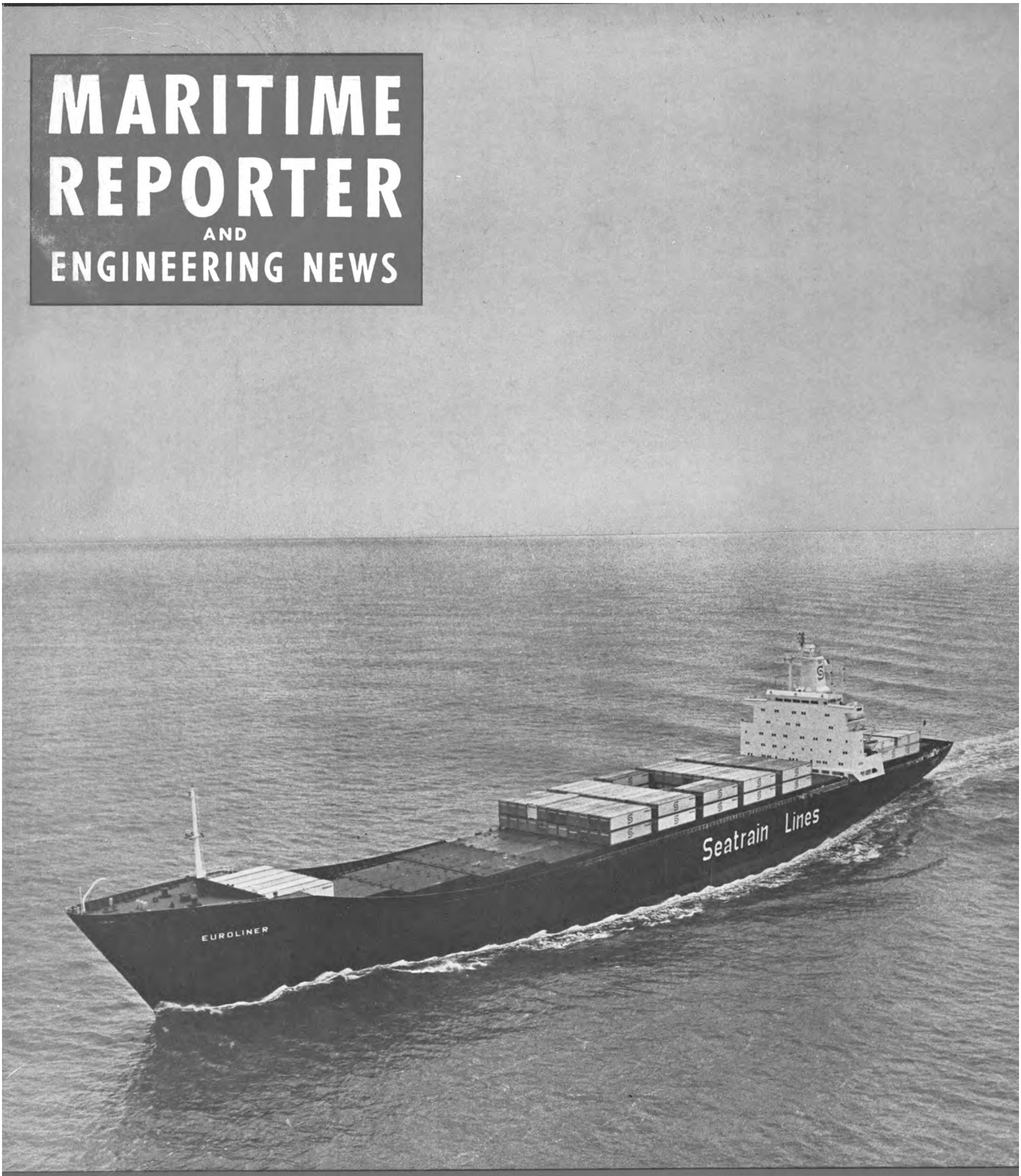
MARITIME
REPORTER
AND
ENGINEERING NEWS



World's Largest Containership Seatrain's Euroliner
First Commercial Ship Powered By Gas Turbines
Sets Trans-Atlantic Speed Record On Maiden Voyage

(SEE PAGE 7)

JUNE 1, 1971

Through the Northeast Passage on a walrus hunter.

Although Sir John Franklin is credited with traversing the Northwest Passage in 1845, it wasn't until some 30 years later that Adolf Nordenskjöld penetrated the Northeast Passage. And he did it in an old walrus-hunting ship, the *Vega*.

It was in late June of 1878 that Nordenskjöld set sail from Sweden, the *Vega* loaded with enough supplies to last thirty men for two years.

On the 16th of July they crossed the Polar Circle and on the 20th of August lay at anchor off Chelyuskin, the northernmost cape of the Old World.

Then as they traveled on, the ice began forming and on September 28th the little *Vega* was hopelessly locked in. The explorers settled down for a long, long winter and celebrated Christmas with the Chukchi natives who served the traditional rice porridge with an occasional polar bear joining in the celebration. It was not until July 1879 that the ice broke.

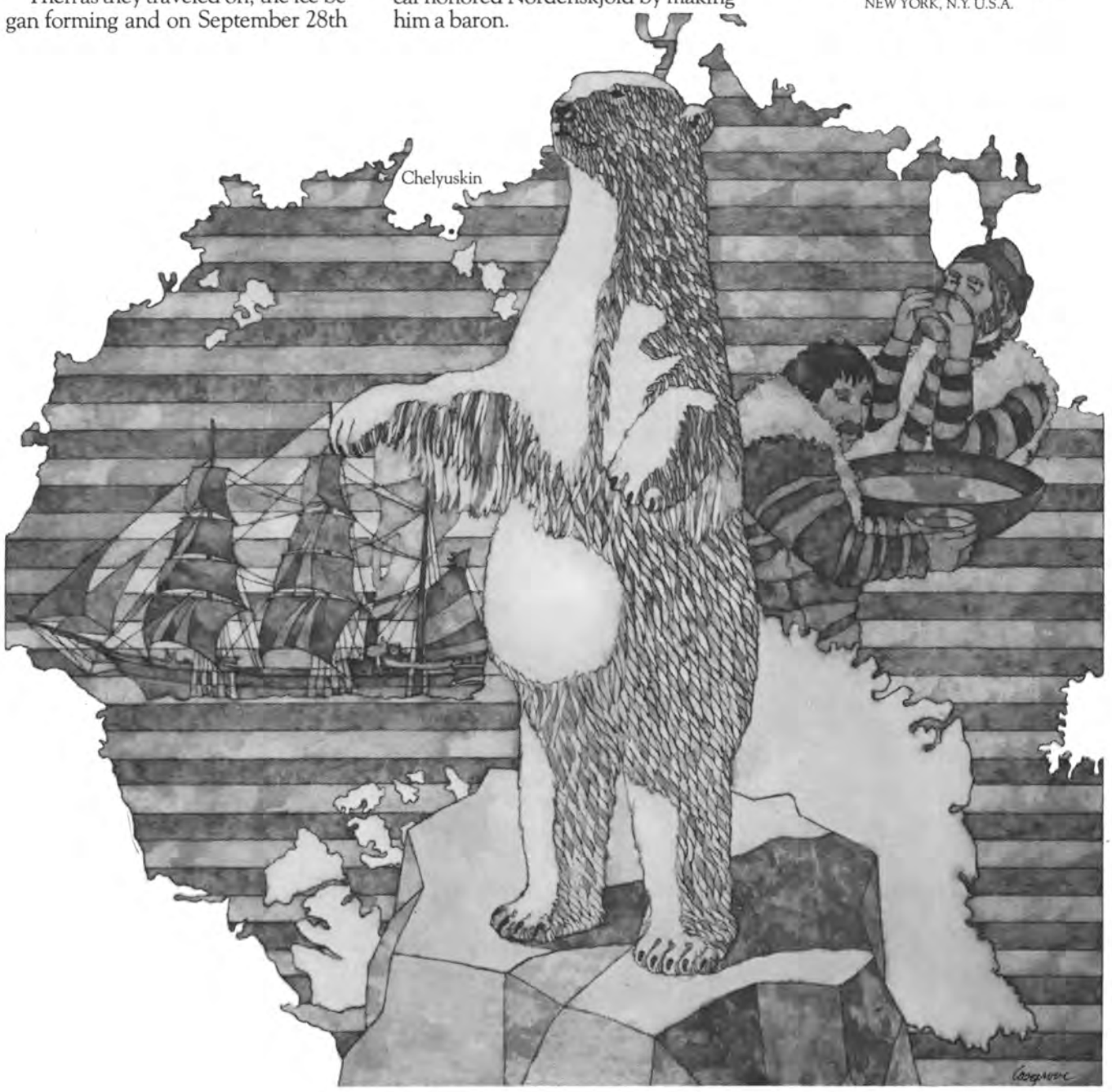
On August 14th Nordenskjöld made it through the Bering Strait and anchored near Bering Island. The Northeast Passage had been navigated.

The *Vega*, after visiting Japan, arrived in Stockholm harbor on the 24th of April, 1880 and Sweden's King Oscar honored Nordenskjöld by making him a baron.

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.



Dravo Receives Order For 12 Hopper Barges From Hennepin Towing

Dravo Corporation, Pittsburgh, Pa., has received an order from Hennepin Towing Co., Minneapolis, Minn., for the construction of 12 hopper barges. The vessels will be 200 feet long, 35 feet wide, and 12 feet deep. The barges, to be used for carrying a variety of bulk commodities, will be semi-integrated in design, with one rake end and roll tops.

Teledyne Buys Three Offshore Drilling Rigs

Teledyne Movible Offshore, Inc., of Lafayette, La., has purchased three workover-drilling rigs from High Seas, Inc., of Houston, Texas. Terms of the transaction were not announced.

The purchases of the rigs enabled Teledyne Movible to expand its fleet of working offshore rigs to 14. A company spokesman said the rigs will be operating offshore in the near future. They are undergoing some modification and renovation at Teledyne Movible fabrication yard at Amelia, La.

Vancouver Shipyards To Build 120-Ft. Ferry For Canadian Govt.

The Canadian Department of Indian Affairs and Northern Development has ordered a 120-foot ferry at a cost of $660,772 from Vancouver Shipyards Co., Inc., Vancouver, British Columbia.

The twin-screw vessel will be ice-strengthened and will be used in the Northwest Territories to carry passengers and commercial traffic across the Mackenzie River. Delivery is scheduled for October.

The Offshore Company Building Drilling Vessel For Shell International

What is said to be the largest offshore drilling vessel ever constructed is to be built by The Offshore Company, Houston, Texas. The vessel will consist of two lower hulls with a 390-foot length overall connected to an upper hull of 270 feet by six stabilizing columns 27 feet in diameter. It will be used by Shell International Petroleum and is to be semi-submersible and fully self-propelled. The actual building of the vessel will be by an Offshore subsidiary in Europe, with completion scheduled for early 1973.

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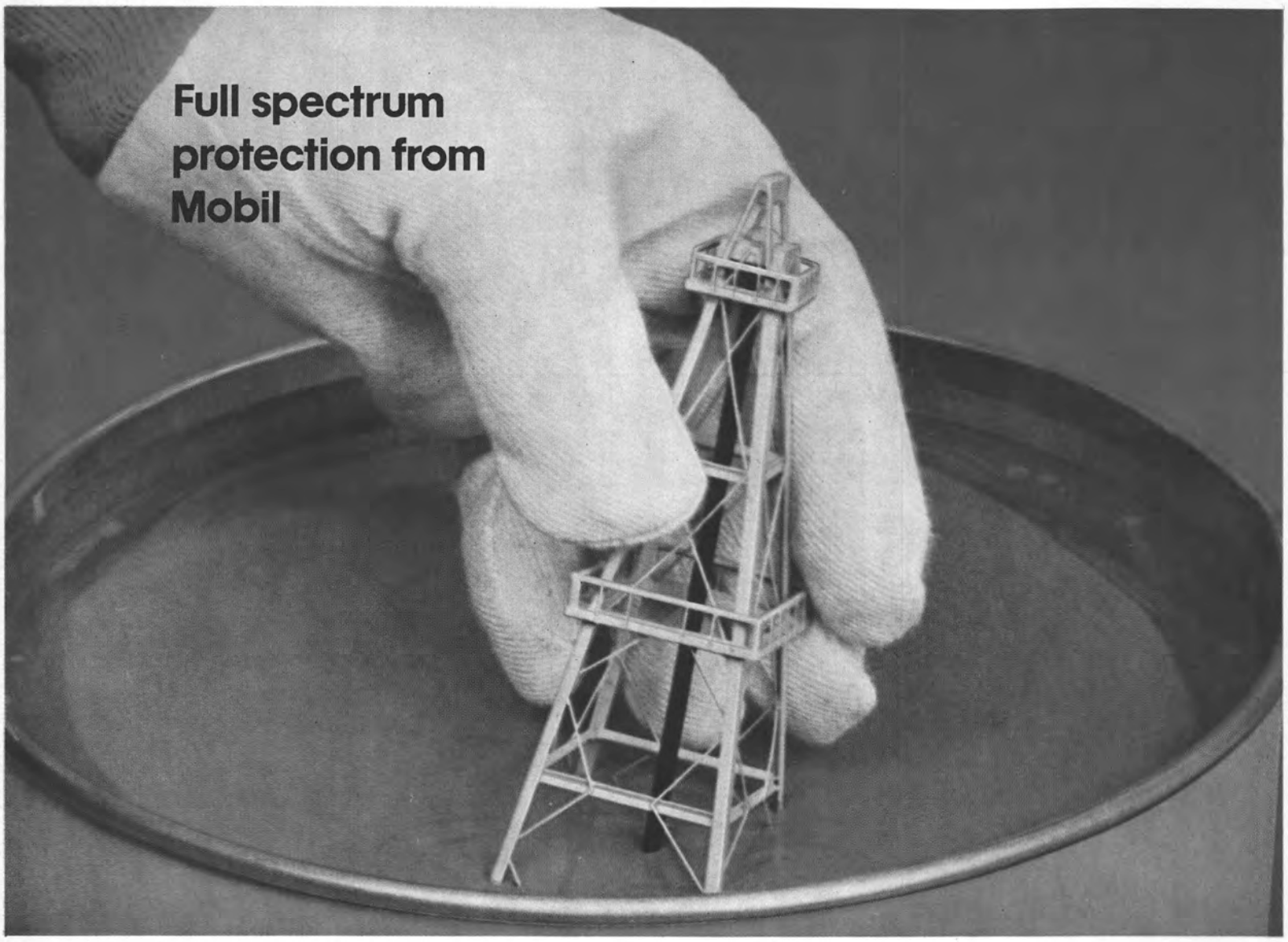

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Brushing or spraying steel with Mobilzinc gives the same protection as dipping it in a galvanic bath. That's why "Zinc-rich" Mobilzinc gives the most effective, longest lasting, easiest applying cathodic protection of any coating.

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.

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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.

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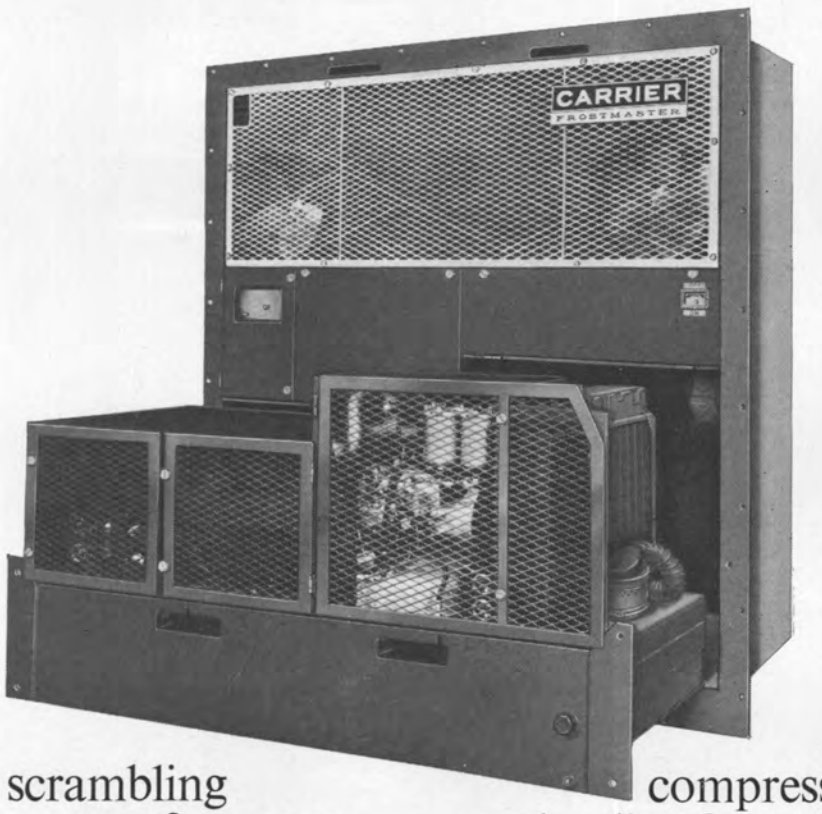
171A

This refrigerated wall packs its own power.



Forget scrambling around for power for your refrigerated container. This new Carrier-Transicold unit carries its own like nothing else. A 230-volt diesel generator set.

Like many of our units, this one also becomes the front end of your container (and saves installation costs). Comes factory-charged with refrigerant and oil. Includes the long-life Carrier 6D compressor. And an automatic close-limit thermostat controls refrigeration, electric heating, and evaporator defrost. Also available with compressor cylinder unloading for capacity control.

Service is no trouble, either. The generator set has forklift pockets, so you can slide it out for easy maintenance. And up-front access makes the rest of the unit just as easy to get at —without removing your cargo.

For the only refrigerated wall with its own power, call or write us. Carrier-Transicold Company, Carrier Parkway, Syracuse, N.Y. 13201.

Carrier TRANSICOLD

Seatrain Lines' GTS Euroliner on her maiden voyage to the United States. The high forecastle and extended bulwarks protect the containers stowed on deck.

Seatrain Lines' First Gas-Turbine Containership

The GTS Euroliner

First Commercial Gas-Turbine Ship Averages 26.5 Knots On Maiden East Bound Atlantic Voyage To Set Speed Record. The Turbo-Power And Marine Systems Inc., Gas Turbine Powerplant Is Fully Automated For Unmanned Operation And Small Crew.

At a speed of 26.5 knots and running at about 80 percent of full power, the world's largest containership, GTS Euroliner, operated by Seatrain Lines, has set a new trans-Atlantic speed record for cargo vessels. The 798-foot, 33,500-ton (displacement) vessel cut almost a knot off the previously reported record of 25.6 knots held by the GTS Admiral Callaghan. The record was set during the maiden eastbound voyage of the Euroliner from Sandy Hook to Maas Buoy off Rotterdam.

The Euroliner is capable of carrying more than 900 forty-foot containers and has been placed in trans-Atlantic service by Seatrain between major U.S. East Coast ports and ports in continental Europe, Scandinavia and the United Kingdom.

The Euroliner is the first of four gas-turbine-powered containerships to be built at the Rheinstahl Nordseewerke yards in Germany. An identical vessel, the Eurofreighter, was launched April 7 and will enter service in July. Hardly had the Eurofreighter slipped into the water than yard workmen began laying the keel for a third containership to be built on the same ways. The fourth vessel will be started later this year. The third and fourth gas-turbine-powered containerships will be in service in 1972.

The powerplants of all four ships, each developing 30,500 shp, are FT4A-12 gas turbines derived from aircraft turbojets. However, gears, shafts and variable-pitch propellers aboard the last two ships are engineered for eventual installation of the more powerful FT4C-2 engines which develop 35,000 shp.

Both the owners and the charterers of the new freighters are giants in the international shipping world. Seatrain Lines, Inc., of New Jersey, is one of the largest U.S. shipping companies, with more than 50 vessels currently in the fleet or under construction. Seatrain Lines is engaged in the worldwide transport of oil and other bulk commodities in addition to its large container trade. The firm also operates the former Brooklyn Navy Yard, which makes it the only shipping company with its major shipbuilding capability in the United States.

All four of the gas-turbine containerships leased to Seatrain Lines are owned by the Scarsdale Shipping Company Limited of London, a subsidiary of J.&J. Denholm, Limited. This latter firm owns or manages nearly 50 vessels ranging from ore carriers and very large tankers to small coastal ships and large freighters which ply the major ports of the world.

The four containerships, though European built and flying the British flag, were designed by Seatrain to standards of the American Bureau of Shipping.

The marine world is giving close scrutiny to the GTS Euroliner. The unusual attention being received by Euroliner is fundamentally due to her propulsion system which is responsible for several "firsts."

1. First privately financed aircraft-type gas-turbine cargo vessel.
2. First gas-turbine container vessel.
3. First gas-turbine unattended engine room cargo vessel.

Since Euroliner and her three sisterships are initiating a new concept in marine operations, it is appropriate to examine in some detail her propulsion system. The decision to use gas turbines is based on many factors but is best summed up by the words "total economics." Annual operating costs are just a part of the total picture and ship's cost, or capital invest-

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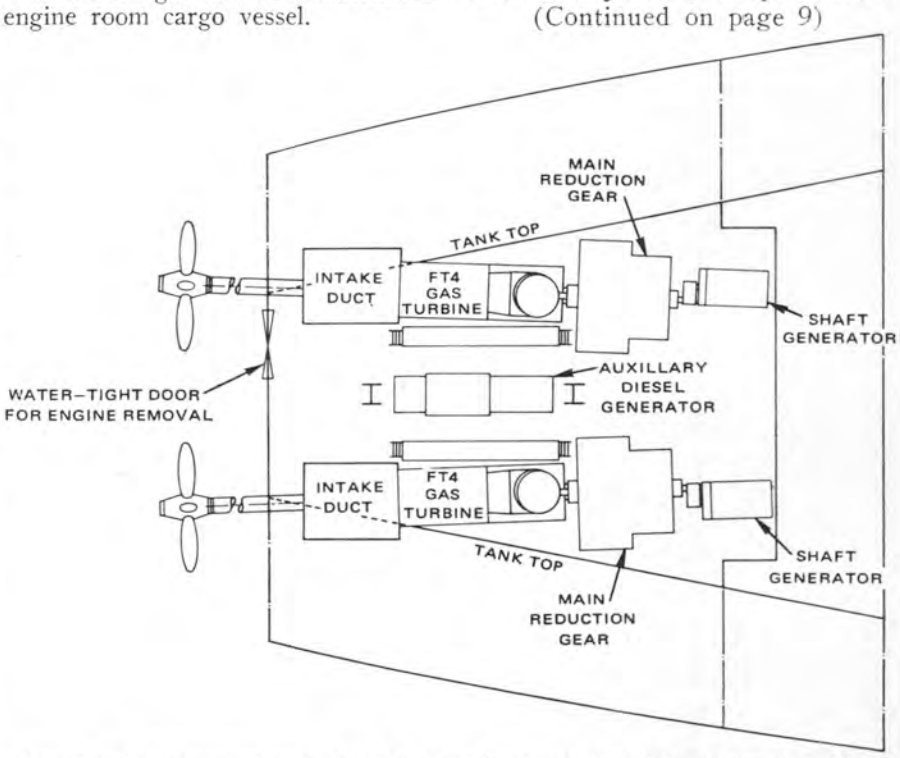
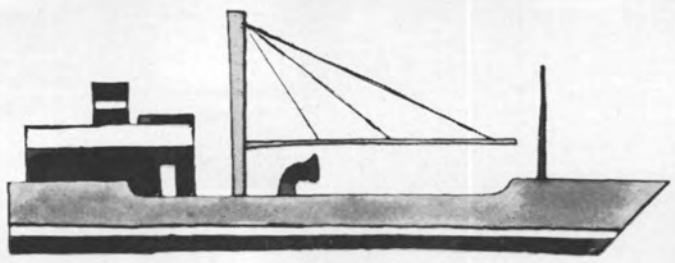
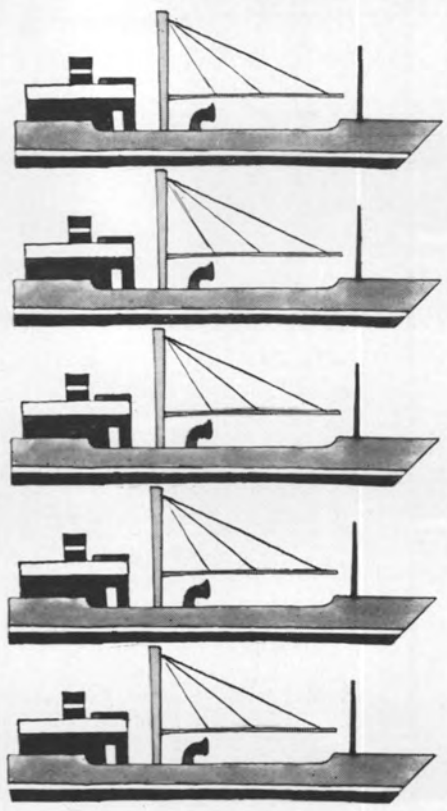


Simplified arrangement plan of the Euroliner's engine room shows the main units.

Introducing the large barge.





Our new barge, the MV Taboga, is the largest in the Panama Canal area. It has a 6,500 ton, 46,000 barrel capacity. (Over double any of our other barges.) And an increased pumping rate of 1,000 tons per hour.

This makes it the perfect supplier for larger vessels, like the new container ships.

But no matter what your size, the Taboga can help you save time and money.

Our new large barge is also fast on the water. So we can have the Taboga where you want it, when you want it. At either side of the Canal.

Wherever you tie-up to it, the Taboga will supply you with bunker "C" fuel, intermediate grades, marine diesel fuel, gas oil and potable water. And there's never any extra charge for deballasting service.

In addition, to make sure you get your best transit position through the Canal, we'll even keep your agent informed of your completion time.

So the next time you're in our area, it might pay you to pay us a visit.

Bunker in Panama by barge. Refineria Panama, S.A.

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GTS Euroliner

(Continued from page 7)

ment, cargo capability, manning and ship availability must all be considered.

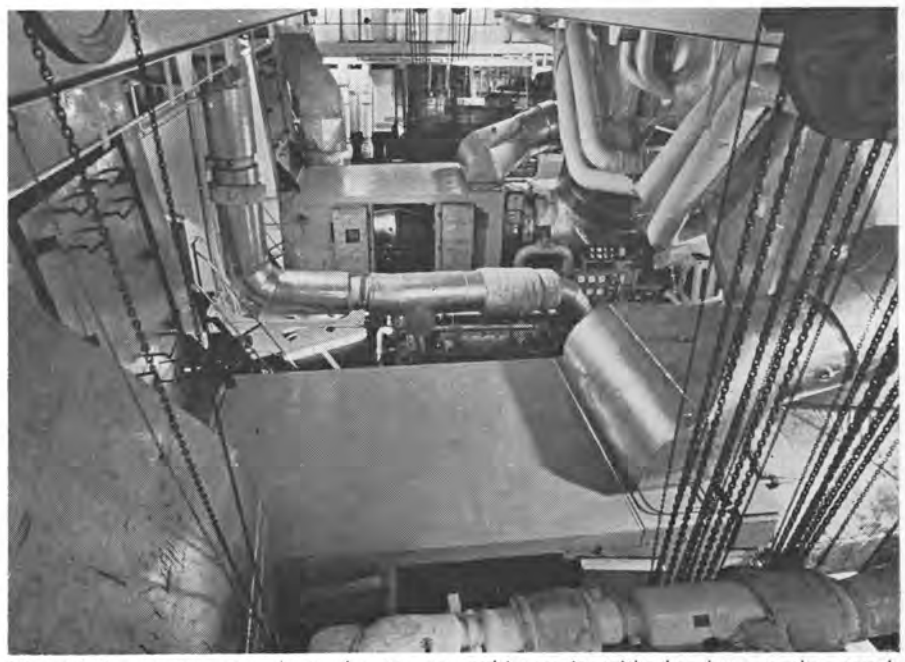
The compact, modular design of the Power Pacs permit significant shipyard installation labor economies and total savings in ship cost of 10 to 15 percent. The ease of automation permits unattended engine room operation with substantial savings in manning. In a volume limited hull such as a container vessel, the 10 percent additional cargo capability is very significant. Of most importance is the reduced off-hire time to be expected as a result of high engine reliability and the six hour engine change-out capability for overhaul. This, of course, permits tighter scheduling and annually a much more productive vessel.

Turbo-Power and Marine Systems, Inc. (TP&MS) have had the responsibility for providing the prime movers, marine propulsion control system and acting as advisor for the entire propulsion train, duct work and other related components. Formerly a department of Pratt & Whitney Aircraft, TP&MS was newly established as a separate subsidiary of United Aircraft Corporation in 1970.

Two FT4A-12 gas turbines provide a total of 60,000 bhp for Euroliner's top speed which is well in excess of 27 knots. The ship has also demonstrated her capability of 21 knots on one shaft.

The FT4A-12 gas turbine was developed from the J75 aircraft jet engine which powers the Boeing 707 and DC8. Extensive changes were accomplished to make it suitable to the marine environment. In its present marine form the FT4A-12 consists of two major components, the gas generator and the free turbine.

The gas generator consists of a low- and high-pressure compressor section, a combustion section, and turbines to drive the compressors.



View of the engine room shows the two gas-turbine units with the doors to the sound-proof engine enclosures open. The tops are removable for easy and fast maintenance.

Stern view of the superstructure shows the engine air-intake enclosures on aft side.

The eight-stage low-pressure compressor and the seven-stage high-pressure compressor are driven by a two-stage and a single-stage turbine, respectively. Between the compressors and turbines is the combustion section consisting of eight combustion chambers arranged around the shaft, with each combustion chamber having six fuel nozzles.

The hot gasses from the gas generator are used to rotate the free turbine which is a two-stage reaction turbine. The operating speed of the free turbine is 3,600 rpm which is lower than many steam turbines and, therefore, simplifies the reduction gear requirements.

To assist shipyard installation of the FT4 and to insure optimum design, the Power Pac approach was taken for Euroliner. A power module was conceived which would permit "plugging in" the power source. In addition, the dimensions of the module or Power Pac were to be such that shipment in a 40-foot container would be feasible. Also, the container would serve as a store house for the shipyard until the Power Pac was installed in the ship. As such, the container was fitted out with lighting, dehumidification equipment and tool storage.

Each of the two FT4 Marine Power Pacs in Euroliner are approximately 27 feet long and 8 feet wide with a total weight of 15 tons. Only about half of the weight is attributed to the engine, with the remainder being such items as the foundation, supports, enclosure and additional support equipment. The engine enclosure provides both sound isolation and proper engine cooling. To facilitate engine maintenance, doors on either side provide for easy access. In addition, the roof of the enclosure is easily removed when changing the engine for overhaul. Included within the Power Pac are the complete lubrication systems (with coolers and precipitron), fire detection and prevention equipment plus all necessary electrical cables and piping for the starting and ignition systems.

All necessary connections are terminated at the base for quick and simple coupling of cables and piping by the shipyard. Actual installation within a ship, including the initial alignment, can be accomplished in one week.

The main components of the two propulsion trains consist of conventional marine, double-reduction, locked-train reduction gears and variable-pitch propellers. The variable-pitch propellers were manufactured by LIPS in Holland and provide for maximum operational flexibility. The reduction gears were provided by DeSchelde and, due to the high torque

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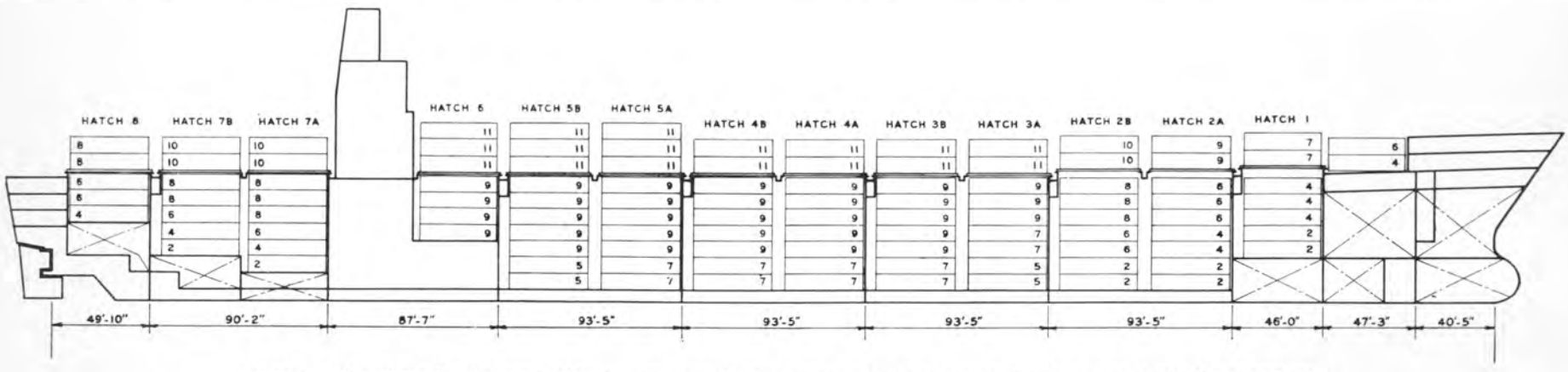

Inboard profile of the Euroliner indicates the container-stowage arrangement and the small volume needed for the engine room.

GTS Euroliner

(Continued from page 9)

associated with a single input shaft, have hardened and ground high-speed pinions. In addition, an AEG 1,000-kw shaft-driven alternator is connected to each of the two reduction gears and equipped with a series connected thyristor-type inverter to supply ship's electrical power.

The main propulsion-control system was designed and built in a coordinated effort by TP&MS and AEG-Schiffbau, Germany. Unattended engine room operation was a fixed requirement with bridge control as well as bridge wing controls for maneuvering. A fully automated monitor system makes possible a 16 hour, unsupervised operation with remote control from the bridge.

The speed of the propeller shaft is set for "ahead" as well as "astern" operation by means of the control lever. The adjustment of the propeller pitch is also combined with this single control lever for each shaft.

The automatic starting system brings the fuel and lubricating oil systems, the propulsion-unit cooling system and the seawater circulating system into operation. As soon as the gas turbine is cleared for operation, it is started by means of a push-button on the engine control panel.

The engine can also be started manually whereby all auxiliary machines are started separately through pushbuttons. A mode selector switch with five positions ensures the functionally correct order of the manual starting procedure.

After reaching idling speed, the gas turbine is accelerated and the propeller pitch is adjusted through operating the control lever either on the bridge or on the engine control panel. Above the maneuvering speed, the propeller is operated with maximum pitch.

When reversing, the control lever is set to the required astern speed. The gas turbine is brought to the minimum permissible power. As soon as the shaft speed is low enough to avoid the so called "windmill effect," the propeller moves into the set pitch for astern operation.

The machine is stopped under normal conditions by means of operating a pushbutton on the engine control panel. The idling speed is maintained for a short time in order to cool the unit before it comes to a standstill.

During the design work for the control system, it was necessary to investigate the operation of the shaft generator during all maneuvering conditions. As the generator cannot be loaded under a certain minimum speed, this minimum speed during maneuvers had to be fixed. During maneuvering operations in the "ahead" or "astern" direction of the ship, the speed of the propeller shaft is held constant and the ship's speed is altered through adjusting the pitch of the propeller. Above maneuvering speed, the propeller pitch remains constant and the generator speed al-

The air-conditioned engine control room contains all the controls and alarms for the main and auxiliary machinery.

ters relative to the shaft speed. The whole speed range from "dead slow" to maneuvering speed "full ahead" is therefore covered with a constant speed of the turbine of 2,000 rpm while the pitch of the propeller is automatically altered. With a machine output of 2 × 5,000 shp and maximum propeller pitch, the ship attains a speed of about 16 knots. From this output up to the full output of 2 × 26,000 shp, the propeller pitch is 100 percent. In order to attain the maximum output of 30,000 shp, a mechanical block on the control lever of the engine telegraph must be freed.

The automatic propulsion controls are monitored by a superimposed AEG data-processing unit of the "Datazent 100" system. It should be noted that, for this equipment, the

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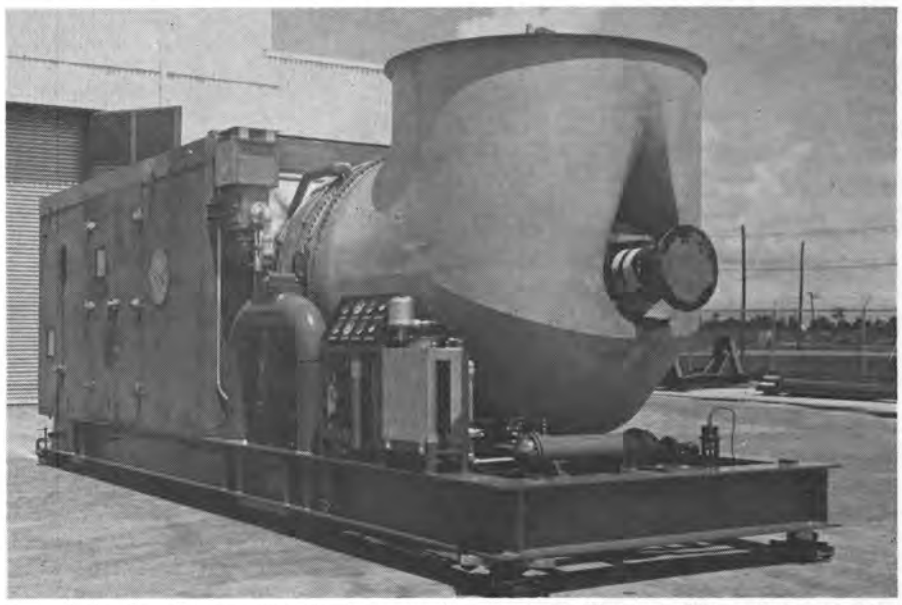
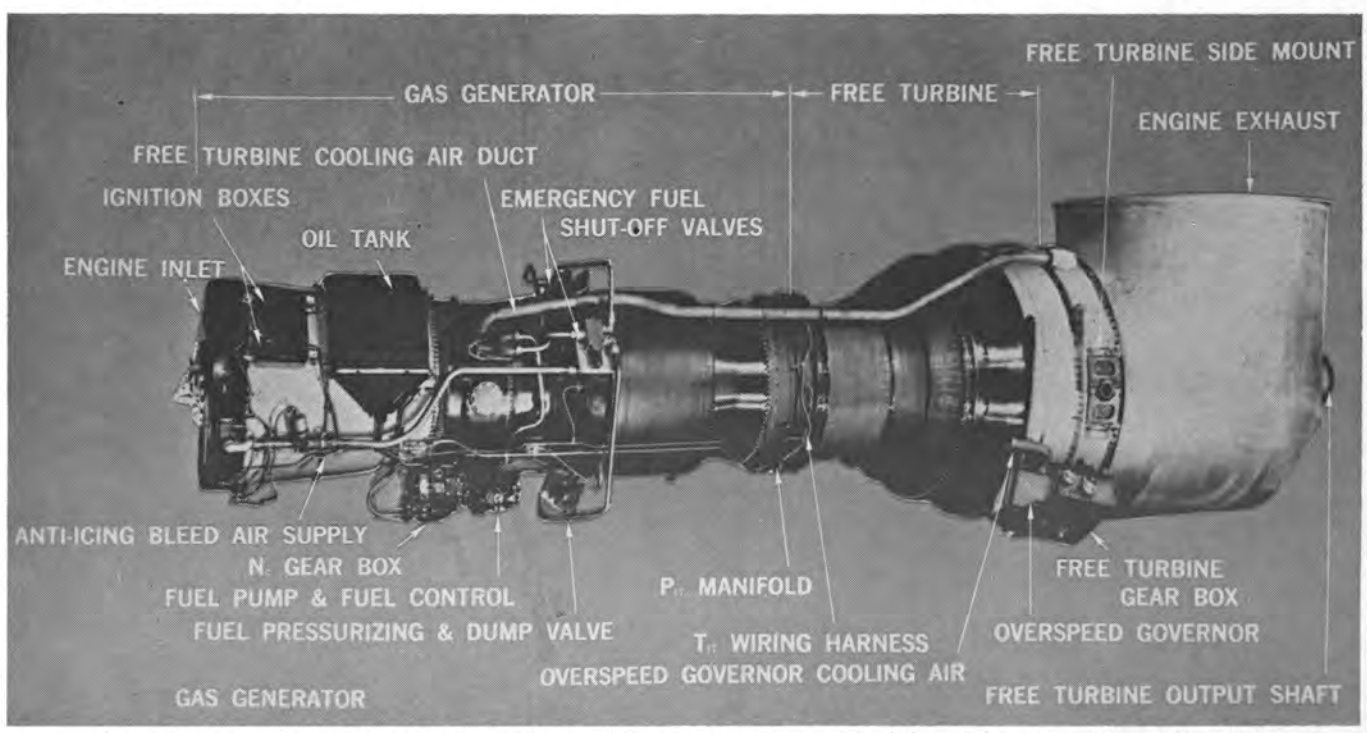


One of the Euroliner's powerplants ready for shipment. The complete unit is mounted on its frame for easy handling. This unit was shipped in a standard 40-foot container.



Annotated view of the FT4 marine gas turbine with the gas generator on the left and the free turbine on the right.

GTS Euroliner

(Continued from page 11)

same standardized electronic modules are used as for the automatic propulsion controls. This is to facilitate the ordering of spares, as well as maintenance and other service work.

All analog and digital measuring values are cyclically scanned and monitored. The values obtained are fed through analog measuring circuits into a central analog-digital converter.

After being subjected to analog-digital conversion, the measured values are transmitted in digital form to the central computing unit for data processing. Most of the measuring points are compared against high and/or low limits stored in a memory bank. On detection of an alarm condition, the disturbance value printer records in a separate log sheet the day, time and type of the disturbed point. An alarm is actuated at the same time. If a point of particular importance is disturbed, there will be an intervention in the relevant programmed sequence of the automatic propulsion control. Thus, the programmed sequence is modified to protect the machinery against any abnormal condition. At the same time, the operating personnel are notified by a duty-alarm system.

At certain preset intervals, a typewriter prints out all important and interesting values in the engine log.

On demand of the operator, a digital display on the MCS console shows the measured value of any selected point. Thus, it is possible to see the operating conditions of the complete system at a glance. In addition, the data-logging and processing unit described contains certain test programs for automatically monitoring its own function. These test programs check the proper functioning and accuracy of the unit before each scanning cycle whereby special attention must be paid to sensor breakage, accuracy of the analog-digital conversion and correct functioning of the logging units and alarms.

All of the equipment has been installed to the requirements of the American Bureau of Shipping's classification for unattended machinery spaces and the U.K. Department of Trade and Industry (formerly the B.O.T.). Of significance is the fact that the ship has been operating continuously in automatic, bridge control mode. Normal procedure has been to start the plant from the machinery control room and immediately shift control to the bridge. There have been no problems to date and the supervisory capability of the control system has demonstrated the confidence that has been placed in it.

The Euroliner is now operating on a number two gas oil. Provision has been made for bunker heating as well as engine room fuel heating to allow burning of the new heavy distillates now available. Although with pour points as high as 75°F, these new distillates will allow operation of the vessel with a small cost differential over the cost of residual fuels. With the increased emphasis on air pollution, it is expected that the heavy distillate fuels will come even more into prominence for all types of propulsion systems. It is anticipated that Euroliner will commence using heavy distillates later this year.

To date, all operations have been well within guarantees of performance including fuel consumption. An average day at sea with speeds slightly above 26 knots, normal auxiliary loads and reefer containers on board have produced an average fuel consumption of 268 tons per day.

Manning for Euroliner consists of a chief engineer, 2nd engineer and two 3rd engineers. Periodic engine inspections will be accomplished by shore personnel and, of course, overhaul will be accomplished ashore. Engine change-out for overhaul is expected to take six hours. This is accomplished by lifting the engine from the engine room into a container hold and off the ship. Monorails and lifting equipment are installed in the engine room to facilitate change-out as well as a large opening between the engine room and the adjacent container hold.

Euroliner's propulsion system demonstrates an optimum application of gas turbines and is the direct result of a coordinated effort between the owners, design agent, shipbuilder and engine manufacturer.

Todd Shipyards Names Olvesen To Sales Post

Edwin Olvesen

Edwin Olvesen has been appointed assistant to the sales manager of Todd Shipyards Corporation, it was announced by **J.B. Burguieres,** sales manager.

Mr. **Olvesen,** with Todd since 1938, has served in various capacities in the New York office and in the shipyards. He was in charge of industrial sales at the Brooklyn Division for 15 years before joining the New York sales force in 1966.

Oglebay Norton Buys Ceres Terminal And Appoints R.T. Green

R. Thomas Green Jr.

Oglebay Norton Company, Cleveland, Ohio, has announced that it has been notified of approval by the Federal Maritime Commission of an agreement between its wholly owned subsidiary, Toledo Overseas Terminal Co., and Ceres Incorporated for the acquisition of Ceres's terminal facilities and equipment at the Presque Isle site of the Toledo-Lucas County Port Authority.

The addition of these facilities by Toledo Overseas Terminals Co. will substantially increase its ability to serve Great Lakes overseas shippers. Vessel berths will be increased from four to seven and transit shed capacity from 115,000 to 160,000 square feet. Outside dock storage area will increase to 31 acres.

R. Thomas Green Jr. has been appointed assistant manager of Toledo Overseas Terminals Co. Mr. **Green,** who joined Oglebay Norton Company in 1965, has been employed in the sales department. Prior to coming with the company, he was with United States Steel Corporation in Cleveland and Pittsburgh.

A native of Shelby, Ohio, Mr. **Green** is a graduate of Western Reserve Academy, Hudson, Ohio, and Amherst College, Amherst, Mass., with a degree in economics.

Mooremack Promotes Carr And Fuccillo

Hubert F. Carr and **Nicholas V. Fuccillo** have been elected vice presidents of Moore-McCormack Lines. The announcement was made by **James R. Barker,** chairman and president.

Mr. **Carr,** who joined Mooremack in 1941, has held the position of secretary of Moore-McCormack Lines, Incorporated, since 1961. He will continue to be responsible for the firm's legal, insurance and claims matters. He is a member of the New York County Lawyers' Association, the Maritime Law Association, the American Society of Corporate Secretaries, and the Downtown Athletic Club.

Mr. **Fuccillo,** a well known personality in the shipping industry, came to Mooremack in 1938. He served in various capacities in the traffic department and until his election as vice president, was general traffic manager. He will continue to direct the activities of the American Republics Line serving the East Coast of South America, and the Robin Line service to South and East Africa.

Mr. **Fuccillo** is a member of the Downtown Athletic Club and the Foreign Commerce Club of New York.

Marcona And Dravo Sign To Develop Marconaflo Slurry Handling System

Marcona Corporation, San Francisco, Calif., and the Dravo Corporation, Pittsburgh, Pa., have signed an agreement to develop and to market jointly the recently introduced Marconaflo slurry handling system.

The unique system for loading, transporting, unloading and handling ores and other bulk commodities in slurry, or partial liquid form, will be adapted to a wide range of new marine, land-based, and ship-to-shore applications under the plan.

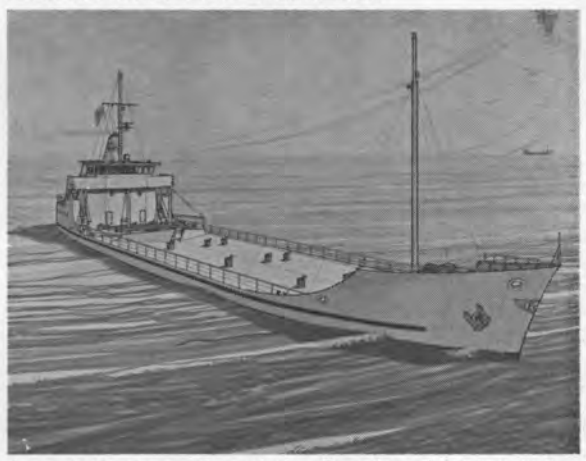
In a joint statement, **C.W. Robinson,** president of Marcona, and **Robert Dickey III,** president of Dravo, said that the combining of Dravo's expertise in the engineering/construction and marketing fields with Marcona's knowledge of slurry technology and experience in existing applications, will serve to advance acceptance of the system on a worldwide basis.

Marcona will be responsible for the technical development of the process and will continue to conduct research and development programs at its Marconaflo Test Center. The company is also establishing a Marconaflo Manufacturing Center for production of Marconajets and accessories, the fundamental components of the Marconaflo system.

Dravo's Engineering Construction Division and the newly-formed Marconaflo Division of Marcona will participate jointly in the commercial development and marketing of Marconaflo and related apparatus systems. Dravo will provide engineering and construction services for specific system applications and related facilities.

Respective activities of the two companies will be directed by **W. Norman Sims,** manager, Marconaflo Division, Marcona, and **Donald R. Rathburn,** manager, Fluid Material Handling & Transportation Systems, Dravo.

Krogen And Barbour Boat Win Contract To Construct 230-Foot Esso Tanker



An artist's conception of the Esso InterAmerica tanker which will be powered by a pair of Caterpillar diesels.

Outbidding both domestic and foreign competition, the Miami-based naval architects James S. Krogen & Co., and Barbour Boat Works Inc. in New Bern, N.C., have won a contract to design and build a new 230-foot tanker for Esso InterAmerica.

Ultra modern in many of its concepts, the vessel, which is designed to the American Bureau of Shipping classifications, incorporates the latest antipollution equipment, such as tank cleaning slop, bilge slop, and sanitary holding tanks.

To be operated in the Caribbean by Esso InterAmerica, the 1,600-ton ship's delivery date is early 1972, **James Krogen,** president of the designing firm said.

Range for the ship will be 2,500 miles, and it will have a cruising speed of 12 knots from its twin D-398 Caterpillar diesels with a 4.1 gear ratio, which are situated in an unmanned engine room. Load capacity is 13,800 barrels. Other statistics, according to Krogen's office, include a draft of 16 feet and a beam of 39 feet.

Over the years, Krogen has emerged as one of the South's leading firms in the design of commercial vessels, such as fishing trawlers, tankers, work boats, landing craft, and custom cruising yachts.

Burmeister & Wain Announces New Board And Management

At the annual general meeting of Burmeister & Wain, Copenhagen, Denmark, the members of the board all tendered their resignations, and the following were elected as new members of the board: **Otto Petersen, Aksel Drejet, Sv. Aa. Bertelsen, G. Halling-Andersen, Hj. Kyrsting** (reelected), **Erik Nielsen,** and **Carl E. Sorensen** (reelected). The board subsequently named **Otto Petersen** as chairman and **Aksel Drejet** as deputy chairman.

Changes in the management were also announced. **Knud Moller, Jens Egelund,** and **K. A. Rasmussen** have left the service of the company, and a new management has been appointed, composed of the following: **Torben Bille,** managing director; **Olav Grue,** director of finance; **Per Schroder,** director of sales, and **C.F. Sverdrup,** technical director.

Olav Grue, who was recently appointed comanaging director of the subsidiary company, Burmeister & Wain Engineering Company Limited, will temporarily continue as director of finance until a new director can be appointed to take over this post.

We don't just sell marine fenders.

We sell complete engineered fendering systems.

We want to be certain our fenders do the job for you.

So before we'll even sell you a fender, we set our engineer design specialists to work.

Our specialists take all the facts, like expected loading, water currents, docking speeds and angles, and type of dock, to come up with a design proposal to suit your specific needs.

Then, if you go for the proposal, we hope you'll buy the fenders.

Check around. We've got our engineered fender systems at work in Miami, Jacksonville, and Philadelphia, in addition to off-shore installations in South America, the Mid East, and the Pacific.

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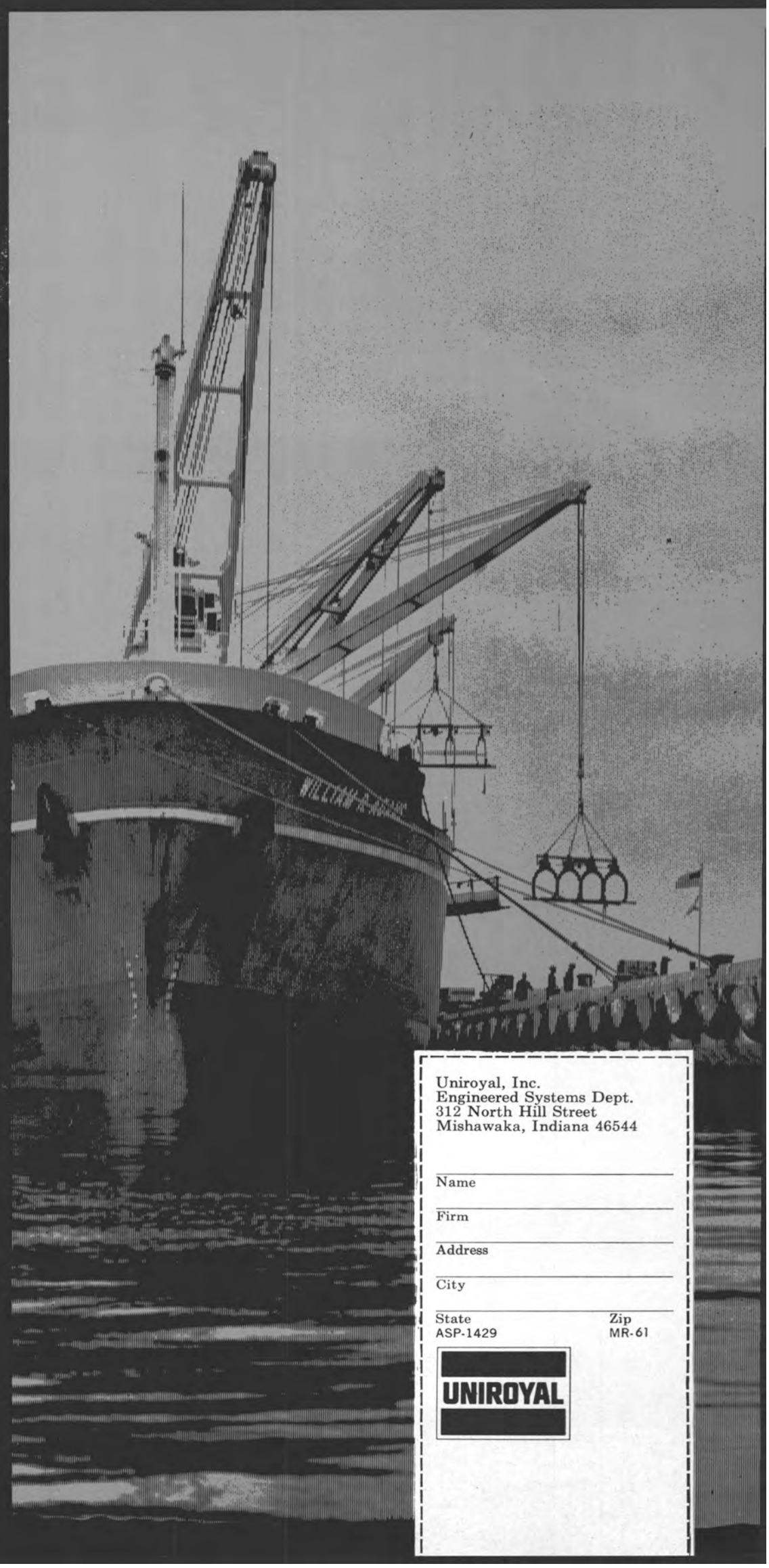

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Mobil Oil Appoints Andreas Panopoulos

Andreas T. Panopoulos

Andreas T. Panopoulos has been named manager of Hellenic sales and special products in Mobil Oil Corporation's marine sales department.

Mr. **Panopoulos** was born in Greece. He is a graduate of the Royal Air Force Academy and served 11 years as a flying officer in the Royal Greek Air Force. He came to the United States in 1962 and, prior to joining Mobil in November 1967, was assistant Hellenic sales manager, North America for Olympic Airways.

Most recently, he has been Hellenic sales manager for the marine sales department of Mobil Sales and Supply Corporation.

Porter Paint Names C. Edwin Wilkins

Porter Paint Co., with general offices in Louisville, Ky., has announced the appointment of **C. Edwin Wilkins** as general sales manager of the Porter Coatings Division.

Mr. **Wilkins,** a native of North Carolina, was formerly national sales manager of the Coatings Division of Mobil Chemical. He will direct the nationwide sales operation of Porter Coatings, which recently purchased the Marine and Industrial Coatings business of USS Chemicals.

Columbus Line Orders 336 Refrigeration Units From Carrier-Transicold

An order for 336 container refrigeration units has been placed with Carrier-Transicold Company, Syracuse, N.Y., by Columbus Line of New York, a subsidiary of Hamburg-Sudamerikanishe, a West German shipping company.

The self-contained units will be of the removable "clip on" type, so that they may be attached to the forward wall of 20-foot insulated containers when the latter are traveling by rail or over the road, according to **William C. Egan,** president of Carrier-Transicold.

Each Carrier-Transicold unit will consist of an open compressor directly driven by an air-cooled diesel engine, an air-cooled condenser, fan-coil evaporator and controls. When required, heat will be supplied by hot gas from the compressor, Mr. **Egan** said.

The clip-on refrigeration units never go to sea. They are demounted at dock side when containers are loaded aboard ship. At that time, the containers are connected to the ship's central cooling plant to maintain uninterrupted refrigeration service.

Columbus Line containers will be used to transport frozen meat, sea food, fruit and dairy products from Australia and New Zealand to the East Coast of the United States and Canada, and chilled or frozen shipments or dry cargo back "down under."

Nat'l Marine Applies For Title XI Insurance On Eight Vessels

Application has been made to the Maritime Administration by National Marine Services, Inc., St. Louis, Mo., for Title XI mortgage insurance. This is in relation to the construction of eight vessels, four barges and four towboats, costing approximately $3.4 million. The towboats are priced at $1.3 million and the barges at $2.1 million.

Two towboats will be 210 gross tons and the other two will be 240 gross tons. The double-skinned barges, which will carry petroleum or chemical products along the Gulf Intercoastal Waterway and on the Mississippi River, will be unmanned and non-self-propelled. Two of these vessels will be 1,300 deadweight tons and two will be 3,000 deadweight tons.

Marcona Carriers Ltd. New Name Of Marcona Shipping Subsidiary

Marcona Corporation, San Francisco-based resource development, shipping and mining concern, has renamed its principal shipping subsidiary Marcona Carriers, Ltd.

Formerly known as San Juan Carriers, Ltd., the firm handles virtually all of Marcona's transportation requirements from iron ore projects in Peru and New Zealand, and salt mining operations in Chile. In addition, the shipping company lifts large amounts of iron ore from Port Hedland, Australia, under sales contracts administered by another Marcona subsidiary, Cia San Juan S.A.

In 1970, Marcona Carriers, Ltd., transported cargoes totaling 16,940,000 tons. The company's fleet at the close of 1970 consisted of 10 owned vessels, with an aggregate 890,000 deadweight tons, plus a fleet of time-chartered vessels, aggregating on average throughout the year about 2.2 million deadweight tons. Additional capacity in 1970 aggregating the equivalent of 500,000 deadweight tons, was made available through single or multiple voyage contracts. The combined tonnage provides Marcona with one of the world's largest dry cargo fleets.

Marcona Corporation is owned primarily by Cyprus Mines Corporation, Los Angeles, and Utah Construction & Mining Co., San Francisco.

COMPANY	LOCATION	NO. OF TANKS	CAPACITY MBBLS.
Alabama Gas Corp.	Birmingham, Alabama	1	175
APCI-NEGEA	Hopkinton, Massachusetts	2	290
Boston Gas Co.	Boston, Massachusetts	1	290
British Columbia Hydro Authority & Power	Vancouver, B.C.	1	175
British Gas Council	Glenmavis, Scotland	1	300
British Gas Council	Partington, England	2	296
British Gas Council	Hirwaun, Wales	1	300
Brooklyn Union Gas Co.	Brooklyn, New York	1	175
Brooklyn Union Gas Co.	Brooklyn, New York	1	290
C.A.M.E.L.	Arzew, Algeria	1	70
Commonwealth Natural Gas Co.	Chesapeake, Virginia	1	348
Connecticut Natural Gas Corp.	Rocky Hill, Connecticut	1	348
Consolidated Edison	Queens, New York	1	290
Distrigas Corp.	Everett, Massachusetts	1	374
Distrigas Corp.	Everett, Massachusetts	1	600
ENI	La Spezia, Italy	2	315
Esso Libya	Marsa el Brega, Libya	2	300
Fall River Gas Co.	Fall River, Massachusetts	1	45
Gaz de France	Le Havre, France	3	76.5
Gaz Metropolitain, Inc.	Montreal, Quebec	1	290
Long Island Lighting Co.	Holbrook, New York	1	175
Lowell Gas Co.	Lowell, Massachusetts	1	290
Memphis Light, Gas & Water Div.	Memphis, Tennessee	1	300
NEGES Group	New Bedford, Massachusetts	1	58
New England Electric System	Lynn, Massachusetts	1	290
New England Electric System	Salem, Massachusetts	1	290
Northern and Central Gas Co.	Hagar, Ontario	1	175
Osaka Gas Co.	Osaka, Japan	2	290
Philadelphia Electric Co.	West Conshohocken, Pennsylvania	1	348
Philadelphia Gas Works	Philadelphia, Pennsylvania	1	73
San Diego Gas & Electric Co.	Chula Vista, California	1	175
San Diego Gas & Electric Co.	Chula Vista, California	1	348
Shell Oil Co.	Brunei, Malaysia	2	378
Somalgaz	Skikda, Algeria	2	350
Southern Connecticut Gas Co.	Milford, Connecticut	1	348
Stadtwerke Stuttgart	Stuttgart, Germany	1	210
Tokyo Electric Co.	Tokyo, Japan	2	220
Tokyo Gas Co.	Tokyo, Japan	2	290
United Gas Industries Corp.	Mechanicsburg, Pennsylvania	1	73

Litton Ship Systems Appoints M.L. Mosier

Maurice L. Mosier

Maurice L. Mosier has been named director of labor relations for Litton Ship Systems Division of Litton Industries, Pascagoula, Miss. Mr. **Mosier's** appointment to the key position at the new ship manufacturing facility was announced by **Ben W. Borne,** vice president and director of industrial relations for Litton Ship Systems.

Prior to joining Litton, Mr. **Mosier** was assistant manager of industrial relations in the corporate offices of Kaiser Engineers, a division of Kaiser Industries Corporation. In 16 years with Kaiser, Mr. **Mosier** held various other management positions with the company's division in Oakland, Calif., Spokane, Wash., Baton Rouge, La., and Chalmette, La. Before his association with Kaiser, he served as personnel manager for the National Gypsum Company.

A native of Pittsburg, Kan., Mr. **Mosier** is a graduate of Kansas State College.

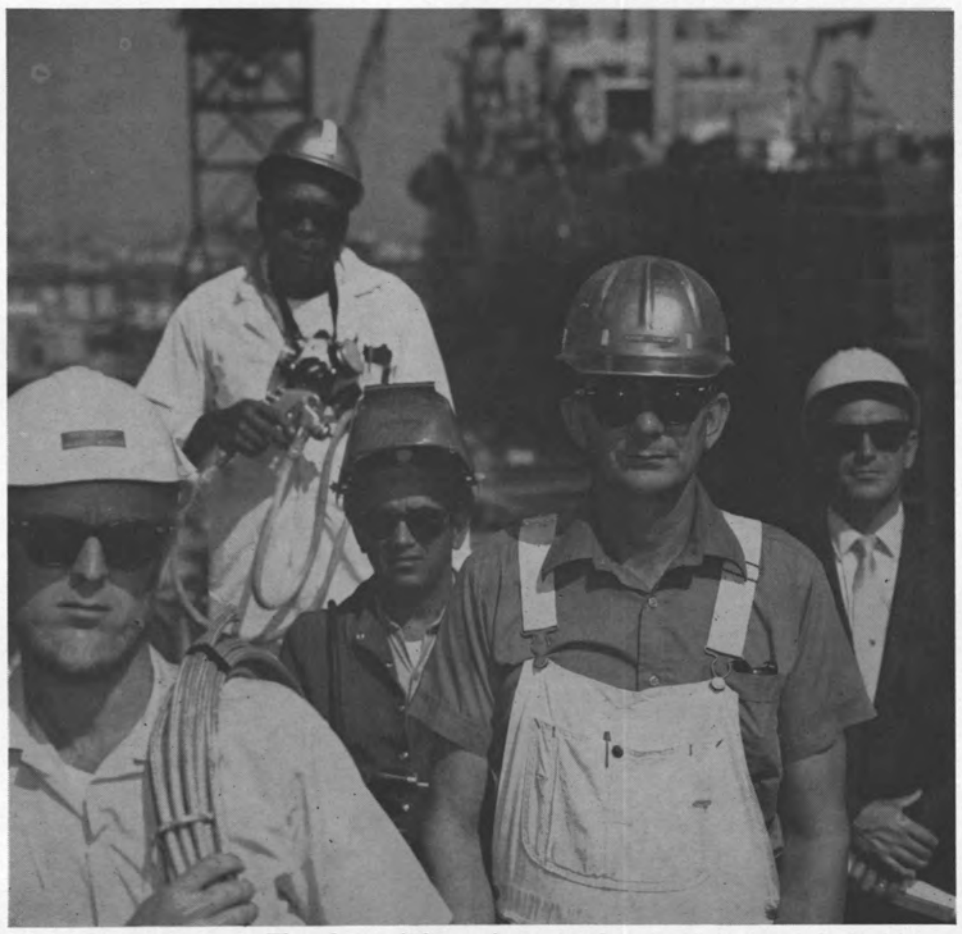
H.O. Penn Appoints Hirschauer Manager National Accounts

John Hirschauer

John Hirschauer has been named manager, national accounts for H.O. Penn Machinery Company, Inc., the Bronx, New York based dealer for Caterpillar Tractor Co. The announcement was made by **Robert Cleveland Sr.,** president of H.O. Penn.

Mr. **Hirschauer** will be responsible for sales to Penn's national account customers. Before joining H.O. Penn, Mr. **Hirschauer** was industrial sales manager for the machinery department of General Electric Company's Venezuelan subsidiary.

LET THE SUN SHINE



The *Age of Aquarius* wasn't our idea, but it could have been. We've been working in year-around sunshine for a long time. It's a rare day when dark glasses are not part of our standard working equipment. It is no secret, of course, that things grow quicker and better under the bright sun . . . shipbuilding is no exception to this axiom. San Diego's continuous mild, sun-blessed weather means more annual work days for all departments. "Weather permitting" is a phrase rarely heard in this yard. We suggest that you add a little sunshine to your next project. It costs nothing more, but it really does perform wonders.

NASSCO NATIONAL STEEL AND SHIPBUILDING COMPANY
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Robert L. Doyle Joins International Paint

Robert L. Doyle

Thomas M. Reinhardt, president, International Paint Company, Inc., has announced the appointment of **Robert L. Doyle** as assistant manager, technical sales, of the company. Mr. **Doyle** will work with the International Red Hand Marine Coatings Sales and Service teams in meeting the requirements of today's shipowners for systems which insure corrosion and antifouling protection in order to enable fast turnaround in port and extended periods between drydockings. He will also assist in the marketing and promotion of International's product lines and services.

Mr. **Doyle** brings with him over 20 years of experience in the protective coatings industry, which includes managerial positions in research and development, manufacturing and sales/service. During the past 10 years he has been involved in conducting seminars and making cost analysis in effective corrosion control coating systems for both marine and chemical environments. He holds a B.S. degree in chemistry from Franklin & Marshall College.

Mr. **Doyle** is a member of the National Association of Corrosion Engineers, the Education Committee of the New York Paint Society, and a member of Marine Finishes Manufacturers Committee of the N.P.V.L.A., and recently served as program chairman for their Eleventh Annual Marine Coatings Conference.

Hoffman Rigging Appoints Don Adams

Donald W. Adams

Joseph F. Watters, vice president, sales and operations, for the Hoffman Companies, Belleville, N.J., has announced the appointment of **Donald W. Adams** as sales representative for the New England area.

Mr. **Adams** has spent his entire adult life working with cranes and heavy equipment. He worked for many years with the Petry Equipment Company in Boston and 14 years as a service engineer for the Harnischfeger Corporation, one of the major crane manufacturers in the United States.

The Hoffman Companies maintain a New England sales office in Boston. Mr. **Adams's** assignment will be promoting the use and rental of Hoffman Cranes and equipment throughout the New England states.

Alfred Ivone Elected Wilson Shipyard VP

Alfred G. Ivone has been elected vice president of Wilson Shipyard, Inc., according to an announcement by **John W. Gravdahl,** Wilson president.

Employed by Wilson Shipyard since 1956, when he graduated from Goldey Beacom Junior College, Mr. **Ivone** has been treasurer of the company since 1964. He will continue to retain that title in addition to the vice presidency.

Wilson Shipyard is located at the Foot of Fourth Street, Wilmington, Del., and is engaged in ship repair and the construction of smaller vessels.

A GOOD CREW: The Society of Naval Architects and Marine Engineers was well represented at the 1971 Offshore Technology Conference held in Houston, Texas, April 19-21. "Manning" the SNAME booth with **Gene King,** hostess, are left to right: **Robert X. Caldwell,** past vice chairman, West Gulf Section; **Kenneth M. Shauer; Louis M. Johnson II,** SNAME representative on OTC program committee and chairman, West Gulf Section; **Blakely Smith,** SNAME representative and vice chairman of executive committee of OTC; **Mrs. Gene King,** hostess at SNAME OTC booth; **Walter H. Michel,** chairman, Panel MS-3; **Arthur W. Stout Jr.,** chairman, Gulf Section; **Andrew E. Allan; Vernon A. Olson,** technical administrator, SNAME, and **Edward M. MacCutcheon,** chairman, Advisory Group for Ocean Engineering.

HARBOR TOUR: At Alumni Day festivities held on the campus at Stevens Institute of Technology in Hoboken, N.J., graduates of the class of 1921 celebrated their 50th anniversary with a tour of New York Harbor aboard the tug Jane McAllister. The 1921 graduates and their wives were guests of their classmate **Anthony J. McAllister** and his wife **Marjorie.** Mr. **McAllister** is chairman of the board of McAllister Brothers, Inc. He is shown on the bow of the tug directly above the letter "R".

Multiply your advantages with compound propulsion systems from Caterpillar

If you need over 2250 horsepower, you need not rely on one big diesel.

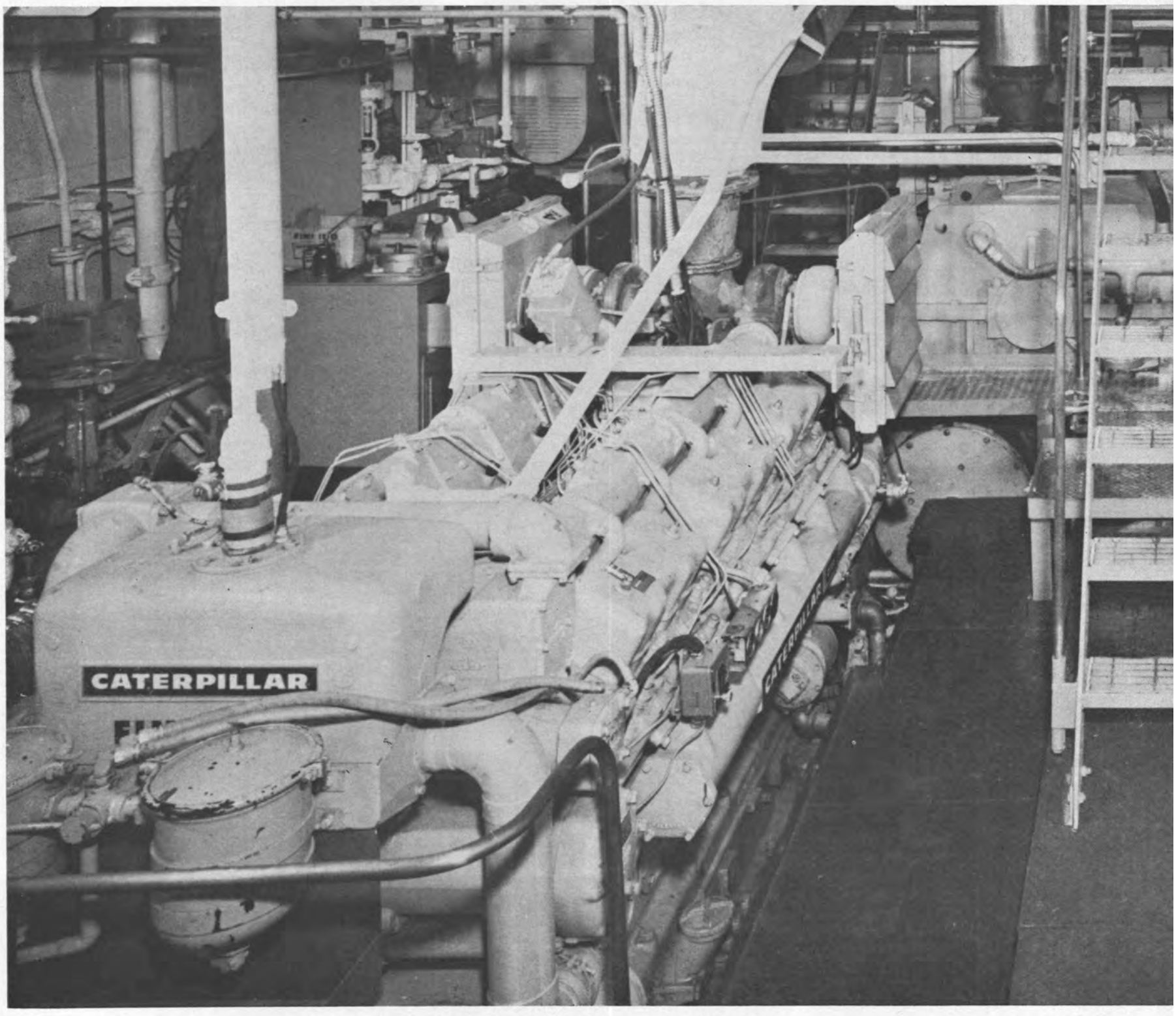
A compound propulsion system incorporating Caterpillar Diesels will multiply your reliability and safety factor and give you economies in power flexibility, too. It gives you the ability to adjust power to the load, reducing fuel consumption and required maintenance.

You might compound Cat Diesels on a single screw. Like the GULF JOAN which has four D398s connected to a Lufkin marine gear. This allows the use of from one to all four engines, depending on the load.

The Cat D398 Diesel Engines each develop 765 hp to give the GULF JOAN a total of 3060 propulsion hp. The 149 ft. tug has a 33 ft. beam and 18 ft. draft. She makes 14 knots light and 10 knots towing a 6000 ton deck cargo barge.

A single lever in the engine room controls all four engines or each can be controlled separately. So the captain has all the power he needs, but can use only the power he needs.

Ship's service aboard the GULF JOAN is supplied by two Cat D333 Diesels driving 75 kw generators. Another Cat



Engine drives the towing winch through a torque converter.

Ask your Cat Dealer to help plan a Cat Diesel compound installation for you. He has all you need: Diesels 85 to 1425 hp. Marine gears. Electric Sets 40 to 900 kw. All Caterpillar-built, with dealer service available the world over.

Multiply your chances to increase your profits.

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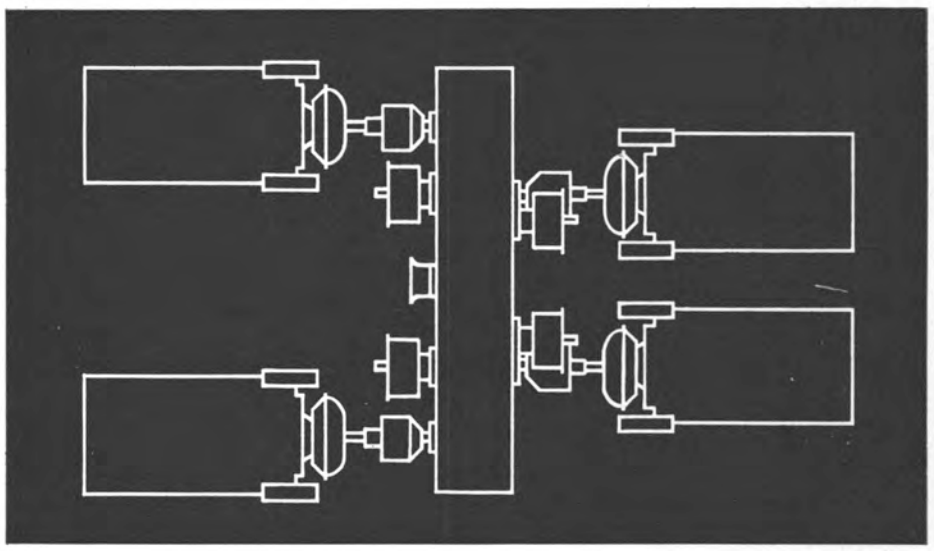
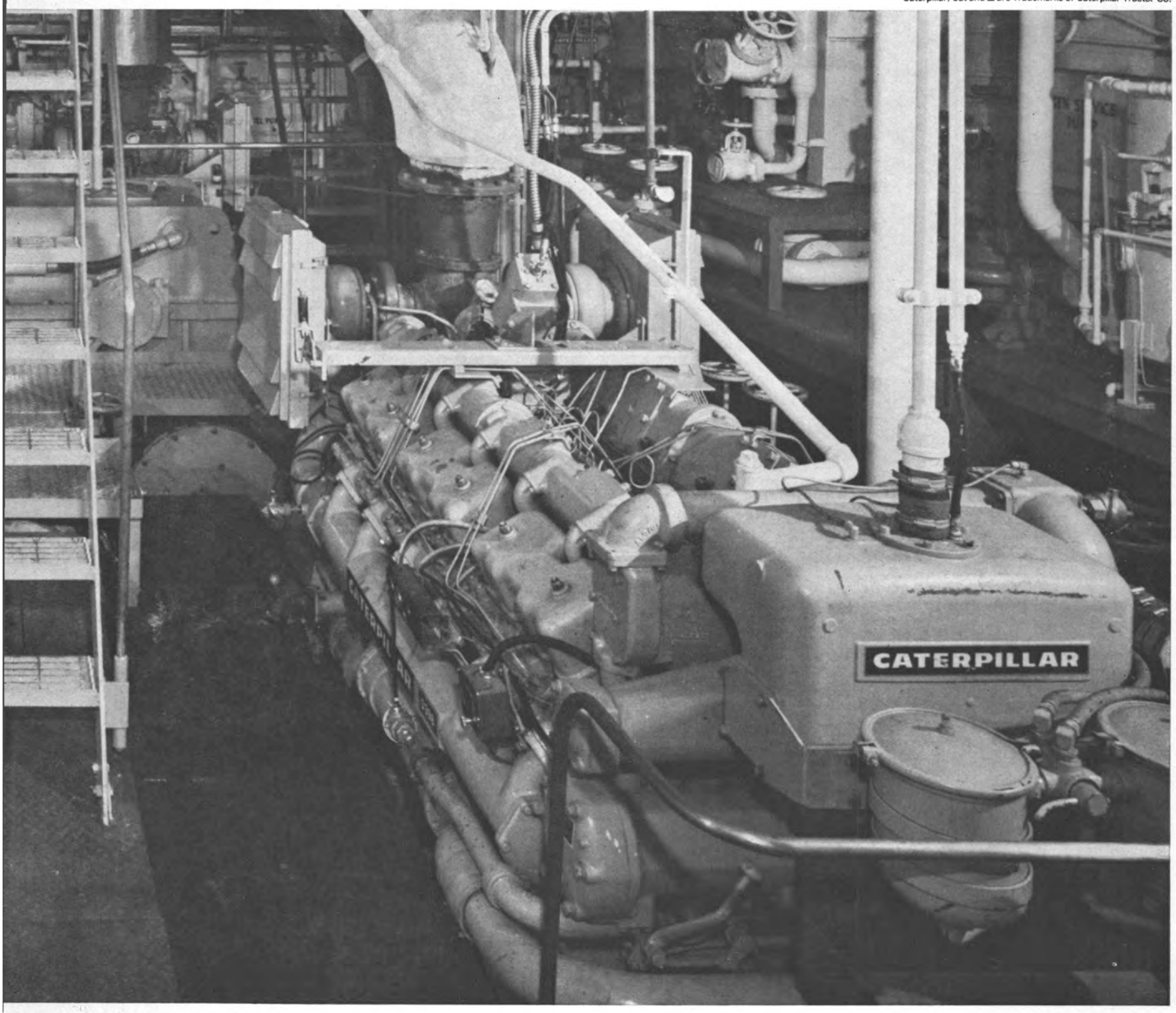




A New Alloy Steel For Cryogenic Uses Offers Material Savings

G.E. Kampschaefer, F.E. Havens, and D.A. Sarno*

During the past ten years, the handling of commercial gas products has utilized the refrigeration technique for conversion to the liquid state for the transport of larger quantities. A majority of this type of transportation equipment has been built for the marine industry.

The most talked about liquefied gas product has been methane or LNG (liquefied natural gas). Many contracts are being let for installation of land-based liquefaction, storage, and regasification facilities to further the usage of this fuel around the world. Because of the worldwide demand and the remote location of the gas, a tremendous increase in construction of ships for transporting LNG is necessary. One source predicts that by 1980 up to 70 tankers will be transporting this commodity. Since there were only 11 such tankers operating as of February, 1969, and commitments for 24 additional vessels by 1975, one can see that an additional 35 tankers could be built between 1975 and 1980. This does not include a number of LNG barges that are being discussed for coastal and inland-waterway transport of LNG.

In order to meet the demand for a steel which is not prohibitive in cost for this trade, Armco Steel Corporation has spent the past six years developing a new heat-treated alloy steel for service at cryogenic temperatures below −150°F. The steel developed has the registered trade name of Armco Cryonic 5 Steel.

The initial applications envisioned for this steel are pressure vessels and containment facilities for liquefied gases such as ethylene at −155°F. and methane at −258°F. Alloy steels presently available for these cryogenic applications consist essentially of the 9-percent nickel steel as covered by ASTM A-353 and A-553 Gr. A, Figure 1. Recently, an 8-percent nickel-alloy version was introduced and this is now A-553 Gr. B. It was approved by the ASME Boiler Code for service at −275°F. Cryonic 5 Steel meets the same notch toughness requirements at this service temperature and provides further economic savings, Table 1.

Armco Cryonic 5 is essentially a low-carbon, 5 percent nickel alloy with ¼-percent molybdenum. The other elements such as manganese and silicon are normal for alloy steels. In addition, phosphorus and sulfur are carefully controlled at low levels for notch toughness. In this respect, this fine-grained steel is similar to the 9-percent nickel steel produced by Armco.

The most important feature of this new alloy steel is the heat treatment which Armco Research & Technology Division discovered for upgrading notch toughness. A three-step heat treatment consisting of conventional hardening, temperizing, and reversion annealing is involved. Simply stated, this new heat treatment refines the grain and optimizes the final micro-structure by controlling the amount of stable austenite along with tempered low-carbon martensite and bainite. This structure accounts for the remarkable combination of high strength, ductility and impressive notch toughness.

A proposed specification covering Cryonic 5 Steel was submitted to ASTM in June, 1970, and is now identified as A-645-71 and should be approved shortly. The alloy also was introduced to API in October, 1970.

The strength and toughness criteria are as follows:

65 ksi .....Min. Yield Strength
95/115 ksi .....Tensile Strength
25 ft-lbs ...Charpy V-Notch Energy @ −275°F.

While the ultimate tensile strength is slightly lower than 8-percent and 9-percent nickel steels, it is similar to weld-joint strengths attained with high nickel-alloy filler metals commonly used for these grades. The proposed notch toughness is identical to that specified by ASTM A-553 Gr. B.

The yield and tensile strengths increase as the temperature drops from room temperature to −320°F., while the ductility is reduced very slightly. Extending test temperatures to higher levels shows very little effect through 600°F.

Table 1—Estimated Plate Prices

Type	$/Ton
Armco Cryonic 5	691
A-553 Gr. A	860
A-353	890
A-553 Gr. B	794

Based on ⅜ to ½ inch by 96-inch by 360-inch plate, EFQ.

The Charpy V-notch impact-toughness tests show both absorbed energy and lateral expansion decreasing slightly with temperature drops. This denotes good toughness through −320°F., the lowest temperature used. The lateral expansion criteria has been adopted by the ASME Boiler Code for notch toughness. Lateral expansion in mils is made on the broken Charpy notch-bar specimen fracture and expresses the amount of plastic deformation that occurs at the base of the fracture face opposite the notch root. It is primarily related to the ductility of the material being tested and is less sensitive to specimen thickness than impact energy. Therefore a consistent lateral expansion requirement is being used.

Physical properties related to low-temperature service, such as the modulus of elasticity and thermal expansion (or contraction) coefficient, were found to be very close to 9-percent nickel steel.

Weldability is of prime concern for most present-day construction and certainly the marine industry. For low-temperature service, notch toughness in weld joints must be measured in addition to soundness and strength. Also, the available filler metals for joining the steel must be evaluated.

Extensive weldability studies by Armco Research have established that the micro-structure of Cryonic 5 is insensitive to cracking induced by hydrogen absorption. This means that cold-delayed-type cracking should not be encountered in joining this steel. This is a tremendous advantage for this high-strength steel in shipyard fabrication. Also, studies show compatibility when welded to 9-percent nickel steel under adverse conditions of high restraint.

In addition to these welding studies, interested fabricators experienced in both shop and field welding cryogenic materials have conducted extensive tests on this new alloy steel. The results show that the filler metals and processes commonly used for 9-percent nickel steel can be successfully used for Cryonic 5 Steel. The tensile strength of Cryonic 5 Steel matches the strength of the deposited weld metal.

The tremendous growth forecast for natural gas as a low-pollutant fuel will require many LNG ships and barges to transport this gas throughout the free world. In addition to the 11 ships that are now in operation, many more are slated for construction.

Armco supplied most of the heat-treated carbon-steel plate, Armco LTM, for the refrigerated-ammonia barges built several years ago by Gulf Coast shipyards utilizing cylindrical tanks. This design may be useful for LNG barges employing a steel such as Armco Cryonic 5. This type tank can be fabricated by many shipyards and would assist in reducing the stability problem with a lower center of gravity as compared to spherical tanks.

Some 150 laboratory heats produced during the past six years of this new alloy steel have been tested and evaluated. This, combined with the experience gained by Armco's Houston Works in producing plate of various thicknesses from some ten small production heats, has demonstrated that this new alloy steel has the necessary properties for use at temperatures as low as −275°F. Armco has been a principal producer of 9-percent nickel steel plate and shapes since early 1960. Therefore, their production experience with this similar type of high-quality steel will be important.

Armco's new heat-treated alloy steel offers significant material savings for ships and barges. The approximate material cost savings of 20 percent provided by Cryonic 5 Steel is significant. An LNG ship of current design now requiring 5,000 tons of cryogenic alloy steel could realize a material savings of $850,000 if Cyronic 5 Steel was specified. Even with an LNG barge, a materials savings of $60,000 could be realized with the new alloy steel instead of 9-percent nickel steel.

The pending issuance of an industry-wide specification takes Cryonic 5 Steel out of the single-source stage and will reflect production of the heat-treated alloy by Armco as well as Lukens Steel Company, who was recently licensed.

In the immediate future, it is anticipated interested users will petition the API and the ASME Boiler & Pressure Vessel Code for permission to use this new cryogenic alloy steel at service temperatures as low as −275°F.

* Mr. **Kampschaefer,** manager-application engineering, Houston, Texas; Mr. **Havens,** senior research metallurgist, and Mr. **Sarno,** research metallurgist, Research & Technology Division, Middletown, Ohio, Armco Steel Corporation, presented the paper condensed here before a recent meeting of the Gulf Section of The Society of Naval Architects and Marine Engineeers.

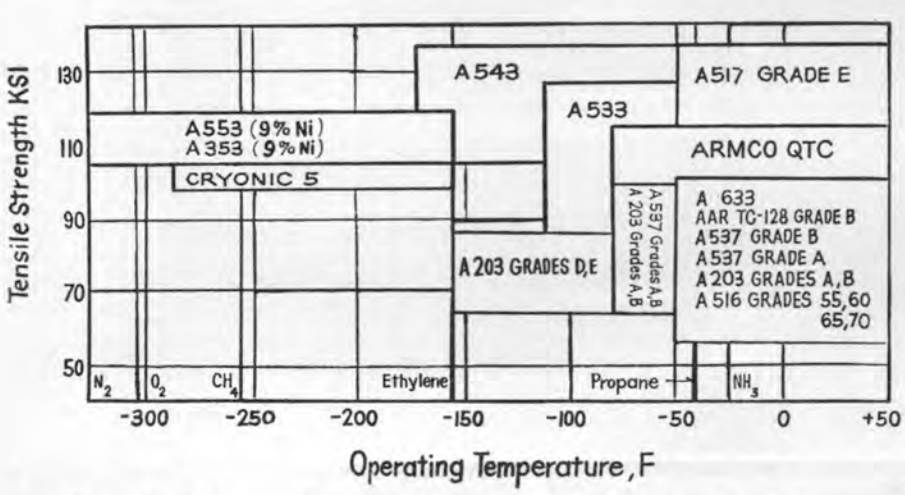


Figure 1—Relative qualities of steels for use in liquefied gas product service.

Anvil Forms Subsidiary Mississippi Boat And Iron To Build River Barges

Anvil Industries, Inc., Brecksville, Ohio, has announced the formation of a new subsidiary for the manufacture of river barges and the custom fabrication of steel for the marine industry. **R.D. Ashman Jr.,** Anvil president, said production facilities are located in Gulfport, Miss., and will be operated by Mississippi Boat and Iron Works, Inc., wholly-owned by Anvil.

Construction has begun on a 40,000-square-foot facility located on 23 acres in the Bayou Bernard Industrial Park on Gulfport Lake. Anvil's initial investment is about $500,000. Mississippi Boat and Iron will operate as an affiliate of Yaun Manufacturing Co., Inc., of Baton Rouge, La., another Anvil subsidiary. **Huey Yaun,** president of Yaun Manufacturing, will serve as president of Mississippi Boat and Iron. Yaun Manufacturing builds rugged, heavy steel machinery for dredging, digging, and materials handling.

"Our inland and intracoastal waterways have tremendous untapped potential for moving cargo," Mr. **Ashman** said. "Our barges and other marine products will be built to meet the burgeoning demand for vessels."

The Anvil group of industries concentrates primarily in the fabricating and forging of steel. Among the well-known industrial names are Ric-Wil, Inc., supplier of prefabricated insulated piping systems; Upson-Walton, wire rope and fittings for marine use and heavy machinery; Cleveland City Forge, forged hardware for heavy construction and industrial equipment; General Utility Products, shells and conduit for underground electrical distribution, and Corrosion Control Corp., cathodic protection systems for buried metals,

Other North American plants of Anvil-affiliated industries are located in Akron, Cleveland and Wellington, Ohio; Niles, Mich.; Pen Argyl, Pa.; Charleston, S.C.; Woods Cross, Utah, and St. Thomas, Ontario, Canada. It maintains a central European office in Paris and has producing plants in Belgium and West Germany. In the first quarter of 1971, new production facilities went into operation in Culcavey, Northern Ireland, and Wakayama, Japan.

Jeffboat's Largest Towboat Honors Texas Gas Chairman

The engine room on the Bill Elmer will be equipped with closed circuit television.

The largest river towboat ever built by Jeffboat, Inc., was launched recently at the firm's yards in Jeffersonville, Ind. The boat's principal dimensions are 180 feet by 52 feet by 11 feet. Powered by three 2,800-hp engines, it is an engineering hybrid of the highly successful 13-boat 5,000-hp series which Jeffboat also designed and built, according to **R.W. Naye,** Jeffboat president. The largest towboats previously built at Jeffboat were the 6,600-hp J.E. Alquist and Patrick C. Calhoun, both of the ACBL fleet.

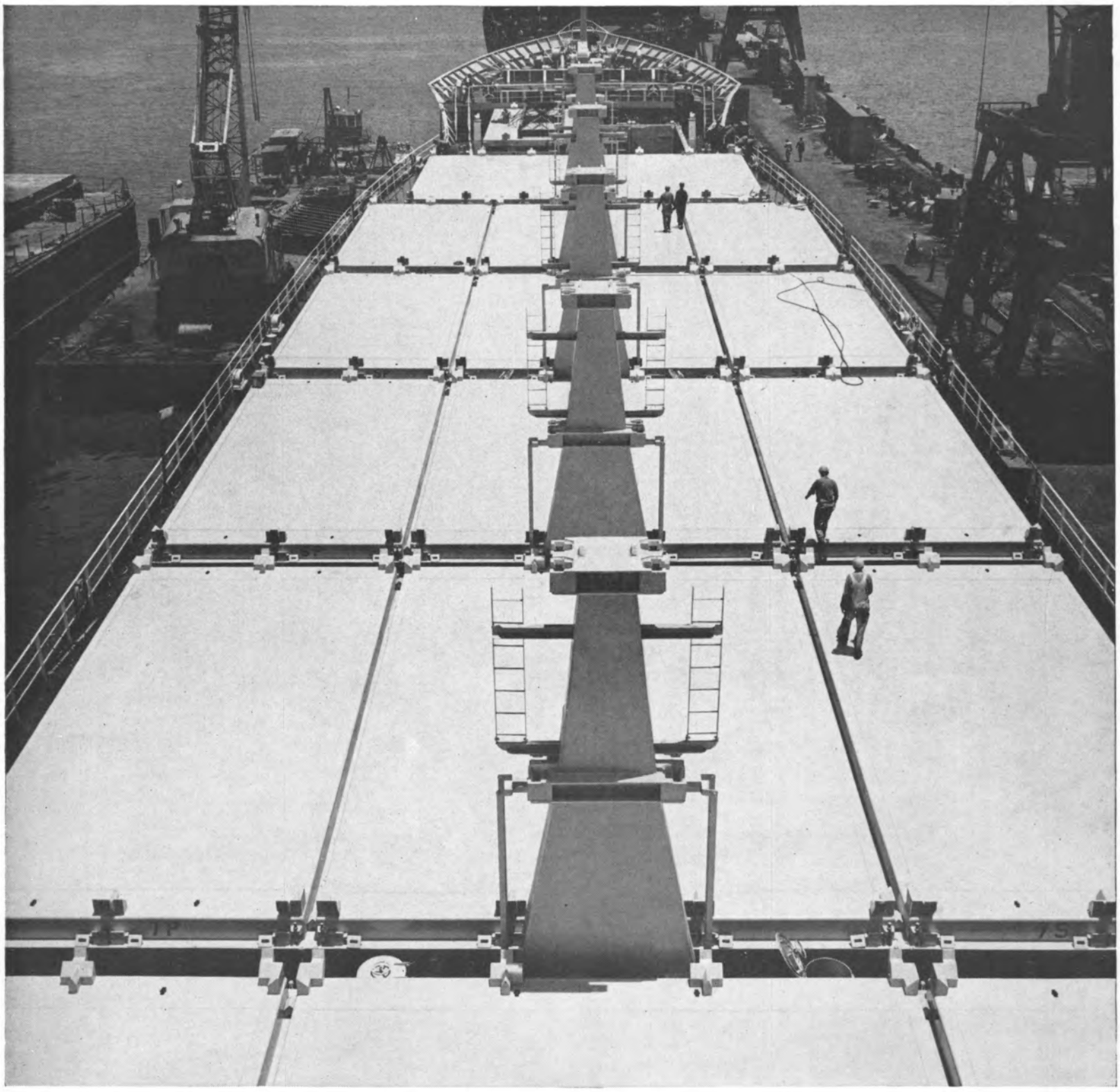
The boat will be named the Motor Vessel Bill Elmer to honor **W.M. Elmer,** chairman and chief executive officer of Texas Gas Transmission Corporation, the parent company of Jeffboat and American Commercial Barge Line Company, in whose fleet the boat will operate. The christening will be held on July 16 in Memphis, Tenn., where three Texas Gas divisions have extensive operations.

The boat is unusual not only in its size and power, but also in its sophisticated engineering. The vessel will carry a radio-teletype capable of broadcasting instantaneous spot checks to shore on all vital functions of the boat's power system. The engine room will be equipped with closed circuit television, allowing the pilothouse to monitor engine room activity. Other electronic equipment such as radar, radiotelephone, VHF, and single side band radio communications, Fathometer and swing indicator, further increase the boat's high efficiency.

George E. Meese Designing 86-Foot Dredging Vessel —Bid Requests Set For July

An 86-foot dredging vessel is being designed by George E. Meese, naval architects and marine engineers, 194 Acton Road, Annapolis, Md. 21403, for East Coast Trawling & Dock Co., Inc., Providence, R.I.

The vessel is being designed for low cost steel construction. It will be 86 feet in length, with a beam of 25 feet, a depth of 10 feet 6 inches, and a draft of 7 feet 6 inches. The cargo capacity will be 60 tons. A Cummins VT12 525M diesel engine will be installed for propulsion. Requests for bids are expected around July 1971.



This is not the kingdom of Lilliput... but the work is Swift.

In *Gulliver's Travels,* Jonathan Swift wrote about a race of industrious and determined men who were only six inches tall. Here you can see a real-life parallel; our workers on a container ship are dwarfed by the size of the ship. Their results are giant-sized: Normal time for the conversion is just six months; often we better that by a whole month. Only the cost is Lilliputian: about a third as much as building a new vessel of comparable capacity and performance.

TODD SHIPYARDS CORPORATION · New York · Brooklyn · New Orleans · Galveston · Houston · Los Angeles · San Francisco · Alameda · Seattle. Executive offices: One Broadway, New York, N. Y. 10004. Phone: (212) 344-6900. Cable: "Robin" New York.

Talk to TODD

Colt Industries To Furnish Sewage Treatment System For East Coast Ferryboat

A sewage treatment system for shipboard service, which was designed and built by Colt Industries' Power Systems Division in Beloit, Wis., will be installed aboard a 390-passenger ferryboat operating on the East Coast. The announcement was made by **F.J. Eubank,** vice president and general manager of the water and waste management operation.

The ferry Uncatena is operated by the Woods Hole, Martha's Vineyard and Nantucket Steamship Authority in Massachusetts. The boat is scheduled for enlarging and modernizing in the fall, and the sewage unit will be installed before she returns to duty. **John J. McCue,** general manager, and **A.E. Libbra,** maintenance superintendent, are in charge of the project.

For some time, Colt Industries has manufactured these pollution control units for military vessels, but this will be the first ferryboat application. The equipment that will be placed on the Uncatena is rated at 5,800 gallons per day.

This sewage treatment system is an electrochemical design which eliminates solids by odorless, smokeless combustion and dispenses a clean, pathologically safe effluent overboard. The liquid discharged from this system meets current official requirements for preservation of water quality. The compact units make any ship self-sufficient in preventing harbor pollution from sewage system discharges.

"We at Colt Industries are heavily engaged in research and manufacturing of marine pollution control equipment and water desalting systems," Mr. **Eubank** commented. "Our sewage treatment systems are designed for many marine applications and our desalting plants are built to produce fresh water where it is needed around the world."

Bethlehem Hoboken Shipyard Uses Unique Technique To Cut Tanker Repair Time In Half

Craftsmen of Bethlehem Steel's Hoboken, N.J., ship repair yard rebuilding the rudder for the 28,000-dwt tanker S/S Eagle Courier.

A unique technique developed by Bethlehem Steel's Hoboken shipyard has halved the repair lay-up time for a tanker which recently lost most of her rudder in a North Atlantic storm.

When the 28,000-dwt tanker S/S Eagle Courier arrived in the port of New York late in March, it was learned that three-quarters of her 30-foot rudder, including the lower casting, had been lost. Her owners, United Tanker Corporation, checked area shipyards and learned that the repair job would take from 40 to 60 days as it would require approximately six weeks to manufacture the lower rudder casting. This L-shaped unit had a length of 4 feet 10 inches, a width of 27 inches, and a depth of 20 inches. Overall, the lost section measured 23 feet 9 inches by 12 feet. The upper rudder casting, 10 feet by 6 feet, remained intact.

At this point, the Bethlehem yard advised the owners that through use of a new technique they could manufacture a substitute steel section to replace the original casting and cut the vessel's projected lay-up time in half. The process, which has the approval of the American Bureau of Shipping and the U.S. Coast Guard, involves the welding of steel plates and has been employed successfully by the Hoboken yard heretofore.

United Tankers gave the Bethlehem yard the "go ahead," and on March 26 the Eagle Courier entered the Hoboken yard. On April 14, only 20 calendar days later, the tanker—with her rudder fully restored—put to sea and resumed her service.

Because of the proprietary nature of the process, details cannot be made available at this time.

Containers Shipped Chicago To Hawaii In Seven Days

The fastest land-sea freight movement from Chicago to Hawaii in transportation history—seven days—was completed Tuesday, May 4, when the Matson containership Hawaiian Enterprise docked in Honolulu.

Three containers, loaded with general merchandise, left the Chicago consolidating station of the Hawaiian Island Freight Association via Santa Fe Railway April 27 and were loaded aboard the Hawaiian Enterprise at Matson's Oakland container yard early Friday, April 30. The ship sailed a few hours later.

Eugene R. Swanson, Matson's general sales manager, said the rush shipment was in response to the freight customer's request to connect the Chicago containers with the Friday sailing of the Hawaiian Enterprise. Mr. **Swanson** said excellent coordination by Matson and Santa Fe operating representatives made the record shipment possible.

Matson regularly makes Midwest to Hawaii container deliveries in nine or ten days.

Bethlehem Steel San Pedro Yard Names Naughton

Robert C. Naughton

The promotion of **Robert C. Naughton,** supervisor in the industrial relations department of Bethlehem Steel Corporation's shipyard in San Pedro, Calif., to management's representative was announced by **Alfred J. Maloney,** yard general manager.

In his new position, Mr. **Naughton** will be in charge of labor and industrial relations for the yard. He succeeds **George L. Bowen** who is being advanced to the position of senior management representative, shipbuilding, at the corporation's headquarters in Bethlehem, Pa. Mr. **Bowen** had been management's representative at the yard since 1964.

A graduate of St. Anthony's High School in Long Beach, Calif., Mr. **Naughton** holds an associate of arts degree in business administration from Long Beach College and a bachelor of arts degree in business from California State College at Long Beach. He also studied business administration at the University of California at Los Angeles Extension, where he earned a certificate from the university's Institute of Industrial Relations.

Mr. **Naughton** came to work for Bethlehem as a clerk in the accounting department at the San Pedro yard in 1941. He enlisted in the U.S. Marine Corps in 1942, and for the next two years served in the South Pacific. He was discharged in 1946 with the rank of staff sergeant. Following discharge, Mr. **Naughton** returned to the yard as senior clerk in the industrial relations department. He was advanced to supervisor in 1960.

Martin And Van Houten Promoted At I.C.&T.

Intercontinental Container and Transport Agency, Inc. has named **Jack H. Van Houten** executive vice president and **N.R. Martin** vice president, it was announced by **Sybren van der Pol,** president of the company. Mr. **Van Houten** had previously served the firm as a vice president, and Mr. **Martin** as an assistant vice president.

Known as I.C. & T., the company is a wholly-owned subsidiary of Holland-America Line Agencies Inc. It represents Atlantic Container Line, Ltd., Japan Line, North Pacific Coast Line, Karlander Kangaroo Line, Nedlloyd and Hoegh Line, Combi Line, and Mexican Line.

Bailey Fluidics Automation Center Appoints C.E. Lane

C.E. Lane

C.E. Lane has been appointed system manager at Bailey Meter Company's Fluidics Automation Center, Chardon, Ohio. He will plan and coordinate technical schedules and financial performance on complex contracts involving fluidic logic systems and associated instrumentation and control.

Since joining Bailey in 1957, Mr. **Lane** has acquired an extensive background in marine and burner control applications. He has held many positions from field sales and service engineer to his most previous position, senior applications engineer for the Bailey Fluidic Automation Center.

Mr. **Lane** holds a B.S. degree in mechanical engineering from Clarkson College and is a member of Pi Tau Sigma, Pi Delta Epsilon, Phalanx, Sigma Delta and A.S.M.E.

The Bailey Fluidics Automation Center manufactures digital fluidic systems and components.

Dearborn-Storm Gets Approval In Principle For Title XI Insurance

The application of Dearborn-Storm Corporation for Title XI mortgage insurance in connection with the conversion of the 10,350-gt drilling platform Coastal Spartan into a drilling ship has been approved in principle by the Maritime Administration. The company plans to use the converted vessel for worldwide exploration of hydrocarbons.

Union Barge Line Orders Heavy Duty Barges From Dravo

Two heavy-duty deck barges capable of carrying concentrated loads of up to 10 tons per square foot have been ordered by Union Barge Line Corporation, Pittsburgh, Pa., a subsidiary of Dravo Corporation.

The vessels, under construction at Dravo's Neville Island boat yard near Pittsburgh, will be used by Union for movement of extra-heavy, oversized loads such as nuclear reactor components, fractionating towers, and other types of large equipment.

The 200-foot long, 50-foot wide, 13-foot deep semi-integrated barges will be designed for both ocean and river use. In addition to its operation on the Ohio-Mississippi River System, Union offers common carrier service across the Gulf of Mexico to and from Tampa, Fla.

Heavy deck plate and special internal bracing with bulkheads and trusses will give the barges their unusual load bearing capability. Decks will be fabricated of ¾-inch steel plate, twice as thick as normal deck plate. Internally, the barges will be divided into a number of compartments for additional load bearing strength. Decks of both barges will be virtually flat to facilitate loading and unloading of outsized cargoes. Special internal compartment design will permit flexibility in ballasting for all types of loading and off-loading situations.

Both barges are scheduled for delivery to Union late this summer.

Gannet Freighting Moves N.Y. Office

Gannet Freighting Inc. has moved to 39 Broadway, New York, N.Y. General agents for Tokyo Shipping Co., Ltd., Nakamura Steamship Co., Ltd., "Epiphaniades" Maritime, Ltd. and Korea United Lines, Inc., the company will continue to be reached at BOwling Green 9-3488.

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.

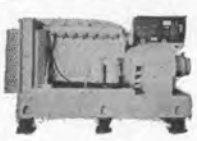
5

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

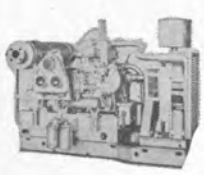
60 KW — 440/3/60 — 1200 RPM—with switchgear.

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—12⅜"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

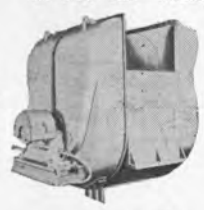
DORV—325M—T-2 Tanker Aux. Generator.

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

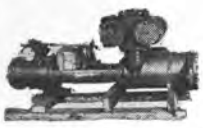
PUMPS

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.

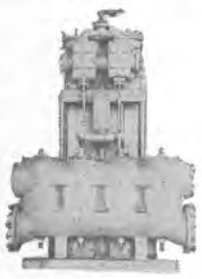
31



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

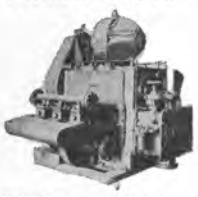
4"—100 GPM—100 PSI—15 HP — 440/3/60 — gear head.

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.

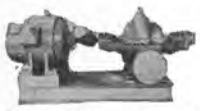
36



UNUSED BOILER FEED PUMP

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

37



UNUSED WARREN BRONZE PUMP

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

38

NEW WORTHINGTON VERTICAL SUBMERSIBLE BILGE PUMP

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

39

NEW—UNUSED BRONZE VERTICAL LST BALLAST PUMP

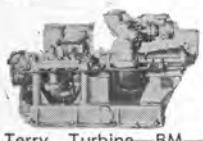
1500 GPM—56' head or 25 lbs. — 8" suction — 6" discharge. MOTOR: Century 30 HP—230 VDC—110 amps—1750 RPM — 40°T rise — stab. shunt—BB drip proof —controls available.

40

EXCELSIOR MOLASSES PUMP—SIZE 5½"

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

41



UNUSED SIZE 4 BUFFALO FEED PUMPS

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

42

COFFIN MODEL F BOILER FEED PUMP—VICTORY OR T2

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

43

BRONZE 14x14x12 CARGO STRIPPING PUMPS

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

WINCHES AND WINDLASSES

44

VICTORY UNIT WINCHES

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

45

MODEL U-6 DOUBLE DRUM WINCHES WITH GYPSIES

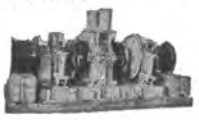
50 HP—230 VDC—reconditioned.

46

HYDE NO. 7 WINDLASS

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

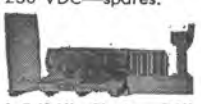
47



NEW—UNUSED LINK BELT WINDLASS

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

48



IDEAL WINDLASS—UNUSED

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

49

UNUSED 70 HP McKIERNAN-TERRY WINDLASSES

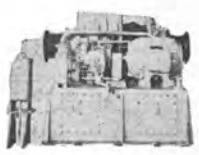
2¾" Chain and two 10640 lb. anchor & 30 fathoms chain @ 30 FPM. 70 HP—230 volts—shunt DC motors—233 amps—550 RPM—55°C rise. Wildcat centers 47½". Base 9'5" wide x 11' long. Weight 36,000 lbs.

50

LCT-6 JAEGER GASOLINE DRIVEN WINCH

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

51



4 SINGLE DRUM ELECTRIC HYDRAULIC WINCHES

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

MISCELLANEOUS

52

VICTORY AP2—WESTINGHOUSE MAIN PROPULSION GEAR

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

53

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

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

54

1 PAIR OF 300 HP UNION DIESEL ENGINES

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

55

MODEL O-2-D M&T RECONDITIONED UNITS

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

56

HYDE 30" DOCK CAPSTAN

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

57

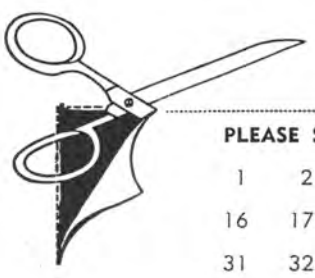
DOUBLE INPUT—SINGLE OUTPUT DIESEL REDUCTION GEARS

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

58

INGERSOLL-RAND MODEL 40 AIR COMPRESSOR

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



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IHI To Build Four 29,000-Dwt Tankers For Esso Tankers Inc.

Contracts have been signed between Esso Tankers Inc., an affiliate of Standard Oil Company (New Jersey) and Ishikawajima-Harima Heavy Industries Company Ltd., for the construction of four 29,000-dwt tankers in Japan.

The tankers will be built at the IHI shipyard in Aioi for delivery in 1974. The vessels will be propelled by 11,500-shp engines and will be used in Esso's international tanker service as petroleum product carriers. Principal characteristics of the tankers are: length, 558 feet; breadth, 85 feet; draft, 35 feet 10 inches, with an operating speed of 16 knots.

SNAME Philadelphia Section Hears Paper On Tanker Unloading

The Philadelphia Section of The Society of Naval Architects and Marine Engineers held its monthly technical meeting on April 16, 1971, at the Philadelphia Engineers Club. Approximately 65 members and guests attended the meeting to hear **Larry Liddle,** marine engineer, research and development department, Sun Shipbuilding and Dry Dock Company, present his paper entitled "Experimental Optimization of Cargo Collection Configuration for Tankers."

Shown above at the Engineers Club in Philadelphia, left to right: **Sam Morse,** ARCO; **Merville Willis,** Sun Shipbuilding and Dry Dock Co., and **Larry Wade,** Mathiasen Tankers.

Merville Willis, assistant naval architect, Sun Shipbuilding and Dry Dock Company coordinated the program. Discussers of the paper included **Sam Morse,** ARCO, and **Larry Wade,** chief mate with Mathiasen Tankers.

During the design of an 80,000-dwt tanker, a study was conducted in an effort to maximize the utilization of the main cargo pumps during cargo discharge. A 1:10 scale model of the bottom structure of the tanker provided a technique for accurately duplicating the flow conditions of the ship during pumpout. The model was used in a series of experiments which determined the optimum configuration of cargo suctions, bulkhead valves, and structure flow holes for the ship. Measurements taken during a routine pumpout of the completed ship indicate that the selected cargo collection configuration functions as expected.

The model tests and corresponding ship test indicate that it may be possible to develop analytical techniques for use in future efforts to improve the cargo collecting system on tankers.

Pictured above, left to right: **Larry Liddle,** Sun Shipbuilding and Dry Dock Co.; **Walter Neal Jr.,** Keystone Shipping Co., and **George Johnson,** Corps of Engineers.

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Business Publications Audit of Circulation, Inc.

Todd Wins Contract To Build Two Ferries For $17,788,000

Two huge ferries, which could be the world's biggest, fastest double-ender vessels ever to be built, are now off the drawing boards and ready for construction at Todd's Seattle shipyards.

These new-class ferries, being built for the state of Washington, are double-bottom structures powered by 8,500-horsepower diesel-electric engines. They are 440-foot vessels, with a 2,000-passenger seating capacity each, and feature luxury never before experienced on any ferry. These cross-sound vessels are capable of carrying 206 automobiles at 20 knots.

Power and capacity features, plus other characteristics, boost them above the Washington State well-known and modern Hyak "superferries." Compared with the four Hyak Class superferries now in service, the two huge ferries are each 58 feet longer and carry 46 more cars.

These two modern vessels will service people and business in the Puget Sound area, including services at Vancouver Island, interspersed with special periodic cruises along the Sound's clear waters.

The Washington State Highway Commission contracted with Todd's Seattle yard to build these two ferries for $17,788,000. Although the contract is for $17,788,000, there is an additional $113,176 for solariums on each ferry. The first of the new ferries is to be delivered by Todd Seattle in 18 months.

Philip F. Spaulding & Associates (now Nickum and Spaulding Associates), naval architects and engineers of Seattle, are responsible for specifications and designs of these vessels.

Construction specifications require, among others, that the double-ended ferries are to have screw and rudder at each end; each hull to be of welded steel construction and transversely framed; a full and complete inner bottom to be fitted through the area below the main engine room, with the exception of sea chest recesses. The main engine foundations will form an integral part of each double-bottom structure.

This table model of the Washington State Ferries shows the solariums on the sun deck.

Vehicle movements on and off these vessels will follow the normal route, which is through either end of the main deck. A partial deck located just above the main deck provides additional lanes for better and faster vehicle handling. The main deck has four truck or auto lanes located at the center section between the engine casings, and other four passenger-auto lanes are located outside of the engine casing, two on each side.

On the partial gallery deck are four more passenger auto lanes, two on each side, between the outboard engine casing and the side curtain plating. Vehicles are loaded and unloaded from each end of the gallery deck via the inclined ramp to the main deck.

Passenger comfort and luxury are provided in the vessel's space arrangements. Primary passenger space is on the upper deck, and secondary space with protected "outside" seating is in the two solariums on the sun deck. The upper deck arrangement includes informal carpeted seating areas, a cafeteria, galley, office, first-aid room, nonsmoking areas, table and settee area for group seating, utility spaces, and public rest rooms with a baby-change room in the women's rest room area.

Passenger "inside" seating is 1,532, and 468 "outside" seating for a total 2,000 seating capacity for each ferry. Officers and crew staterooms to accommodate 17 men are located behind each wheelhouse on the sun deck.

With the addition of these ferries to the fleet, some of the aging vessels will be retired, resulting in lower overall operating costs.

Central Design & Drafting Appoints Adrien Peuvion

Adrien Peuvion, I.T.P.A., P. Eng., has been appointed a director and technical manager of Central Design & Drafting Ltd. (D.J. Doust & Associates), Montreal, Canada, naval architects, marine engineers and transportation consultants.

Mr. **Peuvion** graduated as a mechanical engineer in Paris in 1936 and has some 35 years of experience in the diesel, electrical and hydraulic system fields, in which he has made significant contributions.

Mr. **Peuvion** is also a fisheries specialist in all aspects of shipboard and shore-based refrigeration plant, and is the co-inventor of the Confreeze System of refrigeration which is currently planned for incorporation in some 11 ships to the design of Central Design & Drafting Ltd.

Central Design & Drafting Ltd. is located at 270 St. James Street West, Montreal, P.Q., Canada.

Nickum And Spaulding Form New Organization With Offices In Seattle

George C. Nickum and **Philip F. Spaulding** have jointly announced the association of the two naval architectural firms W.C. Nickum & Sons Company and Philip F. Spaulding & Associates, Inc. The new firm name will be Nickum & Spaulding Associates, with offices at 71 Columbia Street, Seattle, Wash. The principals of the firm will be **George Nickum** as president and general manager, with **Philip Spaulding** as vice president in charge of promotion and new design projects. Other principals of the new association will be **Benjamin Downs,** the chief naval architect in complete charge of all drafting and design, and **John Weiks** as chief engineer. **Gordon Snyder** will be the principal naval architect in charge of special design projects and the chief marine surveyor will be **Merlin Needles,** who will be in charge of all field inspection forces.

Clay Carlock will be the firm's controller and **Mrs. Eloise G. Strom** will be the firm's corporate secretary. Other staff assignments include: **Ed Hagemann** as chief of the hull scientific section; **Jack Starbird** as associate naval architect; **Dan Mahler** as assistant naval architect, and **Larry Menne** as chief hull draftsman in charge of all of the hull design staff. The marine engineer will be **Frank Vibrans Jr.**; the assistant engineer will be **Peter Kalby.** The chief mechanical draftsman in charge of mechanical design staff will be **Lou Dicken.** The chief electrical draftsman in charge of the electrical design staff will be **Miles Luckey. Paul Elliott** has been designated as special projects manager.

The association of these two highly successful companies forms one of the strongest naval architectural design teams in the entire country. Most notable of the firm's accomplishments have been in the area of ferryboat design. The association has been responsible for the design of virtually all of the Washington State ferry fleet in addition to the state of Alaska ferries. The first two vessels of the British Columbia ferry system were designed by the association, and the other vessels of the Dogwood Fleet are modifications to those two vessels. Two 426-foot oceangoing ferries for inter-island service in Hawaii have been designed and are presently in the final stages of financing.

The association has the full responsibility for system design relating to the Golden Gate Bridge Ferry System in San Francisco and is presently designing five high-speed 750-passenger vessels for that service.

In tug and barge design, the association has been particularly noteworthy in the fact that they were responsible for the design of the Daring Class tugs for the Crowley interests in San Francisco, there being eight tugs constructed of this one design.

The firm was also responsible for the Sea Swift Class tugs over 7,000 horsepower, also designed for the Crowley interests in San Francisco, there being six vessels being built off this design.

The other noteworthy vessels have been the design of the tugs Henry Foss and Arthur Foss for the Foss Launch & Tug Company; the Mogul for Washington Tug & Barge Company; tug San Pedro for the Willmington Transportation Company, the tugs Western Comet and Western Meteor for Western Transportation Company in Portland, Ore., plus several classes of tugs for the U.S. Navy and the Army Transportation Corps.

The firm has designed many barges, the most noteworthy being the cryogenic barge Kenai, operated by the Collier Carbon & Chemical Corp., which is of 19,000 tons displacement and 495 feet overall. Other barges of note are the Diamond Head and the Koko Head, which are operated by Pacific Hawaiian Lines.

In research vessels, the firm designed the Miller Freeman, the John N. Cobb, and the Oliver Cromwell for the Bureau of Commercial Fisheries, and the vessels Explorer and Pathfinder for the U.S. Coast and Geodetic Survey.

The cableships that laid telephone cables to Alaska and Hawaii were the firm's responsibility.

Fish factory ships were a recognized specialty of the firm 15 years ago, and old-timers along the waterfront will remember the Pacific Explorer, the Neva, the Ogontz, the Memon, the International and the Saipan and Tinian in their days of activity. Alaskan memories will be stirred by the names of the passenger ship Alaska, Yukon, Aleutian, Cordova and Lakima; the Indian Affairs vessel North Star and the Yukon River stern-wheeler Nenana, all of which sprang from the association's boards.

The fireboats Alki and Duwamish are other local examples of the firm's work.

Work for the U.S. Navy and other Government agencies have long played an important part in the association's activities. Local projects included the hydrofoils Highpoint and Plainview, built by Boeing and Lockheed. Amphibious craft designs include the 60-ton Army vessel Barc, originally built by the Pacific Car and Foundry Company. Over the past 30 years, the association has been responsible for literally thousands of military craft ranging from supply vessels, mine sweepers, patrol craft, net layers, seaplane tenders, repair ships, hospital ships, communication ships, escort vessels and transports. In recent years, the association has handled all of the U.S. Navy's floating drydock designs.

Newport News Shipbuilding Appoints Hayes And Baumler

Wilson C. Hayes

Richard J. Baumler

R.S. Plummer, general manager of Newport News Shipbuilding, has announced two appointments in the production divisions of the Tenneco subsidiary.

Wilson C. Hayes has been named manager of facilities planning, and **Richard J. Baumler,** formerly of the president's staff, will move into Mr. **Hayes's** former position as general superintendent of the yard's hull outfitting division.

A native of Newport News, Va., Mr. **Hayes** received his B.S. degree in civil engineering from Virginia Polytechnic Institute in 1951. He joined Newport News Shipbuilding in 1943 and worked in the mold loft, plant engineering, and machinery installation departments. He was named a staff supervisor in 1951 and in 1963, was assigned to the hull outfitting division staff. Promoted to general foreman of the riggers department in 1963, Mr. **Hayes** was named superintendent of the department in 1964, and served in that capacity until appointed general superintendent of the division in 1967.

During World War II, Mr. **Hayes** served in the Caribbean as a sergeant in the Marine Corps. He is a member of The Society of Naval Architects and Marine Engineers. In 1961, while a staff supervisor, he served as president of the Progressive Club, an organization of shipyard first-line management.

Mr. **Baumler** was born in New York City. A 1952 graduate of the State University of New York Maritime College with a B.S. degree in marine engineering, he sailed for a year as third assistant engineer on the passenger liner America. From 1953 to 1955, he served in the Navy as a lieutenant aboard the destroyer escort USS Joyce.

Mr. **Baumler** joined the engineering technical department at Newport News in 1955, and was named general superintendent of the company's machinery division in 1966. He was appointed to the president's staff in July 1969 and until recently, held a collateral position as manager of nuclear construction.

Author of several technical papers, Mr. **Baumler** is a former president of the Peninsula Engineers Club and a member of The Society of Naval Architects and Marine Engineers, and The Propeller Club.

Taiwan Shipbuilding Corp. Working On 1976 Backlog

The Government operated Taiwan Shipbuilding Corp. will begin construction of four 125,000-ton tankers at its Keelung yard next year. It already has two 100,000-ton tankers under construction, and will begin work this month on an order for four 54,000-ton bulk carriers.

The shipyard has orders on hand to keep busy until 1976, and work on new orders cannot be scheduled before 1977. A 28,000-ton bulk carrier was recently launched, and the keel immediately laid for another. Repair facilities at the yard are also said to be extremely busy.

M.A.N.'s Reliability Program: Wear Data Analysis

Reliability engineering is confronting Research and Development Departments with new tasks. The compilation of wear data is one of the most important criteria for assessing the reliability of a technical system. M.A.N. have developed a method whereby the engineers on board collect the wear data of large engines. This permits detailed analysis by computer of the wear rates and relevant factors.
M.A.N.'s data processing centre has so far evaluated over 10,000 wear records of cylinder liners, piston rings, pistons, ring grooves and running gear components. The results will be invaluable for engine design, maintenance schedules and recommendations for engine operation including the selection of fuels and lubricants.

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478 e

Centralized Readout Of Cargo And Ballast Tanks Installed By Metritape

A new style of centralized gaging console has just been installed by Metritape, Inc., 77 Commonwealth Avenue, West Concord, Mass. 01742, for the remote, centralized readout of cargo and ballast tanks on board an oceangoing petroleum tanker. Tank level information is presented in both analog and digital form, in a single, compact, unitized display, designed for the simple retrofit upgrading of existing tankers.

Liquid levels in all 15 of the major cargo and ballast tanks are displayed on 15 separate vertical edge-reading meters having large easy-to-read scales scribed to the nearest half foot. These are placed on a mimic plan diagram of the ship, and allow the status of all tanks to be observed at a glance.

The condition of any one of the 15 tanks can be selectively read out on a digital number display located alongside the analog meters. Fifteen pushbutton selector switches are contained within a small plan pattern of the ship, and are back-illuminated to show which one of the 15 tanks is being digitally displayed.

In addition, the operator can choose to read any one of three tank conditions: digital ullage in feet and tenths of feet; digital innage in feet and tenths of feet; and digital barrels to the nearest 100 barrels. Digital indication is instantaneous and allows tanks being topped off or drained to be monitored precisely on both digital and analog displays.

General Dynamics/Electric Boat Appoints Behney And Hunter To New Management Positions

Edward J. Behney

John R. Hunter

Joseph D. Pierce, general manager of the Electric Boat Division of General Dynamics, has announced the appointments of **Edward J. Behney** of Groton, Conn., and **John R. Hunter** of Mystic, Conn., to new management positions at the Electric Boat Division. Mr. **Behney** has been named as assistant to the general manager, and Mr. **Hunter** has been named as engineering director, succeeding Mr. **Behney.** Since 1969, Mr. **Hunter** has been manager of electrical engineering.

A Harrisburg, Pa., native, Mr. **Behney** holds a 1937 degree in mechanical engineering from Pennsylvania State University. In 1941, he joined Elco Division of Electric Boat Company and was prominent in design and production of Elco patrol torpedo boats during World War II.

Leaving Elco in 1950, as chief engineer, Mr. **Behney** came to Electric Boat in Groton as design engineer, and in 1951 he was named assistant chief engineer, moving up to assistant design manager in 1957. He participated actively in the development of Nautilus and other submarine classes designed by the division.

In 1962, Mr. **Behney** was named manager of quality control, becoming manager of manufacturing in 1963, and vice president, manufacturing, in 1964. He was named engineering director in June 1968.

Mr. **Hunter** joined Electric Boat Division in 1949, the year he graduated from Worcester Polytechnic Institute with a bachelor of science degree in electronics. The Bath, Maine, native held various design and engineering positions from 1949 to 1957, during which time he worked on the original electrical studies for the Nautilus prototype.

In 1962, Mr. **Hunter** was appointed assistant to the chief design engineer, becoming assistant to the vice president, manufacturing, in 1964 and manager, manufacturing engineering, in 1966.

The Eastern Company Buys Digital Depth Indicator Division From Lykes Bros.

Acquisition of the Digital Depth Indicator line of Lykes Bros., Inc., Systems and Engineering Division of Clearwater, Fla., was announced by **Russell G. McMillen,** president of The Eastern Company.

The transaction, for an unannounced amount of cash, gives Eastern the inventory and tooling for the Lykes division's direct reading, digital and recording depth sounders. Markets for the line are in both the pleasure and commercial craft fields.

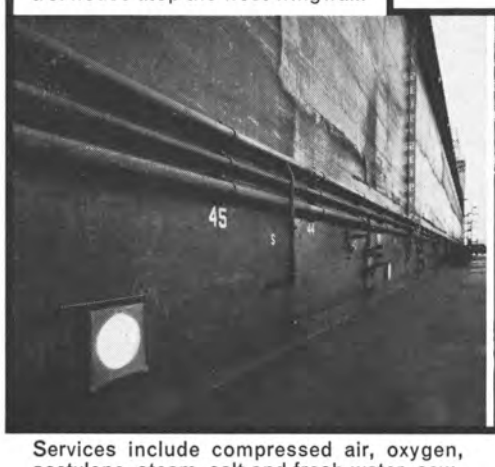
Mr. **McMillen** said they will be added to the line of precision marine instruments manufactured and distributed by the Danforth division of Eastern in Portland, Maine.

Inside our giant drydock at San Francisco

Control of pumps and flooding for all 40 ballast compartments through banks of buttons and indicators is centered here in the control house atop the west wingwall.

Each wingwall carries a 60-ton crane with 90-ft boom. Centerline lift with spreader bar: 120 tons.

Spacious safety decks at the 68-ft level in both wingwalls house the pumps, motors, substations, and other equipment. They are compartmented by watertight bulkheads.



Services include compressed air, oxygen, acetylene, steam, salt and fresh water, sewage lines, AC/DC power, P.A. and phone circuits—all with numerous outlets. Strong lighting is provided throughout.

New dock can lift 65,000 tons and accept a vessel of max 150-ft beam and 31-ft draft. Pontoon is 20 ft deep, has 800-ft-long unobstructed deck—plus two 50-ft, grate-type aprons. Its 2,000 pumping hp can lower and raise the unloaded dock in less than 40 minutes.

65,000 tons lifting capacity makes this the largest floating drydock in America. It is also the country's newest, and incorporates every possible control and service feature to make its operation the most efficient in the business.

Built by our San Francisco Yard, the dock is ready to take on the supertankers. Most of those in the 150,000-dwt class, and some as large as 230,000 dwt, can be handled in this new dock, which has an overall length of 900 ft and a breadth of 150 ft between wingwalls.

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Bethlehem repair yards on the West, Gulf, and East coasts of the United States offer complete repair service to ships of every type and class. Drydocking, periodic surveys, damage repairs, engine and boiler work. You name it, Bethlehem can do it.

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Anixter-New York Appoints Edward Ryan

Edward Ryan, vice president of Anixter Bros., Inc., has been assigned additional responsibilities as president of Anixter-New York, it was announced by **Alan Anixter,** president, Anixter Bros., Inc., Skokie, Ill.

Anixter-New York, formerly Normandy Electric, recently moved into a new 60,000-square-foot warehouse at 300 Executive Boulevard, Elmsford, N.Y. As an integral part of Anixter's continent-wide network of electrical cable specialists, Anixter-New York will serve as a major distribution center for the electrical wire and cable needs of the northeastern Atlantic states.

Mr. **Ryan,** a resident of New York, joined Anixter as a corporate vice president in 1970, after serving as national manager of rod and bare wire for Anaconda Wire & Cable Co. Previously, he was Anaconda's sales manager in New York.

Mr. **Ryan** is a graduate of Yale University, with a bachelor of arts degree in economics. He attained the rank of lieutenant commander while serving in the U.S. Navy.

Mr. **Ryan** is a native of New York and is a member of the Yale Club, Metropolitan Club, Sleepy Hollow Country Club, Copper Club and the IEEE.

According to Mr. **Ryan,** Anixter-New York has one of the country's most modern and efficient electrical cable warehouses, with an inventory of over 5,000 different sizes and types of electrical cable made by major manufacturers. Anixter stocks all types of shipboard cable, industrial cable, coaxial cable, electronic wire, portable cords, high voltage power and control cable.

Edward Ryan

Anixter has formed the first continent-wide network of electrical wire and cable specialists, with distribution centers in 23 major cities in the United States, Canada and Europe. Also, it is a manufacturer and distributor of electrical and communications equipment and cable assemblies.

National River Academy Elects William Hankins

William L. Hankins Jr.

William L. Hankins Jr., Chicago district manager of Columbian Rope Company of Auburn, N.Y., was recently elected to the board of directors of The National River Academy. Mr. **Frank Metcalf,** Columbian's president, announced the appointment.

Prior to his position in the Chicago district office, Mr. **Hankins** held the post of district sales manager, Plymouth Cordage, a division of Columbian Rope, for seven years. In his present position, he heads up the Columbian operation in the Midwest from Ohio to Colorado and from the Kansas-Oklahoma line to the Canadian border. This is Mr. **Hankins's** first term on the board of the Helena, Ark., based National River Academy.

Mr. **Hankins** is a member of the Masonic Order and The Propeller Club. He is a University of Illinois graduate in business administration.

Decker Chartering Opens N.Y. Office

Decker Chartering Corp., a new ship brokerage and chartering firm, has opened an office at 26 Broadway, Room 1534, New York, N.Y. 10004. **Horst K.G. Decker** and **Pedro O. Alayeto** will be in charge of daily operations.

Westinghouse Sets Up Marine Div. In Europe

Dr. Allan W. Davis

Establishment of a Westinghouse marine division in Europe under Westinghouse Electric International, S.A., and headed by Dr. **Allan W. Davis,** vice president, was announced by **Herbert J. Cabral,** division general manager.

Dr. **Davis,** a native of England, will make his headquarters in Newcastle-on-Tyne, England. Another European marine office will shortly be opened in Madrid.

The expansion to Europe, Mr. **Cabral** explained, recognizes the significance of the marine market across the Atlantic and points up Westinghouse efforts to participate in this market by customer service near shipyards.

Dr. **Davis** has been manager of the marine mechanical department at Sunnyvale, Calif., since December, 1966. He had been vice chairman of Fairfield-Rowan, Ltd., in Glasgow, Scotland, since 1963 and deputy managing director of Fairfield Shipbuilding and Engineering Co., Ltd., from 1953 to 1963. He received his bachelor's and doctor's degrees from Glasgow University.

Dr. **Davis** is vice president, U.S.A., and was 1968-70 chairman, California branch, Institute of Marine Engineers. He was 1963-65 chairman, National Association of Marine Engine Builders, and is a member of the American committee, Lloyd's Register of Shipping. He is also a member of the American Society of Naval Engineers, Inc., The Society of Naval Architects and Marine Engineers, Institution of Mechanical Engineers, Royal Institute of Naval Architects, Institution of Engineers and Shipbuilders in Scotland, and the North East Coast Institution of Engineers and Shipbuilders.

H.M. Tiedemann & Co. Names Capt. Feldman

H.M. Tiedemann, president of H.M. Tiedemann & Company, Inc., 74 Trinity Place, New York, N.Y. 10006, has announced that shipmaster Capt. **Edward Feldman** has been assigned to head the firm's Ship Economics Division.

A specialist in ship management, Captain **Feldman,** in addition to his economics and statistical background, brings a quarter century of worldwide sea oriented experience to bear on the economic justification programs of H.M. Tiedemann & Company, Inc.

Ship operational concepts and management problems are made functional by the relevancy of a consumer motivated diagnosis, wherein theoretical and practical parameters are combined to furnish timely solutions.

Prior to this assignment, Captain **Feldman** had under his stewardship, the Field Services Section of H.M. Tiedemann & Company, Inc., offering worldwide ultrasonic material testing, surveys and technical aid to those in admiralty law. Concurrently, worldwide representatives are being established to handle the ultrasonic hull plate testing programs now finalized for single ship as well as fleet owners.

The Field Services staff consists of licensed engineering officers, technicians and divers, backed up by engineers to assess corrosion rates and make recommendations in the corrosion control phase for shipowners.

Sealink Universal Names Magnus Lundh

Sealink Universal Ltd., the recently formed chartering and ship management company, based in Vancouver, British Columbia, has announced the appointment of **Magnus D. Lundh** to the post of operations manager.

Mr. **Lundh** had previously served with Ocean Log Ltd., Empire Stevedoring Co., Ltd., and Canadian Transport Ltd.

$27 MILLION SIGNATURE: Equitable Equipment Co., Inc., of New Orleans, La., will build a fleet of 246 barges at a cost of $27 million to service the SEABEE Class barge and intermodal carriers now building at the Quincy Shipbuilding Division of General Dynamics for Lykes Bros. Steamship Co., Inc. Shown here as the award was announced are, seated from left, **Cecil Keeney** president of Equitable; **Joseph T. Lykes Jr.,** chairman of the board of directors of Lykes, and **Solon B. Turman,** chairman of Lykes's executive committee. Standing, left to right, are **W.J. Amoss Jr.,** executive vice president of Lykes; **Roland Dunn,** SEABEE barge project engineer, and **Stuart W. Thayer,** Lykes's vice president, engineering.

Unattended Engine Room Subject Of Paper Read At SNAME Chesapeake Section

Shown at the meeting are, left to right: **J.J. Hefferman,** Bethlehem Steel Corporation; **W.G. Bullock,** Maritime Administration, author; Rear Adm. **W.F. Rae,** USCG, moderator; **P. Eisenberg,** chairman, Chesapeake Section; **F.D. Yonika,** Maritime Administration, author, and **L.D. Cathers,** Naval Research and Development Center.

The seventh and final meeting of the 1970-71 season for the Chesapeake Section of The Society of Naval Architects and Marine Engineers was held at the Washington Navy Yard Officer's Club on April 20, 1971. Over 100 members attended this meeting to hear **W. Bullock,** Chief, Propulsion Systems Branch, Maritime Administration, present the paper "The Design Requirements for an Unattended Engine Room Steam Propulsion Plant."

Following cocktails and dinner, **Phil Eisenberg,** Chesapeake Section chairman, opened the formal portion of the meeting by introducing **R. Taggart,** who made a short presentation on the history and accomplishments of the Ocean Technology Advisory Committee which was established in 1967 and recently terminated as it was felt that ocean engineering is now an established part of SNAME.

John Nachtsheim, chairman of the nominating committee, Chesapeake Section, presented the proposed officers for the forthcoming season. The candidates that were proposed and elected are: chairman, **Jorgen Strom-Tejsen,** Naval Ship Research and Development Center; vice chairman, **Richard G. Seitz,** Maryland Shipbuilding and Drydock Co.; Secretary-treasurer, **Seth Hawkins,** Naval Ship Research and Development Center; elected member of the executive committee, **James A. Higgins,** Maritime Administration. Mr. **Eisenberg** was then presented with a certificate of appreciation by the members of the Section for his efforts and accomplishments as chairman of the Chesapeake Section during the past year.

The technical session was moderated by Rear Adm. **William F. Rae,** USCG, who introduced Mr. **Bullock** and the coauthor **Frank D. Yonika,** General Engineer, Propulsion Systems Branch, Maritime Administration.

The paper, which was presented by Mr. **Bullock,** represented the highlights of a study prepared by the Office of Ship Construction, Maritime Administration, to provide a base document from which a detailed design for an automated steam propulsion plant could be developed for unattended engine room operation. The paper included a detailed discussion on the concepts of control, methods of operation and a general description of alternate systems. The authors concluded that it was technically feasible to design, construct and operate a merchant ship with unattended machinery plant operation; however, for lack of detailed engineering specifications and specific manning criteria, the authors did not include a corresponding evaluation of the economic feasibility of such a vessel.

Formal comments on the paper, were presented by **A. Friedberg,** Maritime Administration; Lt. Comdr. **J. Forechilli,** USCG; **W.O. Nichols,** Bethlehem Steel Corporation; **J.C. McMahon,** General Electric Co., and **L. Ward,** Naval Ship Engineering Command.

Rosenblatt Receives Tanker Structural Analysis Contract

M. Rosenblatt & Son, Inc., naval architects and marine engineers of New York and San Francisco, has been awarded a contract by the U.S. Coast Guard for tanker structural analysis to determine the extent of liquid cargo protection afforded in the event of collisions and groundings.

The study has as its objective an investigation into what protection is presently afforded by tanker structure, based on current design practice, and what additional protection can be obtained by reasonable changes to these construction configurations.

The work under this contract is expected to contribute significantly to the solution of oil pollution problems, since it will include not only an evaluation of the effect of changes in tanker construction on protection, but also consideration of the effect of increased protection on the economics of oil transportation.

Controlex Appoints Glen Associates

Colin R. Glen

The appointment of Colin R. Glen Associates Ltd. as technical sales representatives has been announced by Controlex Corporation of America.

Colin R. Glen Associates Ltd., based at Owen Sound, Ontario, will have full sales and service responsibility for Controlex mechanical remote control systems in Canada, specializing in marine applications.

Colin R. Glen, the principal, has 25 years of experience in marine engines and associated control systems. Prior to the founding of his firm in 1965, he was a sales engineer with Cummins Engine Company, manufacturers of diesel engines. Mr. **Glen** served in the Royal Air Force during World War II, and has resided in Canada since the war.

Enjay Chemical Appoints Tropic Oil

Enjay Chemical Company has announced the recent appointment of Tropic Oil Company, a longtime marine and industrial supplier, as agent for industrial and marine coatings and cleaners in the Miami area.

George Le Vasser, president of the firm, stated the complete line of Rust Ban paints and Marine Cleaners will be stocked in their warehouse at 7220 N.W. 69th Avenue, Miami, Fla.

Offshore Logistics Buys 10 Vessel Fleet

Burt H. Keenan, president and chairman of Offshore Logistics, Inc., and **E.L. Shannon Jr.,** president of Santa Fe International Corp., have announced that Offshore Logistics has purchased from a Santa Fe subsidiary its offshore supply and support fleet consisting of 10 vessels.

Under terms of the agreement, the subsidiary will receive 60,000 shares of common stock to be issued by Offshore Logistics plus $4.8 million in notes.

Included in the purchase are six supply and utility vessels located in Indonesia, three supply vessels in Trinidad and one utility vessel in California. All of the vessels are presently under contract. Offshore Logistics will assume operations of the vessels immediately.

Mr. **Keenan** said the acquisition will increase Offshore Logistics' fleet to 60 vessels and make it the second largest operator of offshore support vessels in the world.

Mr. **Shannon** said sale of the vessels will allow Santa Fe to concentrate its efforts and investments in the primary areas of the company's interest, drilling and construction, and will further increase its financial ability to accelerate the company's growth in these activities. Mr. **Shannon** said Santa Fe is satisfied that the selection of Offshore Logistics as the purchaser will assure completion of contractual obligations without any interruption of service to present customers.

PPG Industries Forms New Marine Department

The Pittsburgh-based PPG Industries, Inc. has formed a new corporate marine department, it was announced by **Donald G. Griffin,** vice president of traffic and transportation for the firm. Mr. **Griffin** said that initially, the new department will serve PPG's chemical division, but that it might later extend its services to the firm's other divisions. **Irving G. Morgan** has been named to head the department as director of marine transportation.

The marine department will control operations of the recently launched 34,400-ton tanker Puerto Rican, which will serve PPG's new chemical complex soon to go into operation in Puerto Rico. The department will also charter ships and secure barge services in U.S. coastal and inland waters, Mr. **Griffin** said.

R.P. Holubowicz Named Executive VP Int'l MacGregor Ltd.

The appointment of **R.P. Holubowicz** as executive vice president of International MacGregor Ltd., was announced by **Henri Kummerman,** chairman of the company. The appointment is effective immediately and Mr. **Holubowicz** will be headquartered in the company's London offices.

Until his appointment to the MacGregor Organisation, Mr. **Holubowicz** was vice president of commerical marketing for the Litton Industries Shipbuilding Division and Marine Group based in New York. Prior to his association with Litton, Mr. **Holubowicz** was special assistant to the president of Grace Line in New York, before which he headed development planning for the Port of New York Authority. Earlier in his career, he served at sea as an officer and retains an active U.S. Coast Guard certificate as master mariner.

Mr. **Holubowicz** holds degrees from the University of London School of Economics and Political Science (M.Sc.-Econ.) and from Georgetown University, Washington, D.C. (B.S.), and he is a graduate of Kings Point U.S. Merchant Marine Academy.

In addition to his professional employment, he was one of the original founders, and is presently executive vice president, of the U.S. section of ICHCA (International Cargo Handling Co-ordination Association), having written and lectured extensively on the subject of cargo handling and ocean transportation. He is a member of the Maritime Transportation Research Board of the National Academy of Sciences.

R.P. Holubowicz

In making the announcement of Mr. **Holubowicz's** appointment six months after the company's 25th anniversary, Mr. **Kummerman** called it "new blood for MacGregor."

"Having carried the responsibility for development of MacGregor through the last 25 years," Mr. **Kummerman** noted, "I feel it is an appropriate juncture to appoint a man of Mr. **Holubowicz's** qualifications to lead the company into new areas of technology and products that will sustain and reinforce the name of MacGregor as a leader in the maritime industry. His experience in the field of acquisitions and international marketing will be particularly applicable in the introduction of new technology to further the growth of MacGregor in the years to come."

The MacGregor Organisation is comprised of 25 MacGregor companies located in all the principal maritime countries of the world, with total annual sales of $100,000,000 and employing a total of 1,200 people. The Organisation is foremost in technology and the manufacture of equipment for handling cargo and access aboard ship, such as automated steel hatch covers, ramps, side doors, and a full range of other cargo handling systems. Various inventions in this field are to be introduced and announced before the end of 1971.

The U.S. company is MacGregor-Comarain Inc., 135 Dermody St., Cranford, N.J. 07016.

Belgian Operators Name Board Members

At the annual stockholders meeting of the Compagnie Maritime Belge, Antwerp, on May 4, **Charles Evrard, Pierre Pluys** and Capt. **A. Hubert** were elected to be additional members of the board of directors.

At the annual board of directors meeting of the Agence Maritime Internationale, Antwerp, on May 4, **Frederick Guinotte** and **Yves de Spirlet** were elected to be additional members of the board of directors.

N.Y. Propeller Club Elects Weber President

O. John Weber

O. John Weber, director of sales, Seamount Travel Services, Inc. was elected president of The Propeller Club of the United States, Port of New York, for the fourth consecutive term, at the annual meeting held at the Downtown Athletic Club in New York City.

At the same time, Capt. **Adrian P. Spidle,** vice president of Prudential-Grace Lines, Inc., was elected vice president of the 48-year-old Propeller Club, which is dedicated to promote, further, and support an American merchant marine, and to aid the development of river, Great Lakes, and harbor improvement. **Warner Lumbard** was reelected secretary-treasurer.

Capt. **Hewlett R. Bishop,** executive vice president, National Cargo Bureau, Inc., was elected to the board of governors for a two-year term. Elected to the board for three-year terms were: **John S. Bull,** president, Moran Towing and Transportation Co., Inc.; **Thomas S. Chapman,** Bethlehem Steel Corporation; **James P. McAllister,** president, McAllister Brothers, Inc.; **Walter B. Potts,** vice president, Marsh & McLennan, Inc., and **Frederic P. Sands,** Callo & Carroll, Inc.

Mr. **Weber** is the first Propeller Club president to serve four consecutive terms. His shipping career began in 1948, when he joined American Export Lines as manager of its Washington, D.C. office. In 1955, he was appointed vice president of passenger traffic of American Export Isbrandtsen Lines in New York. Mr. **Weber** became president of U.S. Hydrofoils in 1968, and assumed his present post in 1970. He was a lieutenant colonel in the U.S. Marine Corps during World War II, and joined American Overseas Airlines in London immediately after the war.

First Boston Offers Midland Enterprises Ship Mortgage Bonds

The First Boston Corporation, as manager of the underwriting group, announces the public offering of $15-million Midland Enterprises Inc. 8⅞ percent first preferred ship mortgage bonds due 1991, at a price of 99.50 percent to yield 8.93 percent, plus accrued interest.

A portion of the proceeds will be used to repay an interim loan from Midland's parent, Eastern Gas and Fuel Associates, incurred by Midland in connection with a recent acquisition, and the balance will be used for the purchase of river transport equipment.

Midland, through its subsidiaries, operates a fleet of tow boats, tugboats and barges and, in 1970, transported the largest tonnage of any fleet operating on the inland waterways of the United States. The company's principal offices are in Cincinnati, Ohio.

Marcona Corporation Names Edward Potapa

Edward Potapa Jr., has been named assistant chartering manager for Marcona Corporation, according to an announcement by **F.J. Ewers,** general manager-commercial shipping. Mr. **Potapa** will be located in the firm's New York office and will report to **Costas D. Xistris,** manager, chartering.

Mr. **Potapa** was formerly in charge of the chartering department of Walter A. De Lappe Co., Inc., New York. He also served three years as a shipbroker for J.H. Winchester & Co., Inc., New York.

After graduating from the U.S. Merchant Marine Academy at Kings Point, New York, in 1957, with a bachelor of science degree, Mr. **Potapa** completed a year of active duty with the U.S. Navy. He then served seven years at sea as an officer with various U.S. shipping companies.

Avondale Westwego Shipyard Launches 378-Ft. Twin Screw High Endurance Cutter Jarvis

Principals shown above at the launching, left to right, are: Adm. **Chester R. Bender,** USCG, Commandant, U.S. Coast Guard; the Honorable **James M. Beggs,** Under Secretary of Transportation; **Mrs. James M. Beggs,** sponsor, and **Richard Brunner,** vice president of contract administration, Avondale Shipyards, Inc.

The United States Coast Guard Cutter Jarvis, named for Capt. **David H. Jarvis,** was recently launched at Avondale Shipyards, Inc., Westwego Yard. The Jarvis is one of a series of high endurance cutters being built by Avondale's Westwego Yard. **Mrs. James M. Beggs,** wife of the Under Secretary of Transportation, christened the vessel.

Principals of the launching included the Honorable **James M. Beggs** as principal speaker; **Richard Brunner,** vice president of contract administration, Avondale Shipyards, Inc.; Adm. **Chester R. Bender,** USCG, Commandant, United States Coast Guard, and the sponsor, **Mrs. James M. Beggs.**

The Jarvis is named for Capt. **David H. Jarvis,** winner of a special Congressional Gold Medal of Honor, for leading a three man expedition to save 500 starving men at Point Barrow, Alaska, in the winter of 1897-98. The expedition drove a herd of reindeer over 1,500 miles of Arctic ice and snow in the dead of winter to reach the stranded whalers.

The new 378-foot cutters have a beam of 42 feet and displace 3,050 tons. They are equipped with an 80-foot flight deck for use as a helicopter pad. They are powered by a combined diesel and gas turbine propulsion plant, with variable pitch propellers. Dual gas turbines deliver a total of 36,000 shaft horsepower, allowing a maximum speed of 29 knots. The vessels have a cruising range of 14,000 miles. A 350-horsepower bow propulsion unit aids the cutters in maneuvering alongside docks and other tight situations. Closed circuit television enables bridge personnel to see what is happening in other parts of the ship.

The Coast Guard already has nine of the 378-footers in commission. Seven are based in Atlantic ports, one at Alameda, Calif., and one in Honolulu, Hawaii. All are named for former Secretaries of the Treasury.

The Jarvis (WHEC 725) slides gracefully down the ways as she is launched at Avondale Shipyards, Inc., Westwego Yard.

Lloyd's Studies Plan To Build LNG Hulls In One Country And Cargo Tanks In Another

At the request of Conch Methane Services Limited, surveyors of Lloyd's Register of Shipping have carried out a preliminary feasibility study for a new method of building liquefied natural gas tankers within the capacity range of approximately 3,179,394 cubic feet to 4,237,872 cubic feet, although the scheme is not restricted to this size ship.

The essence of the idea under consideration is to build the hull of the ship in one country and the gas cargo tanks at a tank building site in another country. When the hull has been completed and the insulation fitted, it is proposed to sail the hull with loose deck panels to the tank building site where the tanks will be inserted in the ship. The vessel will then return to the original shipyard for completion.

Lloyd's Register has studied the idea and made recommendations for strengthening the gunwale region and for withstanding torsional stresses by improving the shape, thickness and quality of the material used at the corners of the deck openings. Advice has been given on methods of securing the "left loose" deck panels and the desirability of welding some of these in place to increase torsional rigidity of the hull on the return voyage to the shipyard. Limiting sea states have been suggested for the initial voyage of the hull with deck panels left loose.

Conch Methane Services has found that this method of construction will result in significant savings in building time and cost for this well-proven LNG ship design.

Todd Houston Yard Delivers Hydro-Barge Ezra Sensibar

Shown on the platform as **Mrs. Sensibar** reaches up to break the traditional bottle of champagne are, left to right: owner's representative Capt. **Gustav Andersson,** husband **Ezra Sensibar** for whom the barge was named, and **Arthur W. Stout Jr.,** general manager of the Todd Houston Division.

The Houston shipyards of Todd Shipyards Corporation recently delivered the 30,000-ton seagoing Hydro-Barge Ezra Sensibar, the largest vessel of its kind ever built.

The hopper-type barge is self-loading and self-unloading. Its length is 510 feet, width 75 feet, and depth to main deck is 31½ feet. It will carry a crew of 11 men. Total value of the vessel with its machinery and associated equipment is in excess of $10,000,000.

Owned by Construction Aggregates Corporation, a Chicago-based worldwide dredging, land reclamation and engineering firm, construction was begun the latter part of May 1970, at Todd Shipyards in Houston. Because of its length, it was built in two separate sections. The two sections were joined together in the water and then transferred to a drydock for final welding assembly.

Fitted for duty, the Hydro-Barge Ezra Sensibar will have a capacity of 16,000 cubic yards. It will carry two 30-inch centrifugal dredge pumps on board, each driven by an Enterprise 6,000-hp turbocharged diesel. These two engines, together with the auxiliary diesel generator engine, will develop some 16,000 horsepower.

The new Hydro-Barge was christened by **Mrs. Ezra Sensibar,** wife of the president and chairman of the board of Construction Aggregates Corporation, for whom the vessel was named.

The Hydro-Barge Ezra Sensibar is the 16th vessel in the 65-year history of Construction Aggregates Corporation. During this time, the firm has engaged in extensive reclamation and development projects throughout the world. These include all sections of the United States, Canada, Mexico, Jamaica, South America and Israel. One of the first projects was the filling of the offshore site in Lake Michigan for Chicago's historic Field Museum in 1915. The new Hydro-Barge will go to work for the Port of New York Authority, reclaiming swamp land to add 200 acres to the Newark Airport.

NEW YORK PORT ENGINEERS MEET: The Society of Marine Port Engineers, New York, N.Y., Inc. held a general membership meeting and dinner on April 21, 1971, at the Commuters Cafe and Restaurant, 32 Cortlandt Street, New York City. After dinner, the meeting was called to order and a paper entitled "Motivational Patterns of the Merchant Marine Officer" was presented by Prof. **Martin J. Schwimmer,** of the department of maritime law and economics, United States Merchant Marine Academy, Kings Point, N.Y. The paper outlines the reasons for going to sea, why seagoing personnel remain at sea, and reasons for leaving or planning to leave the merchant marine. Shown above are, left to right: **John C. Fox Jr.,** president of the Society; **Philip A. Donahue,** first vice president; Prof. **Martin J. Schwimmer,** author; Capt. **H.O. Travis,** USMMA, sponsor of the paper, and **Percy C. Overman,** assistant secretary of the New York Port Engineers.

Huntington Alloy Division Of Inco Elects R.W. Simmons

Robert W. Simmons, who joined International Nickel's Huntington Division as a chemist in 1940, has been elected president of the Huntington Alloy Products Division, Huntington, W.Va., and a vice president of The International Nickel Company, Inc. **Henry S. Wingate,** Inco chairman, made the announcement. Mr. **Simmons** succeeds **J. Edwin Carter** as president of the Huntington Division. He will report to Mr. **Carter,** who was elected executive vice president of The International Nickel Company, Inc.

Mr. **Wingate** also announced that **Paul H. Flynn** has been elected assistant to the vice president of the parent company, The International Nickel Company of Canada, Limited, reporting to Mr. **Carter.** Mr. **Flynn,** who joined International Nickel in 1939, will move his office to New York from Huntington in the near future. He will continue to serve as a vice president of the Huntington Division and as assistant vice president of Inco, Inc.

Safety Awards Presented By NYSA Bureau

NYSA Safety Award winners standing left to right: **Donald Carey,** Lansdell Protection Agency, Inc.; Capt. **C.E. Shivers,** American Export Isbrandtsen Lines, Inc.; Capt. **James Clark,** Sea-Land Service, Inc.; **J. Etherson** and **G.V. Curcuru,** both with Moore-McCormack Lines, Inc. Seated left to right: **Frank Rock,** Seatrain Lines, Inc.; **C.S. Dickson,** Cunard Line, Ltd.; **A.P. Chopin,** chairman, NYSA; Adm. **John M. Will,** president, NYSA; **T.R. Alff,** Nacirema Operating Co., Inc., and **J.A. Kennedy,** Daniels & Kennedy, Inc.

Adm. **John M. Will,** president of the New York Shipping Association, Inc. and chairman of the board and president of American Export Isbrandtsen Lines, recently presented awards to 12 employers of waterfront labor in the Port of New York who had outstanding records in accident reduction last year.

Awards were also presented to five longshoremen and a trucker who were instrumental in saving the life of a fellow worker.

The presentations were made at the 18th annual luncheon sponsored by the NYSA Safety Bureau, held at the Downtown Athletic Club, New York, N.Y.

Employers receiving awards were: Cunard Line, Ltd.; Nacirema Operating Co., Inc.; American Export Isbrandtsen Lines, Ltd.; Daniels & Kennedy, Inc.; Pierside Terminals Division; Seatrain Lines, Inc.; Lansdell Protective Agency, Inc.; Moore-McCormack Lines, Inc.; Maintenance Associates, Inc.; R. Martorella & Co., Inc.; Sea-Land Service, Inc.; and Moore-McCormack Lines, Inc. (Port Watching).

Longshoremen who received life saving awards were: **Christopher DeMatteo,** ILA Local 1814; **Mario DiCostanzo,** ILA Local 1235; **James O'Connor,** ILA Local 1; **Sebastian San Felippo,** ILA Local 1814; **Marin Sule,** ILA Local 824, and **Joseph Gardella,** trucker.

In presenting the awards, Admiral **Will** said accident prevention is a three-pronged task—management, labor and Government—and cooperation between the parties is essential for success.

Alexander P. Chopin, chairman of NYSA, in his opening remarks, said the record of the Association in reducing accidents, since its establishment in 1952, has been outstanding and safety education will continue as long as accidents occur on the waterfront.

Mr. **Chopin** noted two achievements by the Bureau last year. In cooperation with the union, a safety code, embodying the latest techniques in accident prevention, was distributed to the Port's 20,000 longshoremen. In addition, hard hats were issued to the work force to prevent head injuries, one of the major results of accidents.

Guest speaker was **Frank B. Mercurio,** regional administrator for New York and New Jersey of the U.S. Department of Labor's Workplace Standards Administration.

$4.5 Million Contract To Babcock & Wilcox

The Babcock & Wilcox Company announced that it has received a $4,560,000 contract from the Atomic Energy Commission for the manufacture of nuclear components. The work is to be performed at B&W's Naval Nuclear Fuel Division in Lynchburg, Va.

Gray Elected President Matson Terminals, Inc.

James P. Gray

James P. Gray has been elected president of Matson Terminals, Inc.

Mr. **Gray** was vice president and general manager since October, and before that he served two years as director of industrial relations for Matson Navigation Company, the parent company. Mr. **Gray** started with Matson in 1936 in the Port of Los Angeles.

West Winds Promotes Dawson And Rybensky

West Winds, Inc. of San Francisco, Calif., marine and industrial engineering firm, has announced restructuring of some management functions and two promotions involving key personnel.

Joseph C. Brewster, president and general manager, stated that **John F. Dawson Jr.** and **Robert Rybensky** had been appointed vice presidents of the firm, and that Mr. **Dawson** would assume the duties of assistant general manager, while Mr. **Rybensky** will serve as operations manager.

Mr. **Brewster** indicated that these reassignments and promotions were in keeping with the expanding activities of the firm and the increased responsibilities of its executives.

Micro Announces Personal Two-Way Radio For Tankers

An "intrinsically safe" version of the highly successful MCP-6B UHF Personal Two-Way Radio which will deliver transmitter power of 1.6 watts is now available according to Micro Communications sales manager **David N. Corbin.** The Safe-Com Model MCP-6B-H is approved intrinsically safe for Class I, Division I, Group C & D Hazardous Areas by Factory Mutual Research Corporation.

Safe-Com uses the new Micro-Com "Intri-Safe" Nickel Cadmium Rechargeable Battery Pack. The Intri-Safe Battery Pack circuitry developed by Micro Communications is a highly innovative design which will support higher power personal radio for safe use in hazardous atmospheres.

Petroleum companies are now using personal radio on board tankers for safer and more efficient docking and loading operations. Key personnel equipped with portable radio units during loading and discharging operations can communicate person-to-person instantaneously from any points on the deck, below deck, or within the superstructure. Availability of this higher powered, intrinsically safe radio will provide more effective communication for use on even the largest tankers.

Additional information on Safe-Com can be obtained from Micro Communications Co. at 2452 West 2nd Avenue, Denver, Colo. 80223.

Halter To Build Petroleum Barge For Boston Fuel

Capt. **Vincent D. Tibbetts,** president of Boston Fuel Transportation, Inc. has announced the signing of a contract with Halter Marine Services, Inc. for the construction of a petroleum barge.

The barge, which will be 290 feet in length, have a 60-foot beam and a depth of 19 feet 8 inches, is intended to serve the many customers of Boston Fuel in the Boston/Maine area. Delivery is to be in November.

Captain **Tibbetts** further stated that the preliminary engineering and negotiations were carried out with **Bob Notine,** East Coast representative of Halter, who has had many years of experience in the construction and operation of equipment of this type.

New York Lends Assistance To South Jersey Port Corp.

The Port of New York Authority is lending assistance to the South Jersey Port Corp. in the development of a marine terminal at Camden, N.J., by assigning **Robert L. Pettegrew** to serve as executive director of the corporation, a public agency. Mr. **Pettegrew,** who has been with the Port of New York Authority's planning and development department, will direct the South Jersey Port Corp. staff in implementing policies.

Established in January 1969 to operate the Camden Marine Terminal as an agency of the state of New Jersey, the corporation recently purchased the property formerly used by the New York Ship Building Corp. in Camden and is developing plans to convert the Delaware River frontage into a modern marine cargo facility.

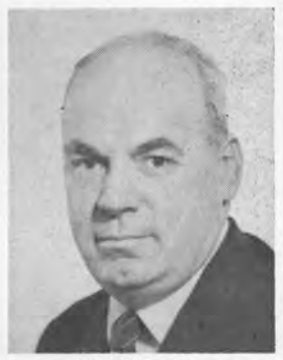
Walz & Krenzer, Inc. Names Dan Schorsch And Pete Bethge

C.T. (Cy) Krenzer, president of Walz & Krenzer, Inc. of Rochester, N.Y., has announced the appointment of **Daniel Schorsch** to the newly-created position of executive vice president. Mr. **Schorsch** will be responsible for all phases of W&K operation, with initial emphasis on augmenting the marketing and engineering capabilities.

Mr. **Schorsch** received his B.S. degree in naval architecture and marine engineering from Webb Institute in 1958. His background includes eight years of experience in shipyards, as well as four years at AAI as a project manager, with detailed responsibilities in marketing, engineering and program development. He is a member of The Society of Naval Architects and Marine Engineers, and the American Society of Naval Engineers.

V.W. (Pete) Bethge has been elected vice president, marine applications. He will continue to operate from their New York City office where, for the past 15 years, he has helped pioneer the development of Walz & Krenzer as a prime supplier of specialized marine equipment.

Daniel Schorsch



V.W. Bethge

Mr. **Bethge** received his B.S. degree in naval architecture and marine engineering from the Webb Institute in 1953. After serving two years as an officer in the U.S. Navy, he joined Walz & Krenzer, Inc. He is a member of The Society of Naval Architects and Marine Engineers. He is also active in the Webb Alumni Association and is currently serving as 2nd vice president.

C.E. (Cliff) Hoitt continues as director and vice president in charge of operations at the company's New York office.

Marine Moisture Introduces Lubricating Oil Clarifier With No Moving Parts

The Marine Moisture Control Co., Inc. of Inwood, N.Y., designers, engineers and manufacturers of industrial and marine equipment, has introduced a new, improved model of their Lubricating Oil Clarifier-Coalescer. This new model has no moving parts and is virtually maintenance free.

The Marine Moisture Control Lubricating Oil Clarifier-Coalescer can be used for cleaning and purifying all types of lubricating oils, hydraulic fluids and diesel fuel by removing all water, sludge and 99.9 percent of all solids present.

Baldt Anchor And Chain Names Kelley And Scalzo

Edwin L. Kelley

Joseph M. Scalzo

Edwin L. Kelley has been appointed assistant to the president and **Joseph M. Scalzo** has been named sales manager of the Baldt Anchor and Chain Division of Baldt Corporation (OTC), New York, N.Y. The announcement was made by **C. Donald Linnenbank,** president of the division located in Chester, Pa.

Mr. **Kelley** was appointed to his new post from the position of sales manager. He joined a predecessor company of the Baldt division in 1940 as a timekeeper in the forge shop. Since then, he has served continuously with Baldt except for two years of military duty in Europe during World War II.

Before becoming sales manager, Mr. **Kelley** had advanced through the positions of assistant production manager, production manager and purchasing agent. He obtained his education at Media High School and Penn State University.

Mr. **Scalzo** recently joined Baldt from the Jersey Bolt Division of A-T-O, Inc., where he held successively the posts of sales manager and general division manager. Prior to that, he was a sales manager for the Micarta Division of Westinghouse Electric Corporation. He holds a business administration degree from the University of Pittsburgh.

Baldt Corporation is a diversified manufacturer whose operations include a Marine and Oceanographic Group and an Industrial Products and Equipment Group.

BIG LIFT FOR A HEAVYWEIGHT: The 300-ton midship house of the jumboized tanker Baltimore Trader is held aloft by Newport News Shipbuilding and Dry Dock Company's giant 310-ton gantry crane. The lift, the crane's heaviest since it went into operation a year ago, came while shipyard workers floated the tanker's old cargo section from underneath the house and moved a new 625-foot forebody into position for joining to the existing stern. The project, largest jumboizing job ever undertaken by the Tenneco subsidiary, will more than double the Baltimore Trader's cargo capacity to 460,000 barrels. Owned by American Trading and Production Corporation, the vessel will undergo sea trials this month.

Newport News Appoints Three

A realignment of management in the shipyard's contracts division has been announced by **Charles E. Dart,** vice president of Newport News Shipbuilding and Dry Dock Co.

Named to the post of manager of the contracts department was **C. Leonard Willis,** who had previously served in the department as assistant administrator. **E.B. Adams Jr.,** who had previously served as assistant cost engineer for overhauls, budgets and cost reporting, was named manager of estimating. The former administrator of the contracts department, **F.J. Horne Jr.,** has now been appointed as director for contract policy. Mr. **Dart** said the new appointees will report directly to him.

Hampton Roads SNAME Presents Color Slides Of The S/S Manhattan's Trans-Arctic Voyage

Pictured at the Mariners Museum, from left to right: **E.C. Pickler Jr.,** chairman elect, 1971-72; **Monroe Macpherson,** national chairman of committee on Sections; **L.C. Robertson Jr.,** chairman 1970-71; **Robert Mende,** SNAME executive secretary, and **Leonard Brand,** featured speaker.

The last meeting of the 1970-71 season was held by the Hampton Roads Section of The Society of Naval Architects and Marine Engineers on Wednesday, April 14, 1971, at the Mariners Museum in Newport News, Va. Over 250 members and guests, including numerous wives, enjoyed the social hour, dinner and technical session.

On the program for the technical session was a color slide presentation of the trans-Arctic voyage of the S/S Manhattan involved in determining the feasibility of transporting crude oil from the newly discovered oil deposits on the North Slope of Alaska to the east coast refineries of the United States. The presentation was given by **Leonard Brand,** a research specialist with the Newport News Shipbuilding and Dry Dock Company, a subsidiary of Tenneco, Inc., who was a technician aboard the Manhattan during her first trip through the Northwest Passage. Subsequent to hull renovations and modifications to withstand the rigors of Arctic travel, Newport News was subcontracted to design, install and operate an instrumentation package to monitor and record ship's characteristics and stress on the hull structure during its tortuous and gruelling trek through the perilous ice flows. Millions of data signals were fed into the computer banks and analyzed by the shipyard's technicians to corroborate the Manhattan's structural design and ability to withstand the crushing pressures encountered in ice infested sea lanes.

Special guest at the meeting was **Robert G. Mende,** SNAME secretary. Section chairmanship was transferred from **L.C. Robertson** to **E.C. Pickler,** who was elected to serve as chairman for the 1971-72 season.

Gulfstream Shipping Named Florida Agent

The appointment of Gulfstream Shipping Corp. as agents and contract stevedores in Fort Lauderdale, Fla., for Deep Sea Mediterranean Lines has been announced by **Arthur E. Erb,** Gulfstream president. Deep Sea Mediterranean Lines, which accepts cargo in the Port Everglades-Miami area for discharge in the Mediterranean, plans to expand their service from three to five vessels in the near future in order to provide sailings every 10 days. Texas Transport & Terminal Co., Inc. of New Orleans, La., are general agents for the line in the United States.

James Anderson Joins Van Ommeren Shipping

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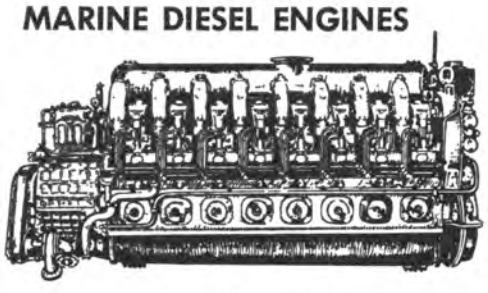

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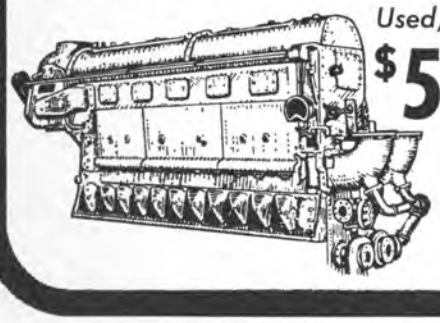

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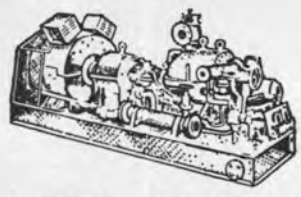

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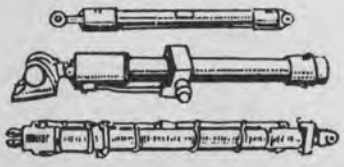

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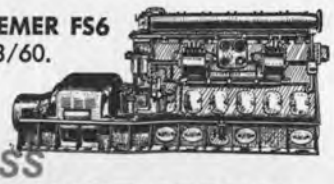

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Johnson Rubber Co., Marine Division, Middlefield, Ohio 44062
Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, Ohio 44309
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wis. 53186

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-Harbor, Inc., 1050 Aladdin, San Leandro, Calif. 94577
Anixter-Netherands, Utrecht Gebouw, Coolsingel 75, Rotterdam 3002, Netherlands
Anixter-New York, 300 Executive Blvd., Elmsford, N.Y. 10523
Anixter-New Orleans, 315 Notre Dame, 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
Eaton Corp., Industrial Drive Division, 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
Farboil 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., 2350 Blanding Ave., 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

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
Conrad-Stork, Div. Stork-Werkspoor, P.O. Box 134, Haarlem, Holland
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., 2350 Blanding Ave., 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
Pacific Pipe Co., 49 Fremont St., San Francisco, Calif. 94080
Pine Tree Engineering, Subsidiary Rice Barton Corp., P.O. Box 654, Brunswick, Maine 04011
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
United Filtration Corp., 9600 John St., Santa Fe Springs, Calif. 90670

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
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
S. Blickman, Inc., 536 Gregory Ave., Weehawken, N.J. 07087
Elisha Webb & Son Co., 136 So. Front St., Philadelphia, Pa. 19106

HEATERS—Ship
Todd Products, Div. of Todd Shipyards Corp., Brooklyn, N.Y. 11231

HYDRAULICS
Bird Johnson Co., 883 Main St., Walpole, Mass. 02081
Bond Hydraulic Equip. Service, Inc., 117 Monroe St., Hoboken, N.J. 07030
Universal Hydraulics, Div. of Ohio Brass Co., 4500 Beidler Road, Willoughby, Ohio 44094
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 Industrial 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
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 PROPULSION
Buehler Corp., 9000 Precision Drive, Indianapolis, Ind. 46236
Combustion Engineering, Inc., Windsor, Connecticut 06095
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
Communication Associates, Inc., 200 McKay Road, Huntington Station, N.Y. 11746
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
ITT Decca Marine, Inc., 386 Park Ave. South, New York, N.Y. 10016
ITT Mackay Marine, 133 Terminal Ave., Clark, N.J. 07066
Paul J. Plishner, 45 West 45 St., New York, N.Y. 10036
Radiomarine Corp., 20 Bridge Avenue, Red Bank, N.J. 07701
Raytheon Co. Marine Products, 676 Island Pond Rd., Manchester, N.H. 03103
RCA Service Co., A Division of RCA, Marine Communications and Navigation Equipment Service, Bldg. CHIC-225, Camden, N.J. 08101
RF Communications, Inc., 1676 University Ave., Rochester, N.Y. 14610

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
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

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
Drayo Carporation, 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
Mitsubishi Heavy Industries, Ltd., 5-1 Marunouchi 2-chome, Chiyoda-ku, Tokyo, Japan
Mitsui Shipbuilding & Eng. Co., Ltd., Nihonbashi-Muromachi, Chuo-ku, Tokyo, Japan
Nashville Bridge Co., P.O. Box 239, Nashville, Tenn. 37202
National Steel & Shipbuilding Corp., San Diego, Calif. 92112
Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
Northwest Marine Iron Works., P.O. Box 3109, Swan Island, Portland, Oregon 97208
Nuclear Service & Construction Co., Inc., 9296 Warwick Blvd., Newport News, Va. 23607
O.A.R.N. (officine Allestimento e Riparazioni Navi) Genoa, Italy
Paceco, Div. Fruehauf Corp., P.O. Drawer E, Alameda, Calif. 94501
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Fla. 33156
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862
Rodermond Industries, Foot of Henderson St., Jersey City, N.J. 07302
St. Louis Shipbuilding—Federal Barge, Inc.
611 East Marceau, St. Louis, Mo. 63111
Sasebo Heavy Industries Co., Ltd., New Ohtemachi Bldg., Chiyoda-ku, Tokyo, Japan
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., Mail 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
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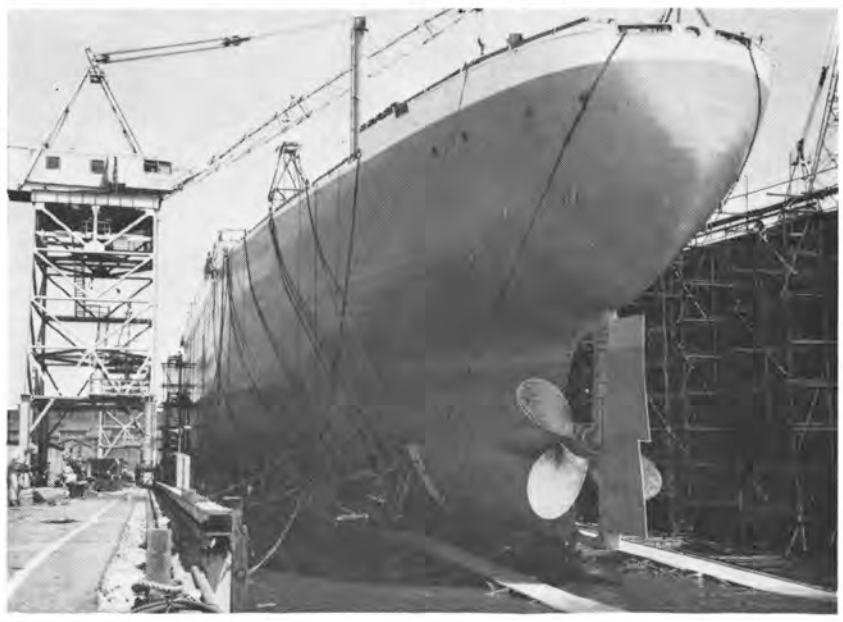

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