship owners as well as supplies but also because the association operations include considerable legislation activity and provides an information source of interest to such other marine service companies as repairers, shoreside contractors, towboat operators, ship cleaners, water taxi owners, etc.

NAMS returns to New York for its Twenty-First after an absence of two years. Its Nineteenth Annual Meeting was held in New Orleans, La., and its twentieth anniversary was held in San Francisco, Calif.

13 PACECO Cranes For Six Foreign Ports

Construction of container handling equipment for six seaports in both Europe and the Far East has been announced by PACECO, a division of Fruehauf Corporation, Alameda, Calif. The cranes are being built by PACECO licensees: Paceco International Limited, London, England; Mitsui Shipbuilding and Engineering Co., Tokyo, Japan; and Fruehauf, S.A., Madrid, Spain.

The Port of Genoa, Italy, will have two new PACECO Low-Profile model Portainers, making a total of three for that port since 1968. All three cranes, for ship loading and unloading, have a 40-metric-ton capacity.

In Holland, the Port of Flushing will get a 41 MT Portainer, and four 35 LT Portainers will go to the British Transport Docks Board, Southampton, England, through Paceco International Limited, London. The first job for Fruehauf, S.A. in Madrid, is the construction of two PACECO Shipstainers, container handling cranes which are mounted aboard ships.

PACECO's Far East licensee, Mitsui Shipbuilding and Engineering Co., Ltd., is installing a Portainer with an articulating boom, to conform to height limitations, at the Port of Tokyo. In addition, they are building two 30 LT Transtainers for the Port of Osaka and three 30 LT Transtainers for the Port of Kobe. The Transtainers have a 77-foot span to handle six container rows, plus carriers on a roadway, in the port terminal area.

Dixie Machine Elects Steele And Pedersen

Walter W. Steele, general manager of Dixie Machine Welding & Metal Works, New Orleans, La., was elected vice president at the March 26 meeting of the board of Idsco Investment Holding Corporation. In announcing Mr. **Steele's** election, **H.D. Hughes,** president, said the vacancy fills a corporate post that has been open since October 6, 1970. Mr. **Steele's** main duties will still be in connection with the operation of Dixie Machine Welding & Metal Works, Ship Repair Division. He is a native of Buffalo, N.Y. Since coming out of the service in World War II, Mr. **Steele** has been associated with ship repair firms for approximately 25 years.

At the same corporate meeting, Mr. **Hughes** announced that Capt. **Lars H. Pedersen** would be vice president in charge of foreign sales. Captain **Pedersen** has been associated with the Dixie Machine Welding & Metal Works firm since 1950. He speaks several languages fluently, and is held in high esteem in all shipping circles. **Lars,** as he is known by his friends, was born in Arendal, Norway, and worked himself up from ordinary seaman to a master, sailing in the Foreign Texas Oil Tanker Fleet during the World War II years. He holds both Norwegian and U.S. master's licenses, all tonnage, all waters.

Port Of Galveston Appoints Gene Poe

Gene Poe

Gene Poe has assumed duties as engineer of the Port of Galveston, it was announced by port director, **C.S. Devoy.**

A native of Dallas, Mr. **Poe** studied at the University of Texas at Arlington and is a licensed professional engineer. He has been a structural engineer on the staff of the Port of Houston for the past 10 years. Prior to that, he was chief engineer of the Lofland Company Houston plant.

An air force veteran of the Korean War, Mr. **Poe** succeeds **Howard Kornberg,** who resigned.

Nat'l River Academy Citations Awarded

Twenty-three Congressional citations were presented by Congressman **Bill Alexander** (D-Ark.) in Helena, Ark., to men who played major roles in establishing the National River Academy of the United States of America, Inc.

Mr. **Alexander** delivered the citations during the Academy's board of directors' meeting. "Without the dedicated, hard-headed work by these men," Mr. **Alexander** said, "the National River Academy would not have become a reality. We would not now be providing this training for inland waterways industry employees in the safe handling of cargoes and safe operation of waterborne vehicles. We would not be taking these important steps toward strengthening the capability of waterways industries to contribute to the economic growth of the nation while protecting our marine environment."

Mr. **Alexander** originated the idea of a river academy to train workers for the inland waterways transportation system. The men receiving the certificates were directly involved in the research or organizational phases of the Academy's establishment.

Those receiving the certificates include the following: **Floyd A. Mechling,** Joliet, Ill., chairman of the National River Academy board of directors; **John M. Donnelly Jr.,** New Orleans, La., vice chairman, and **B.D. Brandon,** Little Rock, Ark., secretary-treasurer; directors of the Academy: **Gale H. Chapman,** Minneapolis, Minn.; Dr. **John Easley,** Helena, Ark.; **Francis Thompson,** Helena, Ark.; Capt. **Jim Walden,** Helena, Ark.; **T.F. Ellis Jr.,** Galveston, Texas; **L.R. Fiore,** Cincinnati, Ohio; **Harry Mack,** Cincinnati, Ohio; Capt. **Noble Gordon,** Tampa, Fla.; **W.H. Kennedy,** Pine Bluff, Ark.; **William C. McNeal,** New Orleans, La.; **Alvan D. Osbourne,** Pittsburgh, Pa.; **Douglas Simmons,** West Helena, Ark.; **H.K. Thatcher,** Camden, Ark.; Dr. **Bart Westerlund,** Little Rock, Ark., and Capt. **Jack Wofford,** Jeffersonville, Ind.; Capt. **Pierre Becker** of the U.S. Merchant Marine, acting director of the National River Academy; Chief Warrant Officer **Carter James** of the 124th Transportation Command, U.S. Army, who was loaned to the project to explore its feasibility, and **Sheldon Held,** Helena, Ark.; Dr. **Mel Freed,** Arkansas State University, and **Dale Enoch,** Memphis, Tenn., who played substantial roles in researching and setting up the National River Academy.

Higgins To Head MPA New York Office

Francis J. Higgins has been named manager of the Massachusetts Port Authority's trade development office in New York, according to **Thomas T. Soules,** port director in Boston.

Mr. **Higgins** has served as regional marketing manager for Seatrain Lines and as sales manager for United States Lines.

Professional

JAMES E. BEST P.E.
BEST & ASSOCIATES INC.
9870 S.W. 81 ST. MIAMI, FLA. 33143
Tel. (305) 271-3369 & 271-0365
CONSULTING ENGINEER • NAVAL ARCHITECT
ASHORE & AFLOAT
PROJECT COORDINATION PRODUCT DEVELOPMENT
INVESTIGATION DESIGN INSPECTION

J. L. BLUDWORTH
NAVAL ARCHITECT
TUGS
BARGES

4030 Wyne St. Houston, Tex. 77017

BOUCHER SHIP MODELS
Since 1905
Ship Models—Show Case
Plating, Test and Industrial Models
Repairs and Parts
BOUCHER-LEWIS PRECISION MODELS, Inc.
36 East 12th Street, New York 3, N.Y., GR 3-6073

BREIT ENGINEERING, INC.
441 GRAVIER ST.
NEW ORLEANS, LA. 70130
504-524-3575
NAVAL ARCHITECTS & MARINE ENGINEERS
MARINE SURVEYORS

COAST ENGINEERING CO.
& ASSOCIATES
CONSULTING ENGINEERS
NAVAL ARCHITECTS & MARINE ENGINEERS
MARINE SURVEYORS
711 West 21st Street Norfolk, Virginia 23517
Telephone 625-2744

Entertainment & Sound Reenforcement Systems
Radio & TV Entertainment Antenna Systems
Closed Circuit TV & Dial Telephone Systems
Commercial Radio-Sound Corp.
ENGINEERS AND MANUFACTURERS
SOUND and COMMUNICATIONS SYSTEMS
652 First Ave., New York, N.Y. 10016 Tel: (212) 679-0400

CRANDALL
DRY DOCK ENGINEERS, INC.
Railway and Floating Dry Docks; Waterfront Structures
Consulting • Design • Inspection
Dry Dock Hardware and Equipment
238 Main Street Cambridge, Mass. 02142

CUSHING & NORDSTROM INC.
NAVAL ARCHITECTS, MARINE ENGINEERS
& TRANSPORTATION CONSULTANTS
50 TRINITY PLACE
NEW YORK, N.Y. 10006
TEL: (212) 425-8095 CABLE: NAVARCHS

DESIGNERS OF SHARP DeLONG OFFSHORE OCEAN FACILITIES
29 Broadway
New York, N.Y. 10006
Tel. 212-422-1275
FIXED
MOBILE
FLOATING

DESIGN ASSOCIATES, INC.
M. KAWASAKI
3308 Tulane Avenue
New Orleans, La. 70119
Naval Architects Marine Engineers
Marine Management Transportation Consultants
Phone: 822-7430

DESIGNERS & PLANNERS
INCORPORATED
NAVAL ARCHITECTS
MARINE ENGINEERS
114 FIFTH AVENUE
NEW YORK, NEW YORK 10011
(212) 691-7770
P.O. BOX 1080
GALVESTON, TEX. 77550
(713) 502-1002

M. MACK EARLE, P. E.
COMPLETE MARINE ARCHITECHNICAL SERVICE
103 Mellor Avenue 301/747-4744
BALTIMORE, MARYLAND 21228

CHRISTOPHER J. FOSTER
Consulting Engineers
Naval Architects - Marine Engineers
SURVEYS, CONSULTATIONS,
DESIGNS & SUPERVISION
FLOATING DRY DOCKS
MARINE STRUCTURES
GRAVING DOCKS
SHIPYARD EXPANSIONS
PORT FACILITIES
OFFSHORE PLATFORMS
OFFSHORE MOORINGS
17 Battery Place, New York, N. Y. 10004 - Digby 4-0125
14 Vanderventer Ave., Port Washington, N.Y. 11050 - PO 7-7830
Cable Address "Cefosto"

FRIEDE AND GOLDMAN, INC.
Naval Architects & Marine Engineers
SUITE 1414, 225 BARONNE STREET
NEW ORLEANS, LA. 70112
523-4621

GIBBS & COX INC
Naval Architects · Marine Engineers
21 West Street, New York, N.Y. 10006

JOHN W. GILBERT ASSOCIATES, INC.
Naval Architects *Marine Engineers*
Brokerage
58 COMMERCIAL WHARF. BOSTON, MASS. 02110

MORRIS GURALNICK ASSOCIATES, INC.
Naval Architects and Engineers
San Francisco, California

·J·J·HENRY·CO·INC·
NAVAL ARCHITECTS · MARINE ENGINEERS · MARINE SURVEYORS
90 West St., New York, N.Y. 10006 — WH 3-2870
401 North Broad St., Philadelphia, Pa. 19108 — WA 5-1755
430 South Main St., Cohasset, Mass. 02025 — EV 3-9200

L K HOMYER
MARINE ARCHITECTURE & ENGINEERING
Box 408, Corona del Mar, California
Dial (714) 673-6491

C. T. ILARIUCCI & ASSOCIATES
MARINE SURVEYORS & CONSULTANTS
"ANYWHERE IN THE CARIBBEAN"
Tourism Pier #3 Office: 724-7570 722-5508
San Juan, P.R. 00902 Home: 723-4013 723-3635
P.O. Box 4351 Cable: MARISURV
San Juan, P.R. 00905 Telex: ITT 345 3020

JAMES S. KROGEN
NAVAL ARCHITECT & MARINE ENGINEER
Tel. 373-8294
1460 Brickell Ave., Miami, Fla. 33131

Littleton Research and Engineering Corp.
Consulting and Contract Research in Applied Mechanics
Hull Vibration and Shock Noise Control
Structural Analysis Hydrodynamics
95 Russell Street, Littleton, Massachusetts 01460
Telephone 486-3526 area code 617

ROBERT H. MACY
Naval Architect & Marine Engineer
P.O. Box 758 Phone: 762-5667
Pascagoula, Mississippi

MARINE APPLICATIONS CO.
MARINE ENGINEERS
Consultants Designers R & D
TECHNICAL SERVICES WORKING DRAWINGS
DIESEL and PROPULSION CONSULTANTS
146 Second Street P.O. Box 167
Mineola, L.I., N.Y. 516-747-3437

MARINE CONSULTANTS & DESIGNERS, INC.
Naval Architects *Marine Engineers*
Cable Address: "Midship"
Main Off.: 308 Invest. Insur. Bldg. • Cleveland, O. 44114 • (216) 781-9070
Sales Off.: 26 Broadway • New York, N. Y. 10004 • (212) 269-0150

Marine Design Associates
NAVAL ARCHITECTS
P.O. Box 2674, Palm Beach, Florida (305) 833-7900
Designers-Consultants
Commercial Vessels, Trawlers & Yachts

MARINE DESIGN INC.
NAVAL ARCHITECTS & MARINE ENGINEERS
1180 AVE. OF THE AMERICAS Circle 7-2640
NEW YORK, N.Y. 10036

TUGS, BARGES, WORK BOATS & CONVERSIONS

MARITECH, INC.
Consultants in Marine Technology
38 UNION SQUARE
SOMERVILLE, MASSACHUSETTS 02143
(617) 666-0546

RUDOLPH F. MATZER & ASSOCIATES, INC.
NAVAL ARCHITECTS • MARINE ENGINEERS • MARINE SURVEYORS
RESEARCH & DEVELOPMENT
13891 ATLANTIC BOULEVARD
PHONE 904/246-6436
JACKSONVILLE, FLA. 32225
127 OCEAN SCIENCE CENTER
PHONE 305/848-5223
RIVIERA BEACH, FLA. 33404

JOHN J. McMULLEN ASSOCIATES, INC.
Naval Architects—Marine Engineers—Consultants
NEW YORK HAMBURG MADRID

GEORGE E. MEESE
NAVAL ARCHITECTS • MARINE ENGINEERS
CONSULTANTS • SURVEYORS
DESIGNS FOR YACHTS AND COMMERCIAL VESSELS
WOOD — ALUMINUM — STEEL — PLASTIC
TELEPHONE 194 ACTION ROAD
COLONIAL 3-4054 ANNAPOLIS, MARYLAND

Designer of Marine Liquid Level Gauging **METRITAPE®**
for: CARGO • BALLAST • FUEL OIL • LUBE OIL
• DRAFT • TRIM • BILGE • TIDE & WAVE
Remote Reading • Analog Digital • Indep. of Sp. Gr
METRITAPE, Inc. W. Concord, Mass. 01742 • 617-369-7500

ROBERT MOORE CORPORATION
MARINE ENGINEERS CONSULTANTS
350 Main Street, Port Washington, N.Y. 11050
(516) 883-7660
Eastern Representatives:
STAR IRON & STEEL CO.
Tacoma, Washington
Custom Cranes & Hoists • Bridge, Gantry, Portal, Revolving, Container Handling

GUNNAR NELSON
MARINE ELECTRICAL CONSULTANTS
SPECIFICATIONS, SYSTEMS & EQUIPMENT
DESIGN & EVALUATION
COMMERCIAL & NAVAL ALL REGULATIONS
2185 LEMOINE AVE., FT. LEE, N.J. 07024 944-4402

U.S. Navigation Appoints Krusen

Edward A. Krusen, former traffic manager of American Export Isbrandtsen Lines' South Asia Service, has joined the staff of United States Navigation, Inc., as vice president for all Scindia Line Services, it was announced by Edward Oelsner Jr., president.

Mr. Krusen has had better than 25 years of experience in all phases of steamship management and operations, and will be responsible for Scindia's operations in the United States and Canada, which include the East Coast, West Coast, Gulf and Great Lakes.

American Ship Files Statement For Offering

The American Ship Building Company has filed a registration statement for an offering to holders of its Common Stock of Rights to subscribe to 148,733 units at the rate of one unit for each 10 shares of common stock held of record at the close of business at a date in May. Each unit consists of two shares of common stock ($1 par value) and one common stock warrant to purchase one additional share of common stock.

The net proceeds of the offering would be used to retire a portion of the long-term indebtedness of the company. 35,000 shares of common stock were also registered for sale by a selling stockholder. Bache & Co. Incorporated would be the managing underwriter for the offering.

American Ship, headquartered in Cleveland, Ohio, is one of the largest shipbuilding and repair firms on the Great Lakes. It is organized into four principal operating divisions: the AmShip Division, engaged in the construction, conversion and repair of ships; the Nabrico Division, engaged primarily in the fabrication and construction of bridges, barges and towboats, the Building Products Division, engaged primarily in the manufacture and sale of metal and plastic building products, and the Transportation, Cargo and Material Handling Division, engaged in the operation of a Great Lakes bulk cargo fleet, and in providing stevedoring and river terminal services.

The company earned $2,119,513 or $1.42 per share, adjusted for a 5 percent stock dividend paid January 4, 1971, on sales and revenues of $73,743,161 for the fiscal year ended September 30, 1970.

Warren Pumps Elects Zalis And Paugh VPs

The directors of Warren Pumps, Inc., Warren, Mass., have elected two new vice presidents.

Albert A. Zalis is vice president, rotary and reciprocating engineering. He has been with Warren since 1950 and has been chief engineer, rotary pumps, since then.

James J. Paugh Jr. is vice president, centrifugal engineering. He has been with Warren since 1963 and chief design engineer, centrifugal pumps, since then.

TT&T Relocates Boston Office

E.B. Kilroy, manager of Texas Transport & Terminal Co. Inc.'s Boston office, has announced the firm's relocation to new and larger quarters at 60 Batterymarch Street.

Mr. **Kilroy** stated that telephone numbers and cable addresses will remain the same, but their new TWX number will be 710-321-0286.

AUTO-LOGIC Corp. Signs $830, 580 Contract With Navy

Jack Teague

Jack Teague, president and chairman of the board of AUTO-LOGIC Corporation, a Washington, D.C. and Bethesda, Md. based logistic company, announced the signing of a contract with the U.S. Navy in the amount of $830,580 for automated logistic services involving ships in the U.S. Navy inactive fleet, located at the Navy Inactive Ships Maintenance Facility in the Orange and Beaumont, Texas, area.

AUTO-LOGIC is an Automated Logistics International firm engaged primarily in the design, programing, and implementation of logistic systems in support of equipment and technical repair parts for industry and Government, with emphasis given to ashore and afloat inventory control of shipboard equipments, technical repair parts and consumable supplies. Projects completed by the company's personnel have resulted in several million dollars savings by the U.S. Navy and commercial shipping lines.

Mr. **Teague,** a retired Navy supply corps lieutenant, said that the project workers will go through more than 30 vessels at the facility to see how much prescribed equipment each has. "For selected ships, we completely remodernize all logistics areas," Mr. **Teague** said. "We go through them from stem to stern." He said there are "tens of thousands of individual items" needed to equip each vessel. His company's project will determine which items are overstocked and which are lacking. "What might be an excess in one ship would be a deficiency in another," Mr. **Teague** said.

After all the ships are examined, the information will be consolidated in computer records and the ships at the Orange facility will then be compared to see where the shortages on one ship can be made up by excesses on another, Mr. **Teague** said. But the process doesn't stop there, he explained. The inventory of equipment on the ships at the facility will be compared to other vessels throughout the Navy—even vessels on active duty. That comparison is also by computer, located at a Navy base at Oakland, Calif., Mr. **Teague** said, and when an excess of equipment is found on a vessel at Orange, the equipment can then be shipped to a point where there is a deficiency.

Although the ships at the Orange facility are not part of the active fleet, they must be kept fully equipped in case they are called to active duty, Mr. **Teague** said. His company's project will bring the ships up to date, he remarked.

The project will also involve stripping equipment from vessels that are to be sold for scrap. "We just cannibalize the ships in the areas where the Navy has a need for the equipment," Mr. **Teague** remarked. "There are still applications for the equipment in the active Navy—this results in multi-million dollar savings. The program more than pays for itself."

Since some equipment from obsolete vessels can be used in the active Navy, expensive production of new equipment is not necessary, Mr. **Teague** said.

Mr. **Teague** explained that he developed the program for Navy-wide consolidation of equipment by computer while on active duty as a supply corps lieutenant.

Baldt Corporation Moves Headquarters

Baldt Corporation (OTC), New York, has announced the transfer of its corporate headquarters to new offices at 1185 Avenue of the Americas, Suite 2150, New York, N.Y. 10036, effective March 26, 1971. The new telephone number is (212) 489-8775.

Baldt Corporation is a diversified manufacturer whose operations include a marine and oceanographic group and an industrial products and equipment group.

Eugene F. Moran Jr.

Eugene F. Moran Jr., a vice president of the Moran Towing and Transportation Company established by his grandfather, died recently in Southside Hospital, Bay Shore, Long Island, N.Y., after a long illness. He was 68 years old and lived at 235 Lake View Avenue West, Brightwaters, Long Island.

Mr. **Moran** began working for the major towing company before his graduation from Lehigh University in 1925. He was a member of the Knights of Malta, a past president of the Friendly Sons of St. Patrick, and a vice president and director of the Brooklyn Chamber of Commerce.

Berwind Lines, Inc. Appoints B.J. Robeson Exec. Vice President

Bruce J. Robeson

Bruce J. Robeson has been appointed executive vice president of Berwind Lines, Inc., it was announced by top official **Hugh G. McComas** in revealing a restructuring of Berwind's high echelon management.

Mr. **McComas,** group vice president of Berwind Corporation of Philadelphia and president of Berwind Lines Inc. of Puerto Rico, said that all executive personnel will report to him through Mr. **Robeson.**

Mr. **Robeson** is a graduate of the Merchant Marine Academy at Kings Point, N.Y., and comes to Berwind via the U.S. Navy, Grace Lines, and until his move to Berwind, Matson Navigation Co. in San Francisco, where he was superintendent of fleet operations with system-wide responsibilities for container, general and bulk cargo operations.

Prior to that, Mr. **Robeson** held various positions with Matson in the freight division, including that of freight operations manager in the Hawaiian Islands. "Mr. **Robeson's** long experience in container operations will assist Berwind, the principal locally-based inter-island container carrier, in expanding and improving its service," Mr. **McComas** said.

Hudson Waterways Names VP-Operations For Container Vessels

Capt. Kosta Jeremic

Capt. **Kosta Jeremic,** commodore of the fleet of Hudson Waterways Corp., has been named vice president in charge of operations for container vessels, it was announced by **Samuel Kahn,** president.

Hudson Waterways, a subsidiary of Seatrain Lines, Inc., operates the parent company's containerships. Captain **Jeremic** has been with the company for 17 years.

Expansion Of Liquid Parcel Trade Leads To Sizeable Increase In Anco Fleet

The Anco Span, one of five sisterships built by Eriksberg Mek. Verkstad for Anco Tanker Service, is a 23,500-dwt parcel tanker. It has a length overall of 556 feet 6 inches, a beam of 81 feet 3 inches and a depth of 41 feet. The total capacity of the cargo tanks is 191,238 barrels. Propulsion is by a seven-cyclinder, single-acting, turbo-charged diesel of the Eriksberg's Burmeister and Wain type, developing 11,500 bhp.

Anco Tanker Service A/S, Oslo, Norway, recently took delivery of the MV Anco Sea, built by Eriksberg Mek. Verkstad, Sweden, thus completing an order for five 23,500-dwt parcel tankers. Six more vessels are being built by Uddevalla Varvet for Athel Line Ltd. of London. Athel Line is a part owner of Anco Tanker Service.

The carrying of parcel oil cargoes was started in the 1930s in ordinary tankers which were rebuilt for such purposes. Prior to that time, the traditional method of transporting small quantities of liquid cargoes was in drums and barrels. Since then efforts have been made to reduce the costs incurred in transporting these small lots of cargoes. The developments in the trade have led to today's parcel tankers of between 20,000 and 30,000 dwt. These tankers may have as many as 40 compartments, and they can carry an equal number of grades of oils, solvents and chemicals. The cargo is pumped into and out of the tanks by a number of independent pumping systems.

One of the largest companies in the parcel tanker trade is Anco Tanker Service, with its head office in Oslo. The present firm was formally incorporated early in 1970, although the owners have been trading in this business since World War II. Anco Tankers currently operates 16 vessels of about 20,000 dwt. Another seven new ships of 23,600 dwt each are scheduled to be delivered to them during 1971 and 1972.

Further expansion is planned. The major problem facing the firm is to develop vessels that suit the ever changing requirements of the liquid parcel trade. Currently, the cargoes carried are partly spot cargoes and partly contract cargoes.

The safe operation of the vessels and the proper handling of the cargoes is a matter which Anco Tankers gives careful consideration. The chemicals, solvents and oils carried may be toxic, flammable and potential pollutants. It is the responsibility of the firm to carry these cargoes in a manner that is neither harmful to the public or the crew. It is likewise the firm's responsibility towards its customers to see that each cargo arrives in the proper condition.

Numerous steps have been taken to ensure safe cargo handling. Anco Tankers has its own technical staff that determines which cargoes are compatible with the coatings of the different tanks and the general handling requirements of each cargo. These requirements are becoming stricter. A close contact with research institutions, like the National Institute of Technology, Norway, is maintained to effect optimal solutions to cargo-coating compatibility problems and tank-cleaning requirements. The same kind of contact is maintained with the coating manufacturers.

Anco Tanker Service is uniquely international. While its main base is Oslo, no Anco vessel has as yet called at that port. The main activity is between continental Europe, the United States, South America, Japan, Australia and Southeast Asia. The share capital of Anco Tanker Service is equally divided between Athel Line Limited of London, Salenrederierna AB of Stockholm and Ole Schroder Holding Company A/S of Oslo. The rapidly expanding staff consists of 45 persons. This includes a New York office primarily staffed by Americans, and the Oslo office where an experienced staff consists of English, Swedish and Norwegian shipping people.

Todd-Seattle Awarded $214,190 Barge Contract

Todd Shipyards-Seattle has been awarded a $214,190 contract by the Alaska Railroad for the construction of a 7,600-barrel-capacity petroleum and deck cargo barge.

SNAME PACIFIC NORTHWEST SECTION STUDENT MEETING: The Pacific Northwest Section of The Society of Naval Architects and Marine Engineers heard two papers during its Annual Student Meeting on March 6, 1971, in Seattle, Wash. Pictured above, surrounded by automatic controls during a tour of the T-AGOR-16 Hayes, a catamaran oceanographic research vessel currently nearing completion at Todd Shipyards, Seattle, are left to right: **Ed Steward,** electrical engineering, Todd Shipyards, Seattle, who discussed the technical paper "Central Operations Systems for Shipboard Power Plants," authored and presented by **Al Nitsch,** General Electric; **Pete Sias,** chairman of the Section; **Hans Schaefer,** chief engineer, Todd Shipyards, Seattle; **Gene Frampton,** assistant secretary-treasurer of the Section; **L.D. Chirillo,** vice chairman of the Section who also discussed Mr. **Nitsch's** paper; Mr. **Nitsch,** and **Everett Aplet,** University of Washington, who authored and presented the student paper entitled "Application of Micro-Electronics to Marine Deck Machinery Control and Instrumentation."

'Propeller-Excited Ship Vibrations' Subject Of N. California Section

Shown at the meeting in San Francisco, left to right: **W.B. Hickman,** Ocean Machinery Co., Section chairman; **R.G. Kline,** U.S. Steel Corp., author, and **Norman Thompson,** Marcona Corporation, papers committee.

Approximately 60 members and guests attended the March 11, 1971, meeting of the Northern California Section of The Society of Naval Architects and Marine Engineers in San Francisco.

A paper entitled "Propeller-Excited Ship Vibrations" was outlined by co-author **R.G. Kline.** Mr. **Kline,** who received his master of engineering degree from the University of California in 1959 and is now associate research consultant for U.S. Steel Co., collaborated with **Ray W. Clough,** professor of civil engineering at the University of California, and **D. Kavlie,** a graduate student at the University of California, in writing the paper.

The investigation described in the paper was prompted by the authors' belief that an oversimplified idealization of ship's structure has been largely responsible for past failures to accurately predict ship vibration characteristics.

In a previous work, the authors extended the usual single-elastic-axis idealization to include effects of the double-bottom structure. The present work further extended the idealization to account for effects of the propulsion systems and the deckhouse. A computer program was used to solve specific examples which were derived from a Mariner-type vessel. Results indicated that presence of excitation from fluctuating thrust has a significant effect on hull vibration. Location of the thrust bearing was also found to have an important influence, while other factors had only minor effects.

Hugh Monroe, American President Lines, **V.J. Bahorich** and **Randolph Paulling,** University of California, participated in a discussion which followed, centering around questions concerning the practical application of the conclusions arrived at in the paper.

Pictured above, left to right: **Bill Hincks,** M. Guralnick & Assoc., past chairman of the Section; **James A. Stasek,** Kings Point Machinery, public relations committee, and **A.J. Haskell,** Matson Navigation, Section vice chairman.

Defense Plans Merger Of Surface Transport Procurement Functions

David Packard, Deputy Secretary of Defense, recently stated that it is planned to merge all surface transportation procurement functions into a single new agency which would report directly to the Secretary of Defense. It was requested in the Packard memorandum that the establishment of a joint transportation command be explored as "an alternate proposal" to transferring most sea lift logistic functions to an existing Army agency.

The newest proposal explained that the Navy would be provided with the opportunity to salvage certain of its responsibilities for procuring ocean transportation. This would have been lost in the merger plan the Defense Department revealed late in February.

Requirements For Radiographic Inspection Of Hull Welds Published By American Bureau

Maintaining its position as a leading authority on welding standards in the shipbuilding industry, the American Bureau of Shipping has just published its "Requirements for Radiographic Inspection of Hull Welds." It is believed that these requirements are the first such standards to be published by a ship classification society.

Continuing a series of welding publications produced by the bureau during the past three years, the requirements have been prepared to establish ABS acceptance standards of radiographic quality. "It is intended," says the bureau, "that these radiographic requirements will serve the needs of the shipbuilding industry in the construction of merchant ships and other related marine structures."

The booklet, which costs $3, is available from any office of the bureau, or from Circulation Manager, American Bureau of Shipping, 45 Broad Street, New York, N.Y. 10004.

Kawasaki Fits World's Largest Nozzle Propeller On Tanker

The 215,782-dwt tanker Golar Nichu, shown on trials off Japan, attained an average sea speed of 16.61 knots.

The 215,782-dwt tanker Golar Nichu, built at the Sakaide yard of Kawasaki Heavy Industries, Ltd., Japan, had the world's largest nozzle propeller installed to increase the propulsive efficiency. The Golar Nichu was delivered recently to her German owners, Ocean Oil Transport GmbH & Co. KG. It carries dual class, both Germanischer Lloyd's and Det norske Veritas.

The Golar Nichu has a length overall of 1,072 feet 10 inches, a breadth of 1:8 feet 1½ inches, a depth of 82 feet 8 inches, and a fully loaded draft of 64 feet 3¾ inches. The main propulsion plant consists of a Kawasaki UR-315, impulse, tandem articulated, double-reduction geared marine reheat turbine with a maximum output of 30,000 shp at 90 rpm and a normal output of 28,000 shp at 88 rpm. A trial speed of 16.61 knots was obtained.

The nozz'e propeller was designed and manufactured by Strommen Staal in Norway.

The owners expect that better economy will be obtained in operation of the Golar Nichu by the increase in the propulsive efficiency and the fuel savings from the adoption of the reheat steam turbine plant.

View of world's largest nozzle propeller installed on large tanker by Kawasaki Heavy Industries' Sakaide yard.

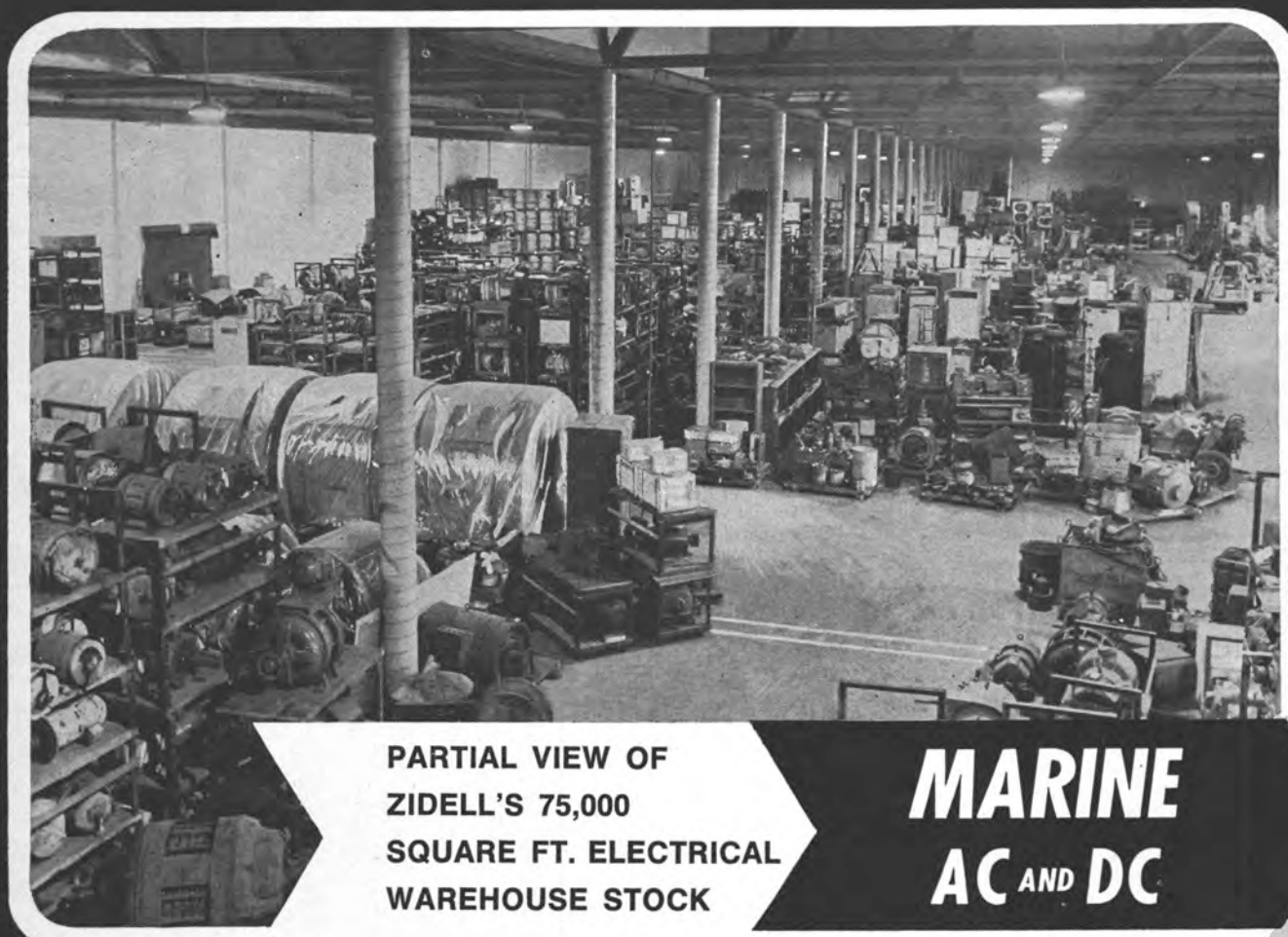
FOR SALE

75,000 Square Feet PACKED with ***ELECTRICAL EQUIPMENT***

SEND YOUR REQUIREMENTS —*"If it's ELECTRICAL, we most likely have it"*

As Removed from

- ☆ **CARGO VESSELS:** C-1's, C-2's, C-3's, Victory and Liberty Ships
- ☆ **NAVY VESSELS:** Destroyers, Destroyer Escorts, Submarines, Troop Ships and Repair Tenders
- ☆ **INDUSTRIAL PLANTS**
- ☆ **TITAN MISSILE SITES**
- ☆ **ATOMIC ENERGY PLANTS**



PARTIAL VIEW OF ZIDELL'S 75,000 SQUARE FT. ELECTRICAL WAREHOUSE STOCK

MARINE AC AND DC

INDUSTRIAL AC AND DC

CALL ZIDELL! SAVE A BUNDLE $$$$

Electric Motors - 1 HP to 4500 HP
Motor-Generator Sets to 300 KW
Generators to 750 KW
Motor Controls and Starters

Distribution Boards and Panels ☆ Vaneaxial Fans to 28000 CFM. Anything and Everything Electrical: Bells, Horns, Sirens, Phones, and on and on . . .

PHONE: (503) 228-8691 ☆ TELEX: 36-701 ☆ CABLE: "ZIDELL"

ZIDELL ELECTRICAL

DIVISION OF ZIDELL EXPLORATIONS, INC.

WRITE: 3121 S.W. MOODY AVENUE • PORTLAND, OREGON 97201

SPECIAL!

PRE-DISMANTLING SALE

All Electrical Equipment, Machinery, Tools and Spare Parts from:

C-3 S.S. TEXAS . . .

DESTROYERS
DD 446 - 449 and 499 . . .

REPAIR TENDERS
U.S.S. OTUS and U.S.S. HOOPER ISLAND . . .

including all machine tools & special repair equipment.

ORDER NOW! SAVE $$

BARGES FOR LEASE
ON GULF COAST OF FLORIDA

MISENER BARGE AND BOAT RENTAL, INC.
St. Petersburg Beach, Florida 813-360-7033

POSITION WANTED

Designer requires position. Apprenticeship and many years experience in machinery piping systems for naval and commercial vessels.

Please reply to:

Kenneth Melville
184 Wales Avenue
River Edge, N.J. 07661

POSITION WANTED

Over thirty years experience in the marine industry covering all phases of new construction and ship repairs. Man desires position in supervisory capacity either in new construction or ship repairs or both. Prefer either Gulf Coast area or Great Lakes. Minimum starting salary $14,000.00 per year. Resume sent on request.

Box 501 **Maritime Reporter/Engineering News**
107 East 31 Street **New York, N.Y. 10016**

SITUATION WANTED FOR PROVEN ACHIEVER

Naval Architect/Marine Engineer (Michigan '65) with five years varied design experience including heavy computer utilization seeks promising position; commutable from NYC preferred.

Box 215 **Maritime Reporter/Engineering News**
107 East 31 Street **New York, N.Y. 10016**

POSITION WANTED—Manager, 12 yrs. experience in two large shipyards, B.S. degree. Proven record of achievements in all phases of Operations, Services and Administrative Management including: Material/Production Control, Marketing, Purchasing, Customer Services, Planning, Sales/Contracts and Systems Analysis/Development. Multilinguist. Will travel or relocate world-wide. References and resume available.

Box 420 **Maritime Reporter/Engineering News**
107 East 31 Street **New York, N.Y. 10016**

Position Wanted—Production management with experience of five years, marine oriented, and additional experience in structural production detail work for about twenty years. Age 45, married, good health. Will consider relocation from the Northeast.

Box 419 **Maritime Reporter/Engineering News**
107 East 31 Street **New York, N.Y. 10016**

Machinery Superintendent

Responsible for the installation and testing of main engine turbines, boilers and other mechanical equipment and machinery required aboard ships under construction. Will supervise over 200 (foremen and craftsmen) in the machinist, sheetmetal, ventilation and pipefitting trades. Permanent, steady position with excellent benefits, located in the metropolitan N.Y.C. area.

Send details in confidence,
including salary history and requirements

Box 502 **Maritime Reporter/Engineering News**
107 East 31 Street **New York, N.Y. 10016**

An equal opportunity employer

Marine Products Salesman

Expanding Marine Systems Division of leading Waterways Operator needs professional Salesman to sell Monitoring and Control Systems direct and through manufacturer's representatives. Excellent opportunity for aggressive man seeking growth. Marine Engineering degree or equivalent preferred. Nation wide travel required. Salary plus commission. Send resume and compensation requirements to:

Box 416 **Maritime Reporter/Engineering News**
107 East 31 Street **New York, N.Y. 10016**

MARINE SALES REPRESENTATIVE WANTED:

Experienced in sales, cargo handling, wire rope and related products, knowledge of sailboat rigging helpful. For sales position in Miami, Florida. Send resume to Edward Quest, 2500 N.W. 39th Street, Miami, Florida 33142.

TURBINES

ROTORS **DIAPHRAGMS**
GOVERNORS **REDUCTION GEARS**
MISC. PARTS

With A.B.S. Certificates

G.E. DORV 325	525 KW
G.E. DORV 325	300 KW
G.E. DS 60	300 KW
Worthington	300 KW
De Laval	300 KW
Hendy (Terry Design)	300 KW
Westinghouse (Victory type)	300 KW
Westinghouse	250 KW
Worthington	150 KW
Westinghouse CA 20	100 HP
G.E. Main Turbine Rotor T2	6000 HP
G.E. HP & LP Turbine C2	6000 HP
G.E. HP & LP Turbine	8500 HP
Westinghouse Turbine & Gear C4, C3 Some AP3	8500 HP

Complete Inventory List Free Upon Request

NICOLAI JOFFE CORPORATION
San Francisco Branch
P. O. Box 2445 **445 Littlefield Ave.**
South San Francisco, California
Phone (415) 761-0993

ANCHORS

Specially Priced

Unused 6,000 lbs.
Navy Stockless.

One $450.00, ten or more $395.00 ea.

Loaded on conveyance Portsmouth, Va.

Also other sizes and anchor chain.

AL EPSTEIN, INC.
MOST ANYTHING IN MARINE SUPPLIES
JA 5-5526 or JA 2-5141 — P.O. Box 51569
1226 St. Thomas St., New Orleans, Louisiana 70150

OS & D RUBBER HOSE

50 — 6" size 20' long sections with flanged ends, in little used, good condition.
Price: $150 per section.
FOB Portland, subject prior sale.
Contact: Ralph Ingram

ZIDELL EXPLORATIONS, INC.
3121 S.W. Moody Ave., Portland, Oregon 97201
Phone: 228-8691, Code 503 — Telex: 36-568

FOR SALE
5 LST MOTOR VESSELS

Equipped as offshore oilwell drilling tenders. USCG & ABS Certificates. L.-311 Ft. —W-50 Ft.—dft. 22 Ft. GT-3337-NT-2803. Located at Venice, La. Sale BY BID—AS IS WHERE IS. For details write or telephone: F. E. NEAL, CHEVRON OIL CO., 1111 Tulane Ave., New Orleans, La. 70112, Telephone (504) 524-5711.

NOW! Conrad built barges

SPECIALLY PRICED FOR IMMEDIATE DELIVERY

120' x 30' x 7'3"
140' x 40' x 8'6"

Brand new heavy duty deck cargo barges, suitable for sand, gravel and pulpwood as well as general oilfield and construction work. Call Parker Conrad.

CONRAD
INDUSTRIES, INC
P. O. BOX 790/MORGAN CITY, LA. 70380
TELEPHONE/AREA CODE 504-384-3060

PRICE REDUCED

1100 passengers, 92 gross tons, three decks, 2 lounges, 165' x 36' x 5'5" draft loaded, speed 14 knots with two 6-71 Quads total 1320 hp. Generators (2) 3-71 20kw 120 volt DC, Decca 303 radar, Fathometer, Sperry steerer. Vessel built 1944, with major widening and conversion 1959 and 1966.

Nantucket Boat, Inc.
Ocean Street Dock **Hyannis, Mass. 02601**
617-775-1885

FOR SALE F/S TYPE VESSEL
M/V "PELICAN STATE"
148'.4" x 32' x 11'.8"
Twin Screw PTD-8 Superiors
Two Hatches, Approx. 20,000 cu. ft.
Recently Drydocked & Audiogauged
Located Morgan City, Louisiana
Price $65,000.

DELTA MARINE EQUIPMENT CO., INC.
1145 Annunciation St., New Orleans, La.
504-523-3002

BARGES ON THE SPOT

FOR CHARTER
Steel Deck Barges

60' x 26'	120' x 32'	190' x 50'
100' x 28'	140' x 34'	195' x 35'
110' x 30'	150' x 34'	200' x 40'
110' x 40'	175' x 35'	269' x 50'

ALSO AVAILABLE:
Hopper—Offshore—Oil and Spud Barges

FOR SALE
269' x 50' x 12' Inland Deck Barge

McDONOUGH MARINE SERVICE

P. O. BOX 26206
NEW ORLEANS, LOUISIANA 70126/504-949-7586
BRANCH OFFICE: P. O. BOX 233 CHANNELVIEW, TEXAS 77530
PHONE HOUSTON 713-622-9977

400 KW TURBO-GENERATORS

Turbine:
G.E. DORV 618—440 PSI—457° Superheat

Gear:
S 193 Form A—10059/1200 RPM

Generator:
400 KW—120/240 V DC—Type MPC—1200 RPM

6 Available — Excellent Condition
Suitable for Upgrading to 600 KW

NICOLAI JOFFE CORPORATION

San Francisco Branch
445 Littlefield Ave. (P.O. Box 2445)
South San Francisco, Calif. 94080
Phone (415) 761-0993

FOR SALE
$60,000

85' ex-S.T. Tug 8½' min. draft
Excellent condition
750 H.P. Busch Sulzer Engine
2 Cummins 30 K.W. Generators
Covered cargo barges
260x40x19 and 198x40x19

C.C. Northon, P.O. Box 24057
New Orleans, La. (504) 282-5983

SOLD Through your CHANDLER

ZINC

99.99+% pure — **For Cathodic Protection**

Meets Military Spec. Mil-A-18001 (ships)
Anodes • Bars • Circles • Rings • Rods IN STOCK

SMITH and McCRORKEN, Inc.

153 Franklin St. Dept. MR
New York 13, N. Y.

Call WA 5-2171
FOR FAST DELIVERY

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

FOR SALE TRAILER STEEL FREIGHTER

226' x 49' x 15' Vehicle clearance 11' rebuilt to trailers 1953 at cost of $400,000.00. Last few years over $200,000.00 spent upgrading. Owner's suite—20 private staterooms for crew plenty bath facilities—Fine galley and dining area for 32 men if needed—F.M.OP 1600HP with one third of factory recommended time for overhaul on new engine. 2 ea. Cummings 60KW 440AC-20KW-DC plants—12.7 knots cruising—Large trailers 30 mixed load 36 trailers Sperry Electric steering —RCA 20 mile radar—Sonar 160 Watt telephone—2 each anchor winches electric—4 ea. 4" bilge fire utility pumps—U.S. Radiator heating plant throughout—take it away $100,000.00.

Contact: OAKSMITH BOAT SALES, INC.
Seattle, Wash. 98119 Phone 283-1000

NEW 7" RADIUS PANAMA CHOCKS

(Meet Panama Regulations)
With Extended Legs for Welding to Deck
IMMEDIATE DELIVERY FROM STOCK

Clear opening 10" x 14"—7" radius. Use as double or single bow chock. OAL 28" on base — OAW 14¾" — cast steel.

THE BOSTON METALS COMPANY
313 E. Baltimore St. Baltimore, Md. 21202
539-1900 (301) 355-5050

UNUSED BITTS

Single bitts—6" diameter—24½" long—8" wide. Not shown is 90° bracket. While they last.
BUY IN QUANTITY
$19.95 EACH

THE BOSTON METALS COMPANY
313 E. Baltimore St. Baltimore, Md. 21202
539-1900 (301) 355-5050

GENUINE WOODEN STEERING WHEEL

Not a Far East fake. From USMC ships. Ship's name on request. Brass fitted, 8-spokes, with brass hub. 42". **$287.50**

THE BOSTON METALS COMPANY
313 E. Baltimore St. Baltimore, Md. 21202
539-1900 (301) 355-5050

GRAY MARINE ENGINES

Government reconditioned Gray Marine 64-HN9 (6-71) — rated 225 HP — with Twin Disc Gear — 1.54:1.

THE BOSTON METALS COMPANY
313 E. Baltimore St. Baltimore, Md. 21202
539-1900 (301) 355-5050

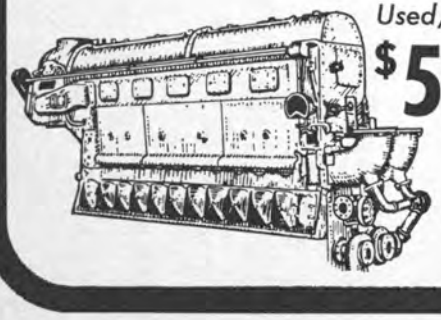
AXIAL FLOW FANS
115 & 230 VDC—440 AC—ALL SIZES

THE BOSTON METALS COMPANY
313 E. Baltimore St. Baltimore, Md. 21202
539-1900 (301) 355-5050

POWER UP BECAUSE THE DIESEL PRICE IS DOWN

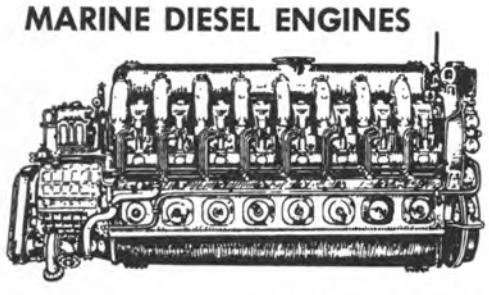
6 —Fairbanks-Morse MARINE DIESEL ENGINES

Model 38D8 - ⅛, 10 Cylinders, 1600 H.P., 720 RPM, 8⅛" Bore, 10" Stroke, Air Start. Condition:



Used, Very Good
$5000 ea.

2—General Motors MARINE DIESEL ENGINES



2—G.M. Model 16-278, 16 Cylinders, 1600 H.P., 750 RPM
Used, Very Good **$3950 ea.**

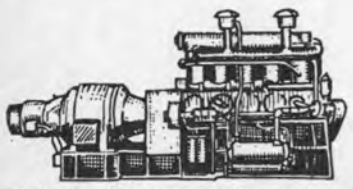
Contact: Ralph Ingram

ZIDELL EXPLORATIONS, INC.

3121 S.W. Moody • Portland, Ore. 97201
Phone: 503/228-8691
Telex: 36-701

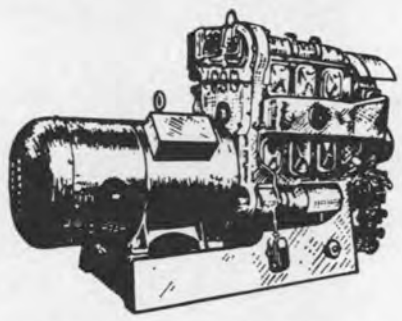
MARINE DIESEL GENERATORS

SUPERIOR, 10 KW, 120 Volts DC.
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.



LORIMER 100 KW, 450/3/60 Volts DC.
BUDA 6DHG691, 60 KW, 120 Volts DC.
SUPERIOR GBD-8, 100 KW, 240/120 Volts 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.



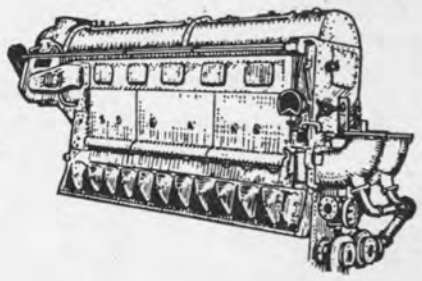
GENERAL MOTORS Model 3-268A, 152 BHP, 1200 RPM, with 100 KW Generators, 450 Volts AC, 3 phase, 60 cycles.
GM 8-268A, radiator cooled, air start with Fairbanks-Morse Generator, 300KW, 440/3/60, complete with switchboard.
FAIRBANKS-MORSE, 38 E 5¼, 300 KW, 260/345 DC.

FAIRBANKS-MORSE

MARINE DIESEL ENGINES

matched pair . . . Model 38D8⅛

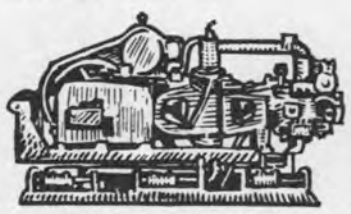
1 Port
1 Starboard
Used condition
1800 HP, 800 RPM,
2 cycle, 8½" bore,
10" stroke, Air Start,
Complete with Westinghouse Reduction gears 2,216:1 ratio, with Hydraulic Coupling



4-COOPER-BESSEMER
MODEL LS-8-DR
1300 HP
277 RPM
Direct Reversing,
Turbo charged.

AIR COMPRESSORS

INGERSOLD-RAND, 50 CFM, 150 PSI, 20 HP, 440/3/60.
INGERSOLL-RAND, 150 CFM, 600 PSI, Model 75, with Westinghouse Motors, 75 HP, 230 DC.
INGERSOLL-RAND, 50 CFM, 600 PSI, Model 30, with Westinghouse Motors, 15 HP, 230 DC.
CHICAGO-PNEUMATIC, 161 CFM, 100 PSI, 40 HP, 230 DC.
WESTINGHOUSE Air Brake, 246 CFM, 140 PSI, with 50 HP Motors, 440/3/60.

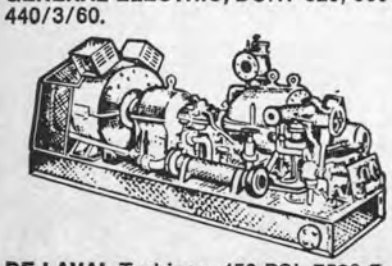


WORTHINGTON, 175 CFM, 125 PSI, with 50 HP Motors, 440/3/60.
JOY, Class WG82, 2-stage rated 100 CFM at 300 PSI, water cooled, size 7" x 3⅜" x 7" with Reliance motor, 30 HP, 220/440/AC/3/60.

STEAM AIR COMPRESSORS **Westinghouse Air Brake Co.,** Size 9½x9x10 Vertical.

TURBINE GENERATORS

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.
GENERAL ELECTRIC Turbine, Type FN3-FN24, Steam 265#G., Serial 54110, with G.E. Generator, 750 KW, 440/3/60, Frame 985 Y, Serial 580447.
2—G.E. DORV Turbines, with G.E. Generators, 200 KW, 440/3/60.

CLYDE 17-DE-90 WHIRLEY

Lifting Rate: 25 tons @ 50 Ft. Radius @ 50 to 60 FPM.—
Boom: 80' to headblock (with 10' whip)
Whip: 10 tons @ 125 FPM—2 part line
Track Centers: 20'—Engine: Cummins HBIS 601, 180 HP supercharged, elec. start—
Motors: Each leg (4 tot.) 7½ HP, 230 DC.—
Power: Diesel electric (DC)

RED HOT BUYS from ZIDELL EXPLORATIONS, INC.

if it's on a ship we probably have it!

NEED IT NOW?

Contact Ralph E. Ingram

Telex: 36-701

3121 S.W. Moody
Portland, Ore. 97201
(503) 228-8691

Submarine Type

PROPULSION MOTORS AND GENERATORS

ELLIOTT MOTORS, 1362 HP, 415 Volts DC, 2585 Amperes, Design 28AN02.
ELLIOTT GENERATORS, 1122 KW, 720 RPM, 415 Volts DC, 2705 Amperes, Design 37C02.
GENERAL ELECTRIC MOTORS, 1375 HP, 415 Volts DC, 2600 Amperes, Type MCF.
GENERAL ELECTRIC GENERATORS, 1100 KW, 750 RPM, 415 Volts DC, 2650 Amperes, Type MCF.

ELECTRIC MOTORS

230 VOLTS D.C.

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.
1—40 HP, Allis-Chalmers, 1750 RPM, Compound Wound, Horizontal, 2 B.B.
1—65 HP, WESTINGHOUSE, 560 RPM, Type CK, Form 10, 260 Ampere, B.B., D.P., Compound Wound.
2—220 HP, G.E., 1800 RPM, Type CDM-13485, Model 25G 339, 775 Ampere, B.B., D.P., Stab. Shunt.
4—9.3 HP, Westinghouse, 640/852 RPM, Type SK, FR. 93.

52—WESTINGHOUSE 50 HP
230 Volts DC, 600 RPM, Type CK, Frame 9, Compound Wound, 181 Amperes, Double Shaft, Totally Enclosed—Waterproof, Horizontal, Approximate Weight 2000 lbs.

CARGO HOISTER BLOCKS

5 ton rated, steel, as removed from surplus Liberty Ships. Manufactured by Young, Draper, etc. 12" or 14" sizes, your choice

$34.50 each

$39.50 each with pull test certificates.

ESCAPE SCUTTLES

18" Steel
Quick Acting
Complete with coaming. Wheel control from above and below.

$95.00 ea., F.O.B. Portland

AXIAL FLOW FANS

LaDel, STURTEVANT etc.

Rebuilt—Guaranteed
In 440 AC, in 115 DC, and in 230 DC, and in sizes 1 HP through 20 HP. Completely reconditioned.

STEERING STANDS

Brass Steering Stands. Complete with angle indicator on top, used 11" base diameter by 35½" high, and with 42" overall, 8-spoke brass steering wheel.

$225.00 each

ALSO SEE ZIDELL'S 5 PAGE SPREAD
IN ALTERNATE ISSUES OF MARITIME REPORTER

BUYERS DIRECTORY

AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Carrier Air Conditioning Co., Carrier Parkway, Syracuse, N.Y. 13201
Union Carbide Corp., Linde Div., 270 Park Ave., N.Y., N.Y. 10017

ANCHORS AND ANCHOR CHAINS
Baldt Anchor, Chain & Forge, P.O. Box 350, Chester, Pa. 19016
Lockstadt Co., Inc., 179 West 5th St., Bayonne, N.J. 07002

BEARINGS
BJ Marine Bearings, a Borg-Warner Industry, P.O. Box 2709, Terminal Annex, Los Angeles, Calif. 90054
Glacier Metal Co. Ltd., Alperton, Wembley, Middlesex, England.
Johnson Rubber Co., Marine Division, Middlefield, Ohio 44062
Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, Ohio 44309
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wis. 53186

BOILERS
Babcock & Wilcox Co., 161 E. 42nd Street, New York, N.Y. 10017
Combustion Engineering, Inc., Windsor, Connecticut 06095

BOW THRUSTERS
Murray & Tregurtha, Inc., 2 Hancock St., Quincy, Mass. 02171

BUNKERING SERVICE
Gulf Oil Trading Co., 1290 Ave. of the Americas, N.Y. 10019
Independent Petroleum Supply Co., 1345 Ave. of Americas, New York, N.Y. 10019
Refineria Panama, S. A. 277 Park Ave., New York, N.Y. 10017
The West Indies Oil Co., Ltd., St. John's Antigua, W. I.

BURNERS—Oil
Todd Products, Div. of Todd Shipyards Corp., Brooklyn, N.Y. 11231

CABLE ELECTRIC MARINE
Anixter-New York, 300 Executive Blvd., Elmsford, N.Y.
Anixter-Owesen, 315 Notredame, New Orleans, La. 70130
L. F. Gaubert & Co., 700 So. Broad St., New Orleans, La. 70150

CLUTCHES, GEARS & BRAKES
Amarillo Gear Co., 517 No. Polk St., Amarillo, Texas 79105
Fawick Airflex Div. Power Transmission Systems, 9919 Clinton Rd., Cleveland, Ohio 44111
Wichita Clutch Co., Inc., Wichita Falls, Texas 76307

COATINGS—Protective
Ameron Corrosion Control Div., Brea, Calif. 92621
Carboline Co., 328 Hanley Industrial Court, St. Louis, Mo. 63144
Devoe & Raynolds Co., Inc., Subsidiary Celanese Coatings Co., 414 Wilson Ave., Newark, N.J. 07105
Enjay Chemical Company, 60 West 49th St., New York, N.Y. 10020
Forboil Company, 90 West St., N.Y., N.Y. 10006
Intercoastal Corp., 2320 Edgewater Ave., Baltimore, Md. 21222
Patterson-Sargent, P.O. Box 494, New Brunswick, N. J.
Porter Paint Co., Louisville, Ky. 40201
Spee-Flo Co., 4631 Winfield Rd., Houston, Texas 77039

CONTAINERS—CONTAINER HANDLING SYSTEMS
Ameron Corrosion Control Div., Brea, Calif. 92621
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

CONTAINER LASHINGS & COMPONENTS
American Engineered Products Co., Box 74, McKees Rocks, Pa. 15136
W. W. Patterson Co., 830 Brocket St., Pittsburgh, Pa. 15233
Pro Par Div. Fruehauf Corp., 10940 Harper Ave., Detroit, Mich. 48232
Seasafe Transport AB, Torstenssonsgatan 3, S 114 56 Stockholm, Sweden

CONTROL SYSTEMS
Galbraith-Pilot Marine Corp., 600 Fourth Ave., Brooklyn, N.Y. 11215
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.

CORROSION CONTROL
Ameron Corrosion Control Div., Brea, Calif. 92621
Carboline Co., 328 Hanley Industrial Court, St. Louis, Mo. 63144
Corrosion Dynamics, 1100 Walnut St., Roselle, N.J. 07203
Intercoastal Corp., 2320 Edgewater Ave., Baltimore, Md. 21222
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., 400 Executive Blvd., Elmsford, N.Y. 10523
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.), 1010 Third Ave., New York, N.Y. 10021
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany
Paceco, Div. Fruehauf Corp., P.O. Drawer E, Alameda, Calif. 94501
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., 449 Sheridan Blvd., Inwood, N.Y. 11696

DECK MACHINERY—Cargo Handling Equipment
ASEA Marine, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
Blackburn Marine Equipment, 6105 England St., Houston, Tex. 77021
Garrett Corp., 9851 Sepulveda Blvd., Los Angeles, Calif. 90009
Lidgerwood Mfg. Co., (Superior Lidgerwood Mundy Corp.), 1010 Third Ave., New York, N.Y. 10021
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
A. G. Weser, Seebeckwerft, 2850 Bremerhaven 1, Germany
Western Gear Corp., Heavy Machinery Div., Everett, Wash. 98201

DIESEL ACCESSORIES
Golten 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
Bruce GM Diesel, Inc., 180 Route #17 S. at Interstate 80, Lodi, N.J. 07644
Caterpillar Tractor Co., Industrial Div., 100 N.E. Adams St., Peoria, Ill. 61602
Colt Industries Inc., 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
Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany.
H. O. Penn Machinery Co., 1561 Stewart Ave., Westbury, N.Y. 11590

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

DOORS—Watertight—Bulkhead
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
Merrin Electric, 162 Chambers St., New York, N.Y. 10007
Oceanic Electrical Mfg. Co., Inc., 159 Perry Street, N.Y. 10014
Pauluhn Electric Mfg. Co. Inc., P.O. Box 12805, Houston, Tex. 77017

EVAPORATORS
Bethlehem Steel Corp., Shipbuilding, 25 B'way, N.Y., N.Y. 10004
Mechanical Equipment Co., Inc., 861 Carondelet St., New Orleans, La. 70130

FITTINGS & HARDWARE
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

HEATERS—Ship
Todd Products, Div. of Todd Shipyards Corp., Brooklyn, N.Y. 11231
Valad Elec. Heating Co., 71 Cortlandt St., Tarrytown, N.Y. 10591

HYDRAULICS
Bird Johnson Co., 883 Main St., Walpole, Mass. 02081
Bond Hydraulic Equip. Service, Inc., 117 Monroe St., Hoboken, N.J. 07030
Vickers, M&O Div., Troy, Mich. 48084

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

LININGS
Ameron Corrosion Control Div., Brea, Calif. 92621
Carboline Co., 328 Hanley Industriol Court, St. Louis, Mo. 63144

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

MACHINERY MONITORS
IRD Mechanalysis, Inc., 6150 Huntley Rd., Columbus, Ohio 43229

MARINE DRIVES—GEARS
Hydro Drive Corp., 4420 - 14th Ave. N.W., Seattle, Wash. 98107
Philadelphia Gear Corp., Schuylkill 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., 55 Brixton Rd., Garden City, N.Y. 11530
Dynel Electronics Corp., 75 Maxess Road, Melville, N.Y. 11746
Edo Western Corp., 2645 So. 2nd St., W. Salt Lake City, Utah 84115
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
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
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
Tracor, Inc., 6500 Tracor Lane, Austin, Texas 78721

MARINE EQUIPMENT
Adsco 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
Nicolai Joffe 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
Chas. Lowe Co., 6340 Christie Ave., Emeryville, Calif. 94608
Merrin Electric, 162 Chambers St., New York, N.Y. 10007
Pacific Coast Eng. Co., P.O. Drawer E, Alameda, Calif. 94506
Stow Mfg. Co., 225 Shear St., Binghamton, N.Y. 13902
Vokes Filter Div. (Cardwell Machine Co.), Cardwell and Castlewood Rd., Richmond, Va. 23221

MARINE FURNITURE
Bailey Joiner Co., 115 King Street, Brooklyn, N.Y. 11231

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

MARINE LIGHTS
Natale Machy. & Tool Co., Box 95, Carlstadt, N.J. 07022

MARINE PROPULSION
Buehler Corp., 9000 Precision Drive, Indianapolis, Ind. 46236
Combustion Engineering, Inc., Windsor, Connecticut 06095
De Laval Turbine, Inc., 853 Nottingham Way, Trenton, N.J. 08602
General Electric Co., Gas Turbine Dept., Schenectady, N.Y. 12305
Murray & Tregurtha, Inc., 2 Hancock St., Quincy, Mass. 02171
Port Electric Turbine Div., 155-157 Perry St., New York 10014
Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
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
Paul J. Plishner, 45 West 45 St., New York, N.Y. 10036
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 Genge Industries, Inc., 4419 Van Nuys Blvd., Sherman Oaks, Calif. 91403
Best & Associates, 9870 S. W. 81 St., Miami, Florida 33143
Breit Engrg. Inc., 441 Gravier St., New Orleans, La. 70130
Coast Engineering Co., 711 W. 21st St., Norfolk, Va. 23517
Commercial Radio Sound Corp., 652 First Avenue, N.Y., N.Y. 10016
Crandall Dry Dock Engrs., Inc., 238 Main St., Cambridge, Mass. 02142
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
John W. Gilbert Associates, Inc., 58 Commercial Wharf, Boston, Mass. 02110
Morris Guralnick, Associates, Inc., 583 Market St., San Francisco, Calif. 94105
J. J. Henry Co., Inc., 90 West St., New York, N.Y. 10006
L. K. Homyer, Box 408, Corona Del Mar, California 92625
C. T. Iliriucci & Associates, Tourism Pier #3, San Juan, Porto Rico 00902
James S. Krogen, 1460 Brickell Ave., Miami, Fla. 33131
Littleton Research and Engrg. Corp., 95 Russell St., 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
Marine Design Associates, P.O. Box 2674, Palm Beach, Florida
Maritech, Inc., 38 Union Sq., Somerville, Mass. 02143
Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225
John J. McMullen Associates, Inc., 110 Wall St., N.Y., N.Y. 10005
George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
Metritape, Inc., 77 Commonwealth Ave., West Concord, Mass. 01742
Robert Moore Corp., 350 Main St., Port Washington, N.Y. 11050
Gunnar Nelson, 2185 Lemoine Ave., Ft. Lee, N.J. 07024
Pearlson 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 657 Mission 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
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
H. Newton Whittelsey, 17 Battery Pl., New York, N.Y. 10004
Alan Winkley, 6420 Colby St., Oakland, Calif. 94618

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

OILS—Marine—Additives
Esso International Inc., 15 West 51 St., New York, N.Y. 10019
Ethyl Corp. Marine Div. Perolin Co., New York, N.Y. 10001
Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019
Humble Oil & Refining Co., Humble Building, Houston, Texas 77002
Mobil Oil Corp., 26 Broadway, New York, N.Y. 10004
Refineria Panama, S. A., 277 Park Ave., New York, N.Y. 10017
Shell Oil Co., 50 W. 50 St., New York 10020
Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017

PAINT—Marine—Protective Coatings
Ameron Corrosion Control Div., Brea, Calif. 92621
Carboline Co., 328 Hanley Industrial Court, St. Louis, Mo. 63144
Devoe & Raynolds Co., Inc., Subsidiary Celanese Coatings Co., 414 Wilson Ave., Newark, N.J. 07105
Enjay Chemical Co., 60 West 49th St., New York, N.Y. 10020
Farboil Company, 90 West St., New York, N.Y. 10006
Intercoastal Corp., 2320 Edgewater Ave., Baltimore, Md. 21222
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., 1345 Ave. of Americas, New York, N.Y. 10019
Refineria Panama, S. A. 277 Park Ave., New York, N.Y. 10017
Shell Oil Co., 50 W. 50 St., New York, N.Y. 10020
Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017
The West Indies Oil Co., Ltd. St. John's, Antigua, W. I.

PLASTICS—Marine Applications
Ameron Corrosion Control Div., Brea, Calif. 92621
Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231
Philadelphia Resins Co., 20 Commerce Dr., Montgomeryville, Pa. 18936
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
Hemisphere Marine Chemicals Co., Inc., 300 Main St., Orange, N.J.
Uniroyal, Inc., 10 Eagle St., Providence, R.I. 02901

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

PROPELLERS: NEW AND RECONDITIONED
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
Bird-Johnson Co., 883 Main Street, Walpole, Mass. 02081
Coolidge Propeller Co., 1608 Fairview Ave. E., Seattle, Wash. 98102
Federal Propellers, 1501 Buchanan Ave. S.W., Grand Rapids, Mich. 49502
Ferguson Propeller, 1132 Clinton St., Hoboken, N.J. 07030

PUMPS
Coffin Turbo Pump/FMC Corp. 326 So. Dean St., Englewood, N.J. 97631
Colt Industries, Inc., Fairbanks Morse Pump & Electric Div., 3601 Kansas Ave., Kansas City, Kansas 66110
M. T. Davidson Co., 1010 3rd Ave., New York, N.Y. 10021
Goulds Pumps, Seneca Falls, N.Y. 13148
Houttin-Pompen N. V. Sophialaan 4, Utrecht, Holland
Worthington Corporation, Harrison, New Jersey 07029

RATCHETS
American Engineered Products Co., Box 74, McKees Rocks, Pa. 15136
W. W. Patterson Co., 830 Brocket St., Pittsburgh, Pa. 15233

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

ROPE—Manila—Nylon—Hawsers—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
Samson Cordage Works, 470 Atlantic Ave., Boston, Mass. 02210
Tubbs Cordage Company, P.O. Box 709, Orange, Calif. 92669
Wall Rope Works, Inc., Beverly, N. J. 08010

RUBBER PRODUCTS—Dock Fenders, Hose, Life Preservers
Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
Schuyler's Engineered Products Co., Box 87, Staten Island, N.Y.
Yokohama Rubber Co. Ltd., P.O. Box 46, Shiba, Tokyo 105, Japan

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

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

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

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

SEWAGE DISPOSAL
Seapax, Inc., 3645 Warrensville Center Rd., Cleveland, Ohio 44122
Youngstown Welding & Engineering Co., 3708 Oakwood Ave., Youngstown, Ohio 44509

SHAFT REVOLUTION INDICATOR EQUIP.
Electric Tachometer Corp., 68th & Upland Sts., Phila., Pa. 19142
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913

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

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

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

SHIPBUILDING—Repairs, Maintenance, Drydocking
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Astilleros Espanoles, S.A. Zurbano, 70, Madrid 10, Spain
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Beliard Murdoch S. A., Kattendijkdok Westkaai 21, Antwerp, Belgium
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
Blount Marine Corp., P.O. Box 360, Warren, Rhode Island 02885
Conrad Industries, P.O. Box 790, Morgan City, La. 70380
Dillingham Corp., P.O. Box 3288, Honolulu, Hawaii 96801
Dravo Corporation, Neville Island, Pittsburgh 25, Pa.
Equitable Equipment Co., Inc., P.O. Box 8001, New Orleans, La. 70122
General Dynamics, Electric Boat Division, 99M Eastern Point Road, Groton, Conn. 06340
General Dynamics, Quincy Division, Quincy, Mass. 02169
Gotaverken American Corp., 39 Broadway, New York, N.Y. 10006
Grafton Boat Co., Inc., Grafton, Ill. 62037
Groignard Shipyards, P.O. Box 829 Colbert, Marseilles, France.
Gunderson Bros. Engrg. Corp., 4700 N.W. Front St., Portland, Oregon 97208
Halter Marine Services, Inc., Route 6, Box 287H, New Orleans, La. 70126
Havre de Grace, Havre de Grace, Md.
Hillman Barge & Construction Co., Grant Bldg., Pittsburgh 19, Pa.
Hitachi Shipbuilding Co.,25 Nakanoshima2-chomeKitaku,Osaka-Japan
Industrial Steel & Mach. Works, Inc., P.O. Box 2217, Gulfport, Miss. 39501
Ishikawajima-Harima Heavy Industries Co., Ltd., 15 William St., New York, N.Y. 10005
Jacksonville Shipyards, 644 E. Bay St., Jacksonville, Fla. 32203
Jeffboat, Inc., Jeffersonville, Ind. 47130
Kawasaki Dockyard Co., 8 Kaigan-dori, Ikuta-ku, Kobe, Japan
Kelso Marine, Inc., P.O. Box 268, Galveston, Texas 77550
Kockums Malmo, Fack, Malmo, Sweden
Levingston Shipbuilding Co., P.O. Box 968, Orange, Texas 77630
LISNAVE, P.O. Box 2138, Lisbon, Portugual
Litton Industries, 9920 W. Jefferson Blvd., Culver City, Calif. 90230
Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
Maryland Shipbuilding & Drydock, P.O. Box 537, Baltimore, Md. 21203
Matton Shipyard Co., Inc., P.O. Box 428, Cohoes, New York 12047
Mitsui Shipbuilding & Eng. Co., Ltd., Nihonbashi-Muromachi, Chuo-ku, Tokyo, Japan
Nashville Bridge Co., P.O. Box 239, Nashville, Tenn. 37202
National Steel & Shipbuilding Corp., San Diego, Calif. 92112
Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
Nippon Kokan Kabushiki Kaisha, 2, 1-chome, Otemachi, Chivoda-ku, Tokyo, Japan
Northwest Marine Iron Works., P.O. Box 3109, Swan Island, Portland, Oregon 97208
Nuclear Service & Construction Co., Inc., 9296 Warwick Blvd., Newport News, Va. 23607
O.A.R.N. (officine Allestimento e Riparazioni Navi) Genoa, Italy
Paceco, Div. Fruehauf Corp., P.O. Drower E, Alameda, Calif. 94501
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Fla. 33156
Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862
Rodermond Industries, Foot of Henderson St., Jersey City, N.J. 07302
St. Louis Shipbuilding—Federal Barge, Inc.
611 East Marceau, St. Louis, Mo. 63111
Sasebo Heavy Industries Co., Ltd., New Ohtemachi Bldg., Chiyoda-ku, Tokyo, Japan
Sumitomo Shipbuilding & Machy. Co., Ltd. 2-1 Ohtemachi 2-chome, Chiyoda-ku, Tokyo, Japan
Teledyne Sewart Seacraft, P.O. Box 108, Berwick, La. 70342
Todd Shipyards Corp., 1 Broadway, New York, N.Y. 10004

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

SHIP MODEL BASIN
Hydronautics, Incorporated, Laurel, Maryland 20810

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

SHIP STABILIZERS
Lidgerwood Mfg. Co., (Superior Lidgerwood Mundy Corp.), 1010 Third Ave., New York, N.Y. 10021
Maritech, Inc., 38 Union Sq., Somerville, Mass. 02143
John J. McMullen Associates, Inc., 110 Wall St., N.Y., N.Y. 10005
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

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

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

SWITCHBOARDS
Hose McCann Telephone Co., Inc., 524 West 23 St., N.Y., 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, Md. 21202
Henry Gillen's Sons Lighterage, 140 Cedar St., New York, N.Y. 10006
James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004
Jackson Marine Corp., P.O. Box 1087, Aransas Pass, Texas 78336
McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
McDonough Marine Service, P.O. Box 26206, New Orleans, La.
P. F. Martin, Inc., Mall Bldg., 325 Chestnut St., Philadelphia, Pa.
Moran Towing & Transportation Co., Inc., 17 Battery Place, New York, N.Y. 10004
L. Smit & Co., 11 Broadway, New York, N.Y. 10004
Suderman & Young Towing Co., 329 World Trade Center, Houston, Texas 77002
M. & J. Tracy, Inc., 1 Broadway, New York, N.Y. 10004
Turecamo Coastal and Harbor Towing Corp., 1752 Shore Parkway, Brooklyn, N.Y. 11214

VALVES AND FITTINGS—Hydraulic—Safety Flanges
Hubeva Marine Plastics-Lining, 435 Hamilton Ave., Brooklyn, N.Y. 11231
Hydrasearch Co., Inc., Riva Rd., Annapolis, Md. 21401
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Mechanical Marine Co., Inc., 900 Fairmount Ave., Elizabeth, N.J. 07207

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

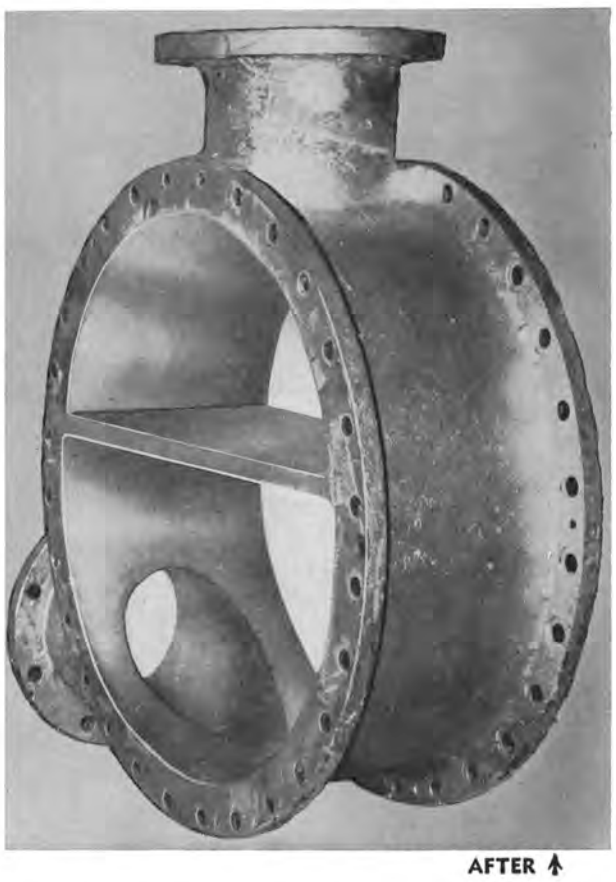
WIRE ROPE
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., Bethlehem, Pa. 18018
United States Steel Corp., P.O. Box 86, Pittsburgh, Pa. 15230

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

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

Thousands of Repair Jobs have been completed quickly and economically with

BEFORE



AFTER ↑

CORDOBOND®

Strong-Back Materials

First proven under the most difficult conditions by the Navy, the Cordobond Strong-Back Method offers a fast and easy method of repair both aboard ship and ashore. Applied quickly by ship or maintenance personnel, Cordobond Strong-Back products are used extensively for repairing and lining:

Water Boxes	**Ventilators**
Machinery Castings	**Stacks**
Ducts	**Pumps**
Pipes	**Sea Valves and Chests**
Condenser Covers	**Tanks, Bulkheads and Decks**
Cooler Heads	**Shell Plating Etc.**
Tail Shafts	**Frozen Pipes, etc.**

The Cordobond Strong-Back Components, when used according to directions, will repair anything from a pin hole to a complete break with a patch of great strength that clings tenaciously and lastingly.

MARINE REPAIR KITS

STANDARD KIT For Ocean Going Vessels JUNIOR KIT For Harbor Craft

CORDOBOND REPAIR KITS CONTAIN ALL THE COMPONENTS AND ACCESSORIES FOR MAKING EMERGENCY REPAIRS AT SEA

Packed in sturdy Navy type refillable metal containers.

SEND FOR LIST OF CONTENTS AND LITERATURE

Over 5000 ocean going vessels carry our standard repair kits. Cordobond is not affected by water, oil, gasoline, etc. It does not corrode. It eliminates costly gas freeing. Cordobond is self curing, no applied heat necessary.

ALABAMA—Mobile
Saunders Engine & Equipment Company
CALIFORNIA—Wilmington
J.M. Costello Supply Co., Inc.
—San Francisco
Cordes Bros.
FLORIDA—Jacksonville
Weedon Engineering Co., Inc.
GEORGIA—Savannah
Southern Marine Supply Co., Inc.
LOUISIANA—New Orleans
Hubeva Marine Plastics, of New Orleans, Inc.
—Baton Rouge
Gulf Coast Supply Co.
MAINE—Portland
Chase, Leavitt & Co., Inc.
MARYLAND—Baltimore
Tate Temco, Inc.
NEW JERSEY—Newark
Seither & Ellis, Inc.
OREGON—Portland
Bessco Marine Service
PENNSYLVANIA—Philadelphia
Atlantic Port Contractors, Inc.
TEXAS—Galveston
Gulf Coast Supply Company
WASHINGTON—Seattle
May & Smith Company
BELGIUM—Antwerp
Verfaillie & Elsig SPRL
CANADA—Halifax
Hubeva Marine Plastics, Halifax

CORDOBOND STRONG-BACK PRODUCTS

Standard Resin Leveling Compound Strong-Back Putty Strong-Back Sealer Steel Putty

Hubeva Marine Plastics, Inc.

382 Hamilton Avenue **Brooklyn, New York 11231**

Phone: 212-875-6178 or your local agent

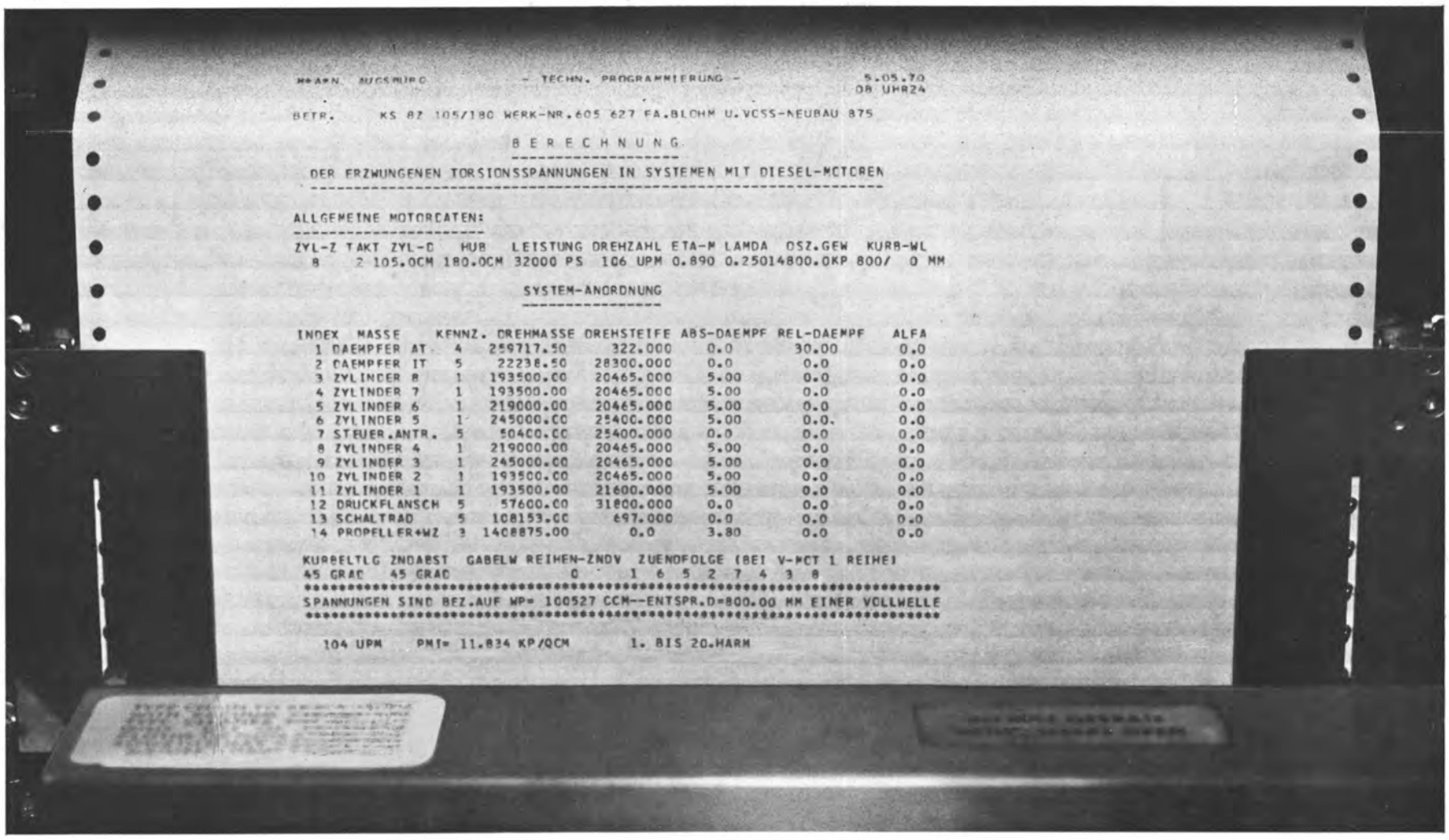
SOLE DISTRIBUTORS OF CORDOBOND STRONG-BACK PRODUCTS

Agents throughout the world

Trained applicators available for repairs or instruction

—Montreal
Heffernan Tiles Limited
—Toronto
Heffernan Tiles Limited
GREECE—Piraeus
Marine Technical Bureau
HOLLAND—Rotterdam
Van Lessen & Punt N.V.
HONG KONG—Kowloon
Marine Supply Company
ITALY—Genoa
Coger S.A.S.
JAPAN—Yokohama
Inouye & Company Ltd.
MALAYA—Singapore
Wah Hong & Company Ltd.
MAURITUS—Port Louis
Taylor-Smith & Co.
NORWAY—Stabekk
A.B. Morch & Company
SOUTH AFRICA—Capetown
Globe Engineering Works, Ltd.
—Point Durban
James Brown & Hamer Ltd.
SPAIN—Bilbao
Indame S.A.
—Cadiz
Consulmar S.L.
TRINIDAD W.I.—Port of Spain
R. Landry & Company, Ltd.
WEST GERMANY—Hamburg
Van Lessen & Punt GMBH

M.A.N.'s Research Program: Vibration Technology



Every power unit is a spring-mass system and thus subject to vibrations. Analysis of vibration data is indispensable if adverse resonances and uncontrollable stresses are to be avoided. Thus, any assessment of the alternative propulsion systems necessitates an investigation of the torsional vibrations.

To minimise vibrations of the total propulsion system, the analysis of the vibration behaviour must also take into account the characteristics of the coupling, gear unit, shafting and propeller.

The computer calculates and evaluates the natural frequencies of the components of the vibration system, the stresses occurring in the critical speed ranges and, most important, the stresses to which the shafting is subjected. The results make it possible to achieve greater reliability of the propulsion system.

M·A·N

AUGSBURG (W.-GERMANY)

American M.A.N. Corporation,
500 Fifth Avenue, Room 5416
New York, N. Y. 10036

484 e