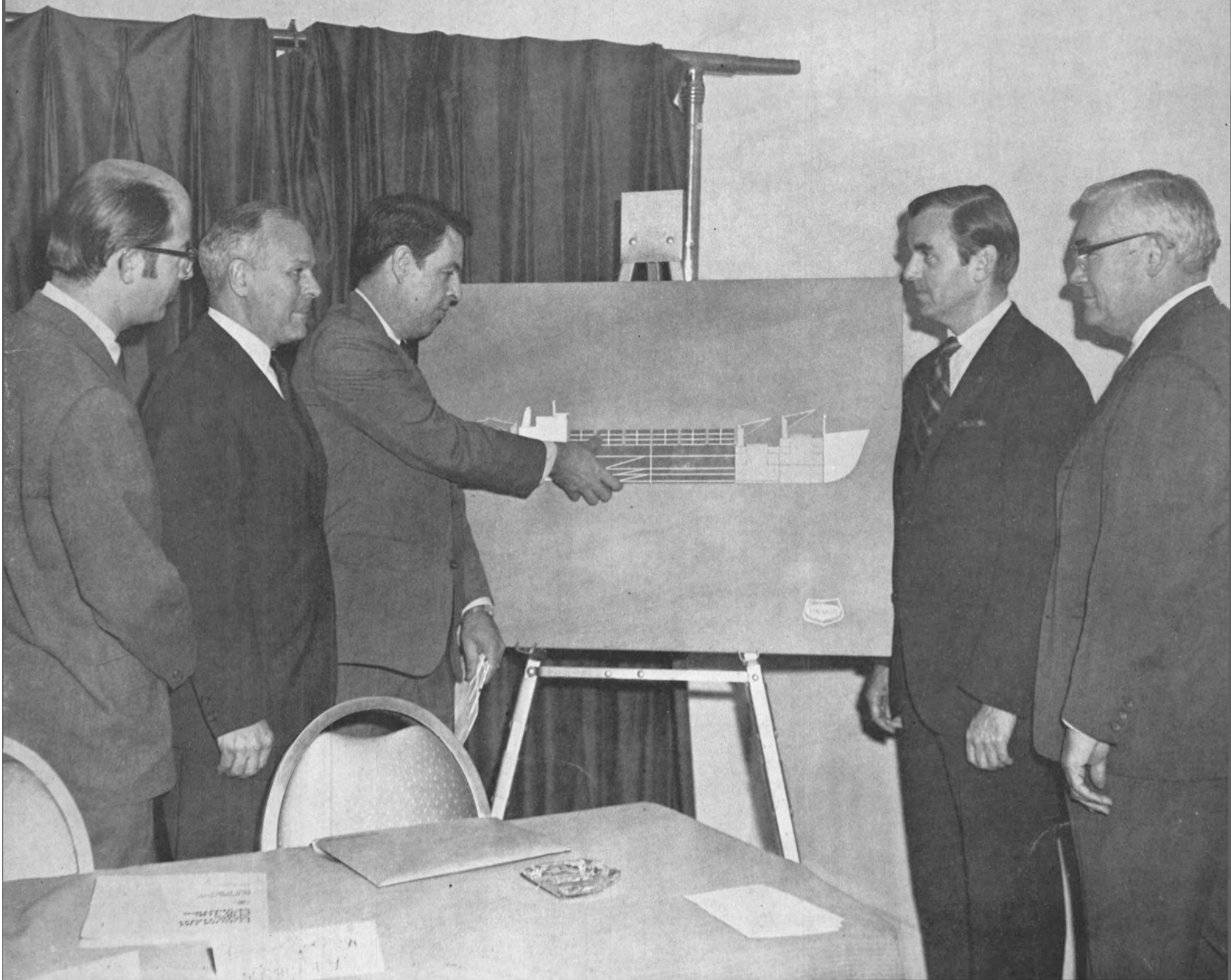


MARITIME REPORTER AND ENGINEERING NEWS



R.W. Thorpe Jr.

J.F. Goodrich

J.D. Deal Jr.

A.E. Gibson

L.C. Ackerman

**Maritime Administration Unveils
Merchant Ships For The Seventies**

(SEE PAGE 9)

JUNE 15, 1970

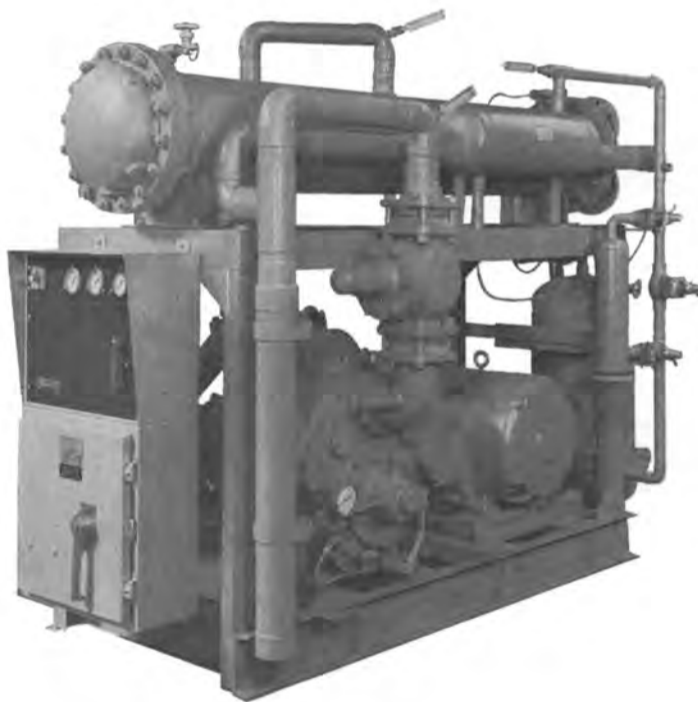
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**Tugboat Contract To
Big River Shipbuilding**

Rosedale Gravel Company has placed an order for the construction of a twin-screw tugboat measuring 64 feet by 26 feet by 7 feet 9 inches with Big River Shipbuilding, Inc., Vicksburg, Miss.

The vessel will be powered by General Motors diesels of 900-total-bhp.

**Uniflite To Build
Navy Personnel Boats**

A \$909,612 contract for the construction of various 33-foot, Mark 2, personnel boats has been awarded to Uniflite, Inc., Bellingham, Wash., by the Naval Ship Systems Command, Washington, D.C.

Barge Construction

Caruthersville Shipyard, St. Louis, Mo., has been awarded a contract by undisclosed interests for the construction of two 2,000-dwt oil barges. Each barge is to measure 180 feet by 52 feet 6 inches by 12 feet 6 inches.

Dravo Corporation, Pittsburgh, Pa., is to build 19 covered hopper barges for The Valley Line Company. Each 1,600-dwt barge is to have a length of 200 feet, a beam of 35 feet, and a depth of 12 feet.

Hillman Barge & Construction Co., Pittsburgh, Pa., has a contract for the construction of a 1,500-dwt tank barge for Monsanto Chemical Co. The barge is to have a length of 195 feet, a beam of 35 feet, and a depth of 12 feet 6 inches.

Jeffboat, Inc., Jeffersonville, Ind., is to build two double-raked, deck cargo barges for Material Service Corporation. Each 1,500-dwt barge is to measure 195 feet by 35 feet by 10 feet 6 inches.

Reliance Marine Transportation & Construction Corp., Kingston, N.Y., is to build three 1,000-dwt deck cargo barges for stock purposes. Each barge is to be 130 feet long, have a beam of 40 feet, and a depth of 11 feet 3 inches.

St. Louis Ship, Division of Pott Industries, Inc., St. Louis, Mo., has an order from Gulf Mississippi Marine Corporation, New Orleans, La., for an oil barge. The 2,400-dwt barge is to measure 200 feet by 60 feet by 14 feet.

Todd Shipyards Corporation, Houston Division, has laid the keel for a welded steel, unmanned, non-self-propelled tank barge for the Alamo Barge Lines of Houston, Texas. The vessel, which is scheduled for completion in July 1970, will measure 195 feet by 36 feet 6 inches by 10 feet 6 inches.

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**MARITIME
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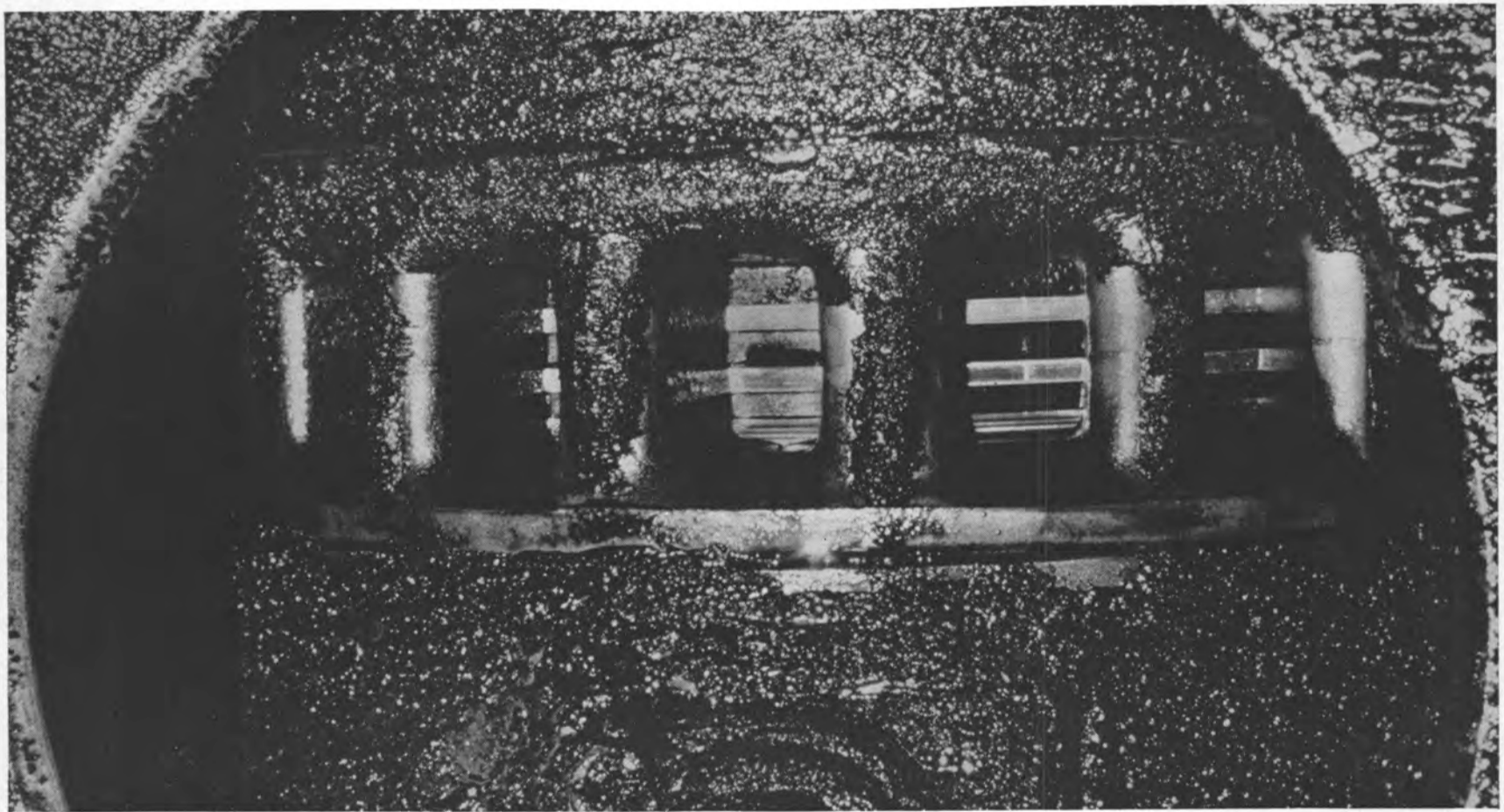


Photo above, a closeup view through the No. 2 cylinder air box inspection cover of a 20-cylinder turbocharged EMD 645.

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American Ship Building Elects Elliott President

Campbell W. Elliott, prominent Cleveland executive and civic leader, has been elected president of the American Ship Building Company, Lorain, Ohio. The announcement was made at a recent press conference by **George M. Steinbrenner III**, chairman and chief ex-

ecutive officer of the company. Mr. Elliott, who resigned as senior vice-president of Midland-Ross Corp. to accept the new responsibility, will also serve as chief operating officer.

Mr. Elliott has had considerable experience in the shipbuilding field in addition to his service for three years on the board of the American Ship Building Company. From 1942

through 1945 he was assistant to the president of Cramp Shipbuilding Co. of Philadelphia, Pa., which employed 20,000 people and contributed mightily to the war effort, building cruisers, submarines and other vessels.

He came to Cleveland in 1956 as vice-president, industrial and public relations of Midland Steel Products, and became vice-president,

administration, the following year when the company merged to form Midland-Ross Corp. He has been senior vice-president since 1965. Until his resignation to become president of American Shipbuilding Company, Mr. Elliott's areas of responsibility have included legal, patents, personnel, acquisitions, industrial relations, advertising, and public relations.

Mr. Elliott is 56, and a native of St. Louis, Mo., where he earned his LL.B. degree at City College of Law after first attending St. Louis University.

American Ship Building Company, listed on the New York Stock Exchange, is the largest shipbuilding and repair company on the Great Lakes. It also owns and operates one of the largest bulk carrier fleets on the Great Lakes, and is active in the building products, metal fabricating, material handling, and shipboard sewage disposal fields. Through its acquisition of Nashville Bridge Co. last year, it is also a major national bridge builder, and supplier of barges, tow boats, and dredges.

Mooremack Elects Fiske President



Lawrence F. Fiske

William T. Moore, chairman of the board of Moore and McCormack Co., Inc., has announced the election of **Lawrence F. Fiske** as president and chief operating officer of Moore and McCormack Co., Inc., and its subsidiary Moore-McCormack Lines, Incorporated. Mr. Moore will continue as chairman of the board and chief executive officer of both companies.

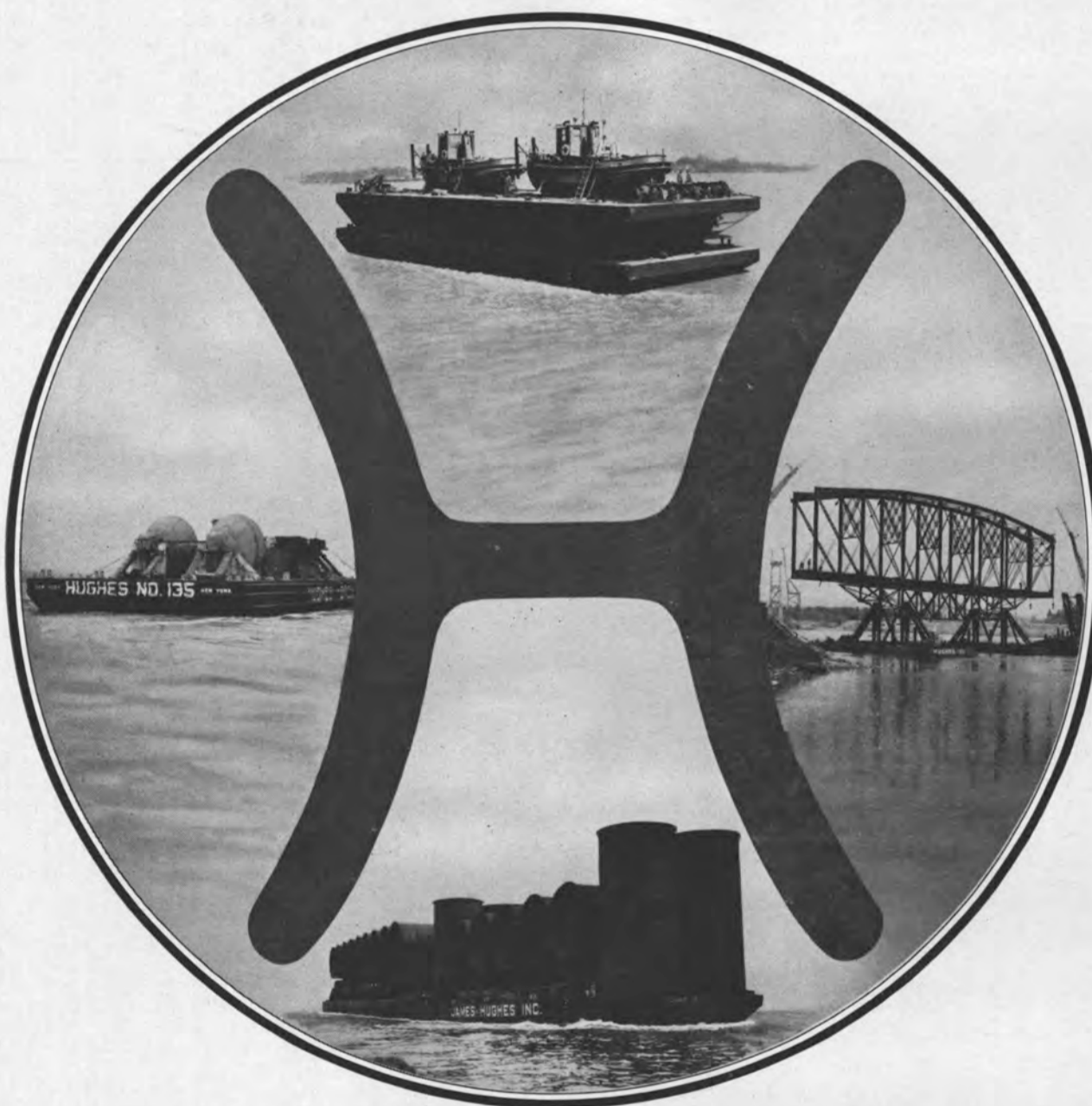
Mr. Fiske came to Moore-McCormack Lines from Robin Line in 1957 as assistant vice-president. He was elected vice-president in 1960 and executive vice-president and director in 1962.

A native New Yorker, Mr. Fiske attended Pelham High School and was graduated from Colgate University in 1934. In 1962, he was a graduate of the Advanced Management Program of the Harvard University Graduate School of Business Management.

Mr. Fiske's clubs include the New York Athletic Club, Weeburn Country Club and the Newcomen Society. He is a governor of the India House. He also belongs to the Whitehall Club and is a member of the Sons of the American Revolution.

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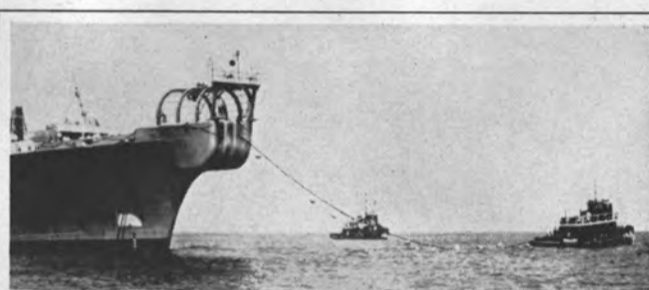
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Merchant Ships For The Seventies

Bath Iron Works And Newport News Shipbuilding Present In New York Results Of Cargo Studies And Designs For Standard Ships To Be Built During The Next 10 Years. Basic Ship Designs With Many Options For Flexibility Proposed.



ON THE COVER: Pictured left to right are: **Richard W. Thorpe Jr.**, CMX program manager, Bath Iron Works Corporation; **J.F. Goodrich**, president, Bath Iron Works Corporation; **Joseph D. Deal Jr.**, CMX program manager, Newport News Shipbuilding and Dry Dock Company; **Andrew E. Gibson**, Maritime Administrator, and **L.C. Ackerman**, president, Newport News Shipbuilding and Dry Dock Company.

On May 21 the Maritime Administration unveiled at a special presentation in the Biltmore Hotel in New York City, two series of standard ships designed to fill the nation's commercial shipping needs in the 1970s. Before an audience of about 600 marine people, Bath Iron Works Corporation and Newport News Shipbuilding and Dry Dock Company presented in summary form the results of six months of study, research and design efforts performed under \$500,000 Maritime Administration contracts.

These two parallel contracts were placed to determine the trade requirements of the United States during the next 12 years and to develop, based on these trade forecasts, the composition of a fleet of 300 new ships to be built during this period at a cost of \$3 billion. These contracts are the first part of President Nixon's program to build 30 ships a year. A further re-

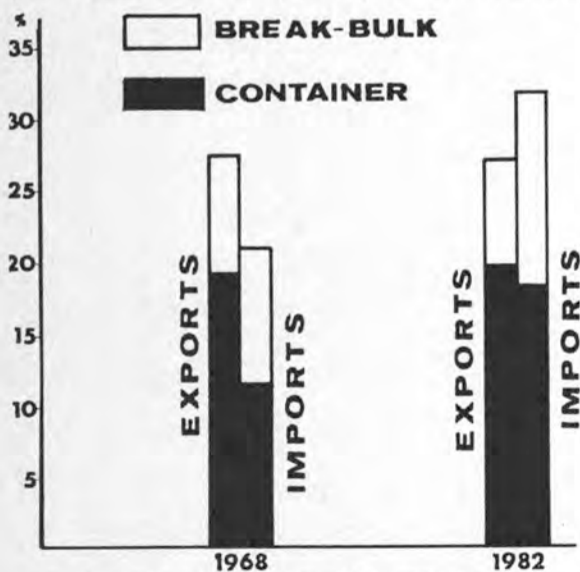


Figure 1—Bath's forecast for liner cargoes.

quirement of these contracts was to determine how the government aid to shipbuilding could be reduced over this period from about 50 percent to 35 percent. Based on this latter requirement, both contractors proposed ship production plans which involved the construction of new shipyards.

For this project, known as the CMX project, Bath Iron Works formed a team of companies consisting of Booz Allen Applied Research Inc., to study bulk cargo movements and make fleet analyses; J.J. Henry Co., Inc., to prepare the preliminary ship designs; Harbridge House, to make management analyses; Dunlap & Associates, to develop cost and price analyses, and Bechtel Corporation, to design a new shipyard.

Newport News Shipbuilding and Dry Dock organized a team consisting of Arthur D. Little, Inc. for trade forecasting; Hydronautics, Inc. for ship and fleet optimization; George G. Sharp, Inc. for ship optimization and trade-off studies, and Western Gear Corporation for production planning.

Trade Forecasts

Since this program was sponsored by the Maritime Administration, no domestic trades were to be included in the trade forecasts. However, it was necessary for each contractor to make certain assumptions. Bath Iron Works broke the trade down into liner and contract categories. This firm forecast that by 1982 the total cargo movement would be 620 million tons per year for an overall growth of 50 percent from 1968. These cargoes would be divided as shown in Figures 1 and 2. Its estimates showed that liner traffic by 1982 would constitute 10 percent of the total cargo in tonnage and 75 percent in dollar value.

Newport News Shipbuilding used a slightly different breakdown as shown in Figure 3 and Table 1. This firm's forecast gave a total of 580 million tons of cargo moving in 1982.

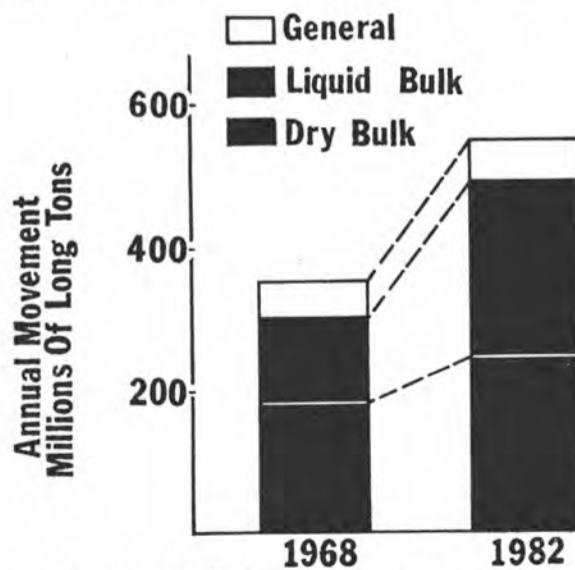


Figure 2—Bath's forecast for contract cargoes.

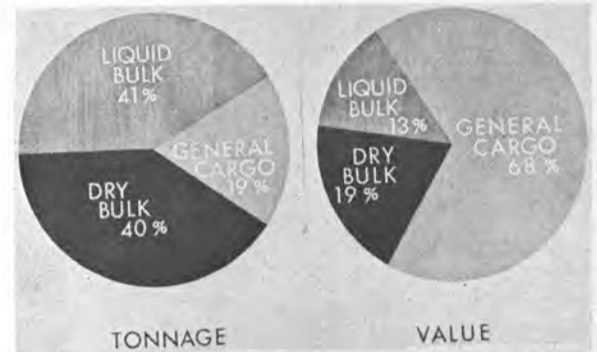


Figure 3—Newport News' forecast for 1982 cargoes.

Table 1—Newport News' Forecast of 1982 Cargoes
(in millions of long tons)

	Imports	Exports	Total
General Cargo	58	53	111
Dry Bulk	81	149	230
Liquid Bulk	209	30	239
TOTAL	348	232	580

Ship Selection

The methodology used by the two firms was similar. A large number of candidate ships were selected. These were studied on first cost and operating cost bases together with general optimization to specific trade routes and cargoes. By extensive computer runs, it was possible to narrow down the ship types to a manageable few ships. These ship types were then reviewed with individual ship operators and a special committee appointed by the American Institute of Shipping. On this basis, it was possible to temper theoretical results with practical knowledge.

Both firms arrived at nearly the same types and sizes of ships required to carry U.S. cargoes. Both firms also looked into special types of ships such as barge carriers and LNG vessels and determined that while there was a need for these ships, they were too special to be classed as standard ships.

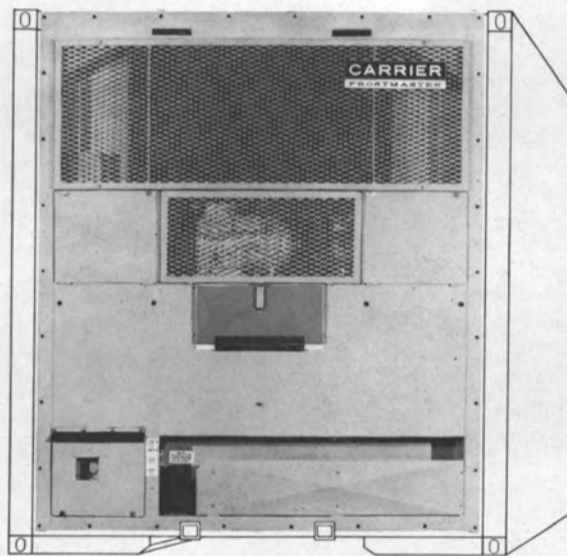
Ship Types—Newport News

Newport News Shipbuilding's fleet optimization process derived the need for: bulk carriers suitable for transit through the Panama Canal, general cargo ships for containerized/unitized cargoes, tankers suitable for entry into major U.S. ports, and multi-purpose ships for the expanding neo-bulk trades. To meet these four needs, the firm developed four basic ship designs, all of which are suitable for modifying to suit any owner's specific needs. These four basic ships are shown in Figures 4, 5, 6 and 7.

The design of an ore/bulk/oil carrier was developed and designated the Crescent Class. The ship is designed with a 24,000-shp steam turbine propulsion plant operating with two boilers, which provides a sustained sea speed of 17.3 knots. It has a cargo deadweight of 69,520 tons.

(Continued on page 11)

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Merchant Ships For The Seventies—

(Continued from page 9)

Two hull options are offered. Using the same bow and stern but a new midbody with the same molded dimensions provides a 72,000-dwt tanker. Another alternate is to provide a design strictly for dry bulk trade. In addition to the hull options, there are various machinery options including a 24,000-shp industrial gas turbine.

The estimated cost of this ship in lots of ten is \$21.4 million.

A containership, the Vanguard Class, provides for the carriage of 1,540 twenty-foot containers. The ship is designed with a single-screw 35,000-shp steam-turbine propulsion plant, which gives a service speed of 23.3 knots.

Two options are provided utilizing the bow and stern sections and modifying the arrangement of the cargo hold. Conversion of Holds 3, 4, and 5 into a new midbody section results in a combination roll-on/roll-off/containership. With modifications to Holds 1, 2 and 6, a break-bulk/containership option is available.

Various options are available for outfitting and machinery including a lower-powered propulsion plant.

The estimated cost of this ship in lots of ten is \$19.0 million.

The third ship offered is a 120,000-dwt tanker, the Voyager Class. It is powered by a 24,000-shp steam-turbine propulsion plant which gives a sea speed of about 15.5 knots.

It can also be built as an ore/oil carrier and with machinery variations.

The estimated cost of this ship in lots of ten is \$25.0 million.

The Nomad Class, the fourth basic ship, is a modest sized multi-purpose ship which can carry about 27,000 tons of cargo. The basic ship is proposed with a 12,500-shp industrial gas-turbine power plant geared to a controllable reversible pitch propeller. This plant gives a speed of about 16.6 knots.

Two options provide for a general cargo ship or a tanker.

The estimated cost of this ship in lots of ten is \$12.0 million.

Ship Types—Bath Iron Works

To satisfy the liner and contract trades, Bath Iron Works showed four basic ship designs but divided into six classes named after New England rivers. From these, a total of 22 options are offered. The basic Bath Iron Works designs are shown in Figures 8, 9, 10, and 11.

The Penobscot Class, large containership, can carry 1,468 twenty-foot containers. It is powered by a 40,000-shp steam turbine plant which provides a service speed of 23.4 knots.

Two options are available for this class: it can be lengthened so that a total of 1,636 containers can be carried, or it can have a stern ramp installed for carrying roll-on/roll-off cargo on the weather deck.

The estimated cost of this ship in lots of 20 is \$18.8 million.

The second ship proposed is also a containership, called the Merrimac Class. It was designed in conjunction with a break-bulk design, the Allagash Class. Either ship is convertible to the other without structural modifications to the hull. The Merrimac Class can carry 666 twenty-foot containers. It is a self-contained ship with its own container-handling equipment. It is designed with a single-boiler 24,000-shp steam-turbine power plant which will give a service speed of 21.3 knots. Space is provided for the installation of two boilers if desired.

The estimated cost of this ship in lots of 20 is \$16.2 million. As a break-bulk vessel, the estimated cost is \$16.4 million.

(Continued on page 13)

Newport News Shipbuilding's Basic Ship Designs

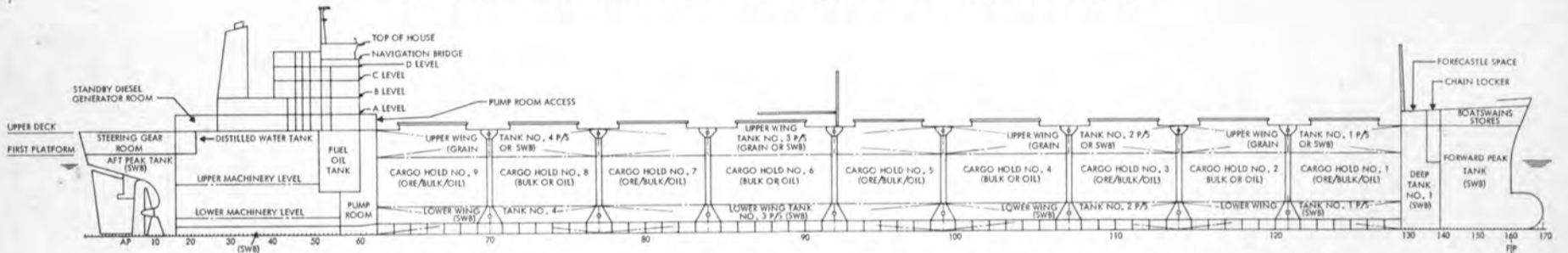


Figure 4—Crescent Class (OBO): Length bet. perpendiculars-827 feet; beam-106 feet; depth-60 feet; draft-44 feet 3 inches; cargo deadweight-69,520 tons, speed-17.3 knots.

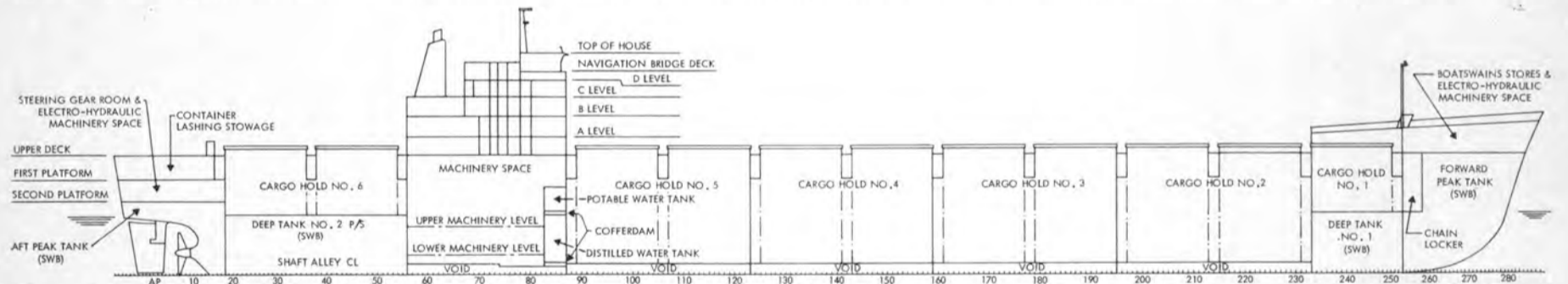


Figure 5—Vanguard Class (containership): Length bet. perpendiculars-685 feet; beam-103 feet; depth-60 feet; draft-29 feet 6 inches; containers-1,540; speed-23.3 knots.

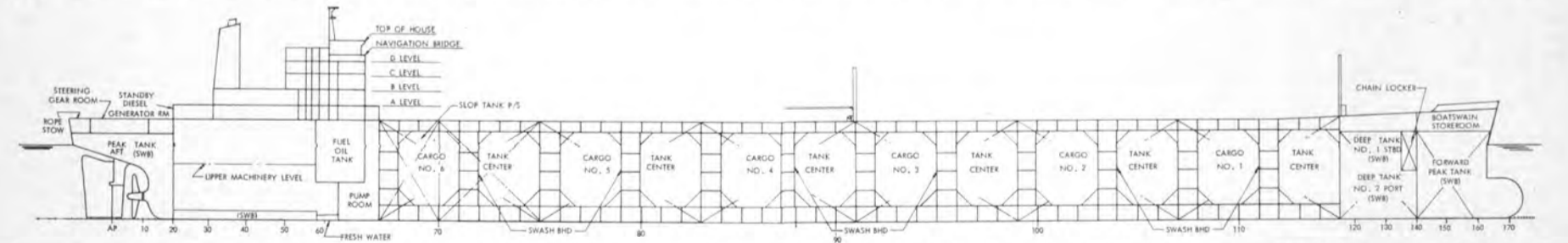


Figure 6—Voyager Class (tanker): Length bet. perpendiculars-900 feet; beam-147 feet 6 inches; depth-63 feet 6 in.; draft-48 feet 6 in.; cargo-120,200 dwt; speed-15.5 knots.

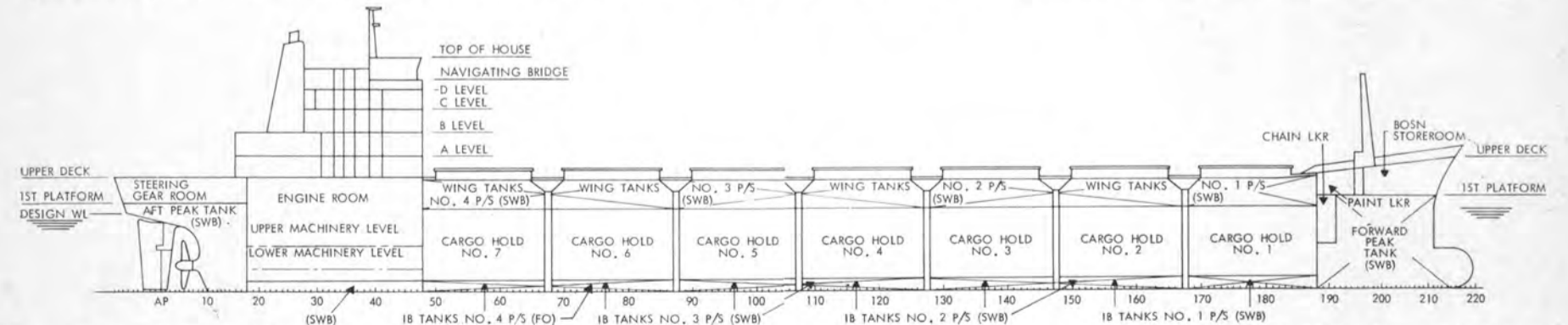


Figure 7—Nomad Class (multi-purpose): Length bet. perpendiculars-547 feet; beam-87 feet; depth-48 feet; draft 35 feet 3 inches; cargo-26,700 dwt; speed-16.6 knots.

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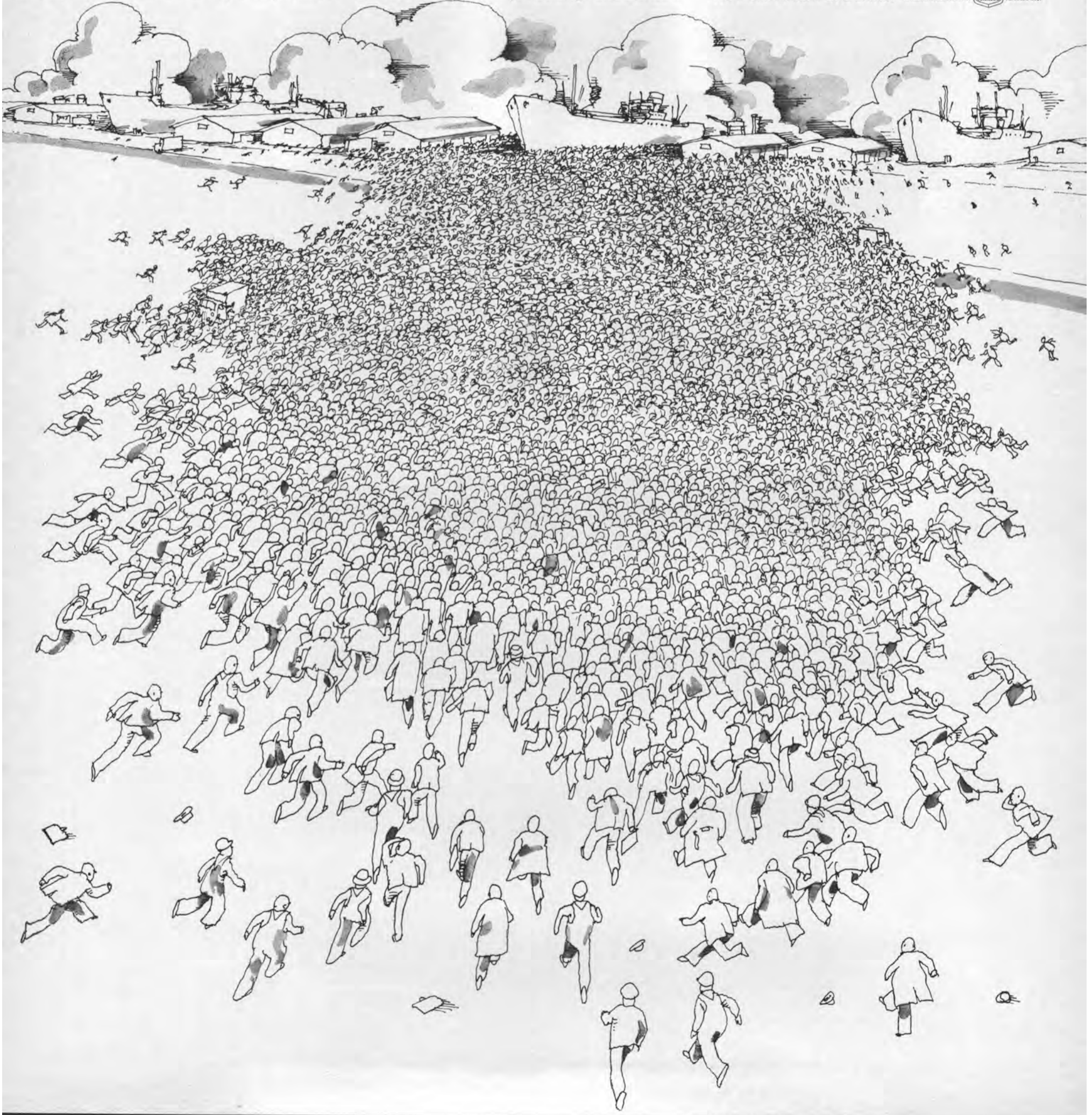
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Merchant Ships For The Seventies—

(Continued from page 11)

Bath Iron Works feels that the combination ship, having both break-bulk and container capacity, will prove very useful for trades with developing countries.

The Bath team proposed an ore/bulk/oil vessel, Saco Class, with a cargo capacity of 71,500 tons. Powered by a single-boiler 24,000-shp steam plant, a service speed of 17 knots was predicted.

An option with this vessel is to have it produced as an ore/bulk ship. It can be lengthened by about 100 feet for greater capacity.

A variation of the Saco Class ship is the Machias Class tanker with a deadweight capac-

ity of 75,000 tons. This class has the same bow and stern as the OBO ship but a tanker mid-body.

The estimated price in lots of 20 of the Saco Class is \$19.8 million and for the Machias Class tanker is \$17.9 million.

A ship that can go anywhere, including the St. Lawrence Seaway, is the fourth basic ship, the Kennebec Class. It is a diesel-powered ship designed for unattended operation, with a steam plant or gas-turbine plant as alternatives which has a service speed of over 16 knots. Flexibility was the key thought in the design of this 21,000-dwt ship. It can be used for dry bulk cargoes, containers, lumber, break-bulk, automobiles, etc. A wide variation in cargo gear is offered to suit most trades.

The estimated cost of the basic ship is \$11.9 million.

Standardization

In order to reduce first costs, both design teams made many features standard for several ships. The bows and sterns on many Newport News Shipbuilding's ships are the same, power plants are duplicated and the deck house is standard for all ships.

Bath Iron Works' design also uses the same bow and stern on several ships and the deck house is standard on all but the Kennebec Class. Power plants are interchangeable on many ships.

New Shipyards

To provide the ships that are needed at the prices quoted, both shipyards proposed new facilities designed for the maximum of automation. Newport News Shipbuilding estimated (Continued on next page)

Bath Iron Works Basic Ship Designs

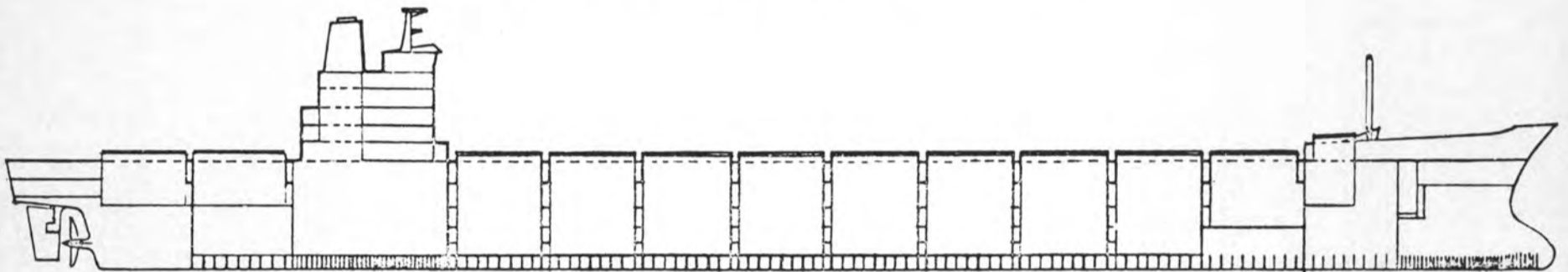


Figure 8—Penobscot Class (containership): Length bet. perpendiculars-720 feet; beam-102 feet; depth 54 feet 9 inches; draft 31 feet 6 inches; containers-1,468; speed-23.4 knots.

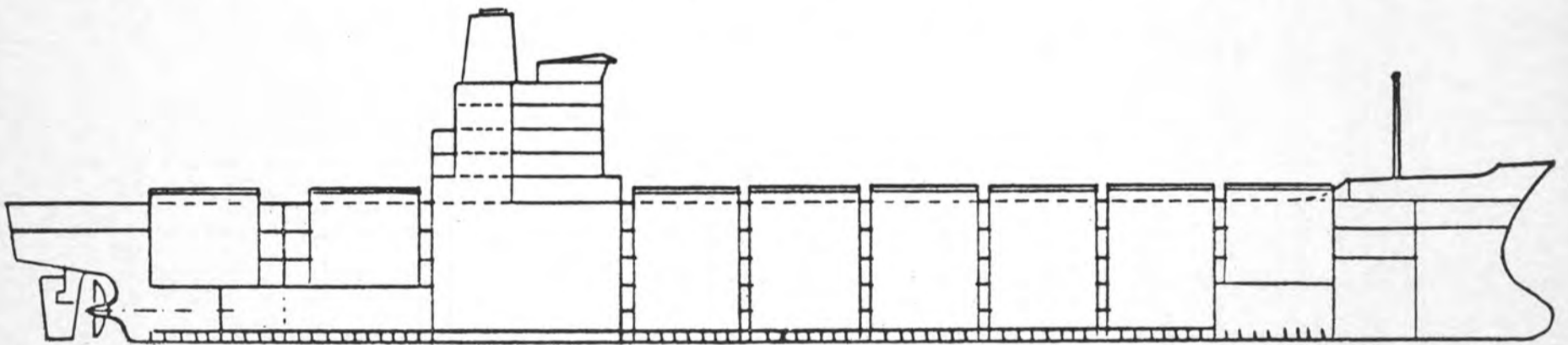


Figure 9—Merrimac Class (containership): Length bet. perpendiculars-550 feet; beam-86 feet; depth 54 feet 9 inches; draft 31 feet 6 inches; containers-666; speed-21 1/4 knots.

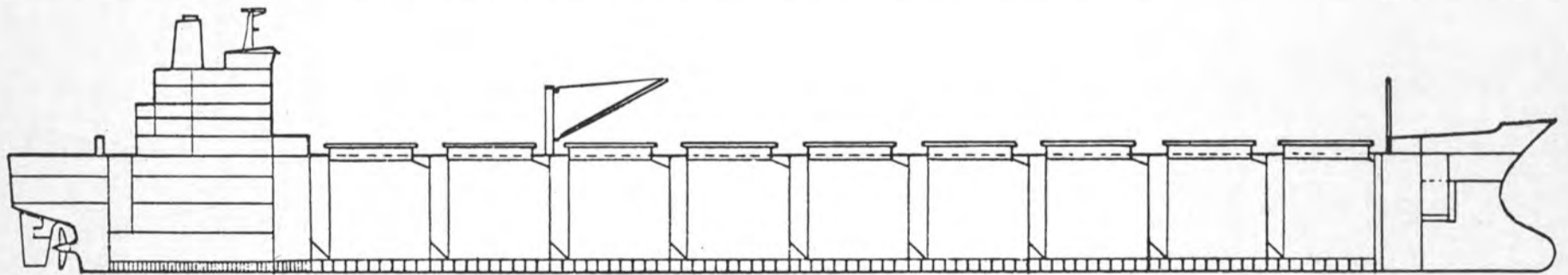


Figure 10—Saco Class (OBO): Length bet. perpendiculars-775 feet; beam-105 feet 6 inches; depth-62 feet 6 inches; draft-45 feet 8 in.; deadweight-71,550 tons; speed-17 knots.

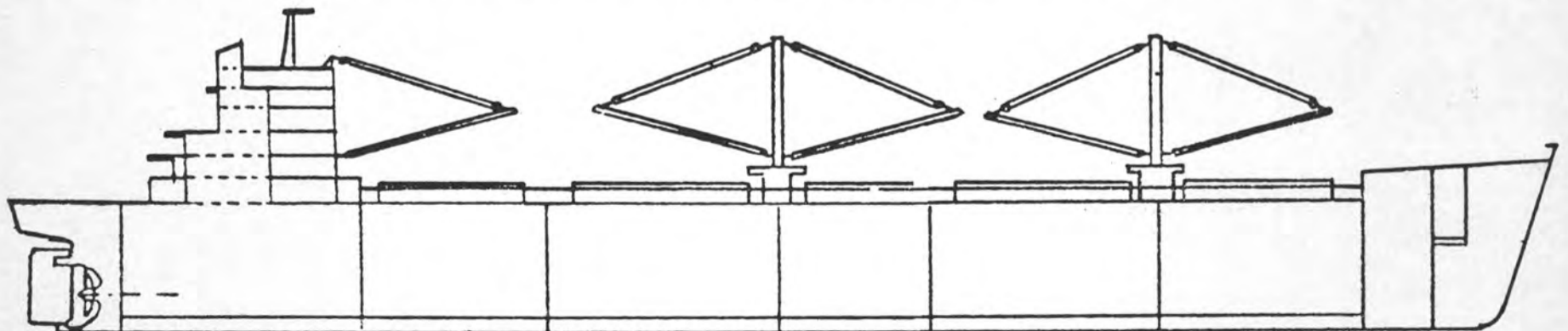


Figure 11—Kennebec Class (multi-purpose): Length bet. perpendiculars-541 feet; beam-75 feet; depth-45 feet; draft-32 feet 4 inches; deadweight-21,280 tons; speed-16 knots.

Merchant Ships For The Seventies—

(Continued from page 13)

that the cost of the new facility would approximate \$125,000,000. **L.C. Ackerman**, president, declined to state where the new facility would be built.

Bath Iron Works estimated the cost of the new shipyard at \$97 million dollars. **J. Goodrich**, president, stated that the yard would undoubtedly be built on land adjoining the present yard.

Joseph D. Deal Jr., manager of advanced systems, presented the Newport News Shipbuilding report. **Richard W. Thorpe Jr.**, CMX project manager, presented the Bath Iron Works proposal.

What Is Next?

Andrew Gibson, Maritime Administrator, presided over the presentation of these designs. He advised that the marine industry would be requested to review the designs and submit comments together with their interest in any design. The Maritime Administration would then have contract plans and specifications prepared for those designs which appeared of interest to industry. It is hoped that by the end of this year, the Administration will be able to request bids for the construction of the first flights of ships.

Mr. **Gibson** stated that all U.S. shipyards will be given a opportunity to bid on the ships and to propose standard ships of their own design. He also advised that the enabling legislation for this program is now being considered by the Congress.

Interested parties can obtain full details on the designs and back-up studies, from the Maritime Administration in Washington, D.C.

Marine Industries Delivers Branch Lines Ltd. Tanker Designed For Arctic Waters



The 412-foot Ludger Simard is equipped with a steel belt at the waterline for winter navigation. Her stern bears the characteristic lines of an icebreaker.

Built for the account of Branch Lines Limited, the 412-foot tanker Ludger Simard was recently christened at Marine Industries Limited Shipyard in Sorel, Quebec.

This addition to the Jos Simard and the Edouard Simard now brings the tanker fleet of this Quebec company to eight vessels specialized in the transportation of petroleum and chemical products between the Atlantic Seaboard, the Great Lakes and the Northwest Territories.

Built along the same lines as the Jos Simard and the Edouard Simard, the first Canadian ships to pioneer winter navigation in the St. Lawrence River to Montreal, the Ludger Simard can sail under the most rigorous conditions in the Atlantic and the Great Lakes, due to an all-welded steel hull, equipped with a steel belt at the waterline.

This tanker of 7,000 tons can carry a total capacity of 63,000 barrels of petroleum prod-

ucts. Equipped with four steam driven pumps, each with an hourly capacity of 350 tons, the Ludger Simard carries a device, reducing to a minimum the time required to load or unload the 15 cargo tanks in the ship.

The general specifications are as follows: overall length, 412 feet 7 inches; length between perpendiculars, 388 feet; width, 52 feet; depth, 28 feet; deadweight, 7,000 tons; tank capacity, 2,835,000 gallons; propulsion power, 4,900 bhp; loaded draft, 22 feet 6 inches; speed during trials, 14 knots; complement, 28.

Sophisticated equipment installed includes an Integrated Ships Instrumentation System for monitoring the main machinery components (it is the first such installation on a Canadian ship). This ISIS, a data logging system, prints out pertinent information at requested intervals on the main engine—the ship's service generators, steering gear, boilers, shafting, etc.—enabling the ship's engineer to maintain close surveillance on all the complex machinery supplied for a vessel of this size.

The accommodation located aft and built for a complement of 28 has been fully furnished with modern, up-to-date equipment chosen with ease-of-maintenance and safety factors in mind. The vessel complies in every way with the International Convention for the Safety of Life at Sea—1960.

The Ludger Simard, the pride of the fleet, will be under the command of two very deserving and trustworthy officers, employed by Branch Lines for a number of years: Capt. **J. Robert Gagnon** and Chief Engineer **Roland J. Peloquin**.

Construction of the tanker was started in July 1969 at the Sorel Yard, where newly installed facilities are allowing a continuous improvement of productivity and a reduction of production costs.

Monsignor **Jean-Charles Leclaire**, pastor of the Parish of Saint-Pierre de Sorel blessed the ship. **Mrs. Ludger Simard**, wife of the late president of Marine Industries Limited and of Sorel Steel Limited, acted as sponsor for the christening ceremony.

Due to its recent expansion program, resulting from modernization of its facilities and new production methods, Marine Industries Limited has on its order book a number of contracts including the following: the construction of the first two of four naval escort helicopter vessels ordered by the Department of National Defense; the fabrication of 1,600 railway cars; the fabrication of five turbines and generators for the central power stations at Churchill Falls and eight turbines and generators for Manic V, as well as four synchronous condensers which will stabilize the power load on the 735,000-volt lines between Churchill Falls, Manic, Quebec and Montreal.

Barges—



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Our business is barges and we design, build and deliver to suit you.

Stock designs or custom designs, single units or a fleet—Hillman builds 'em.

The quality is tops, your deadlines will be met and the price will please you. Let us tackle your next barge assignment.

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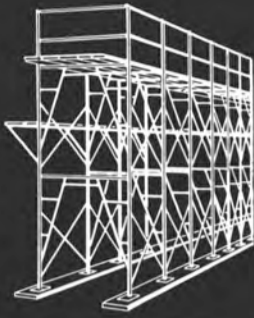
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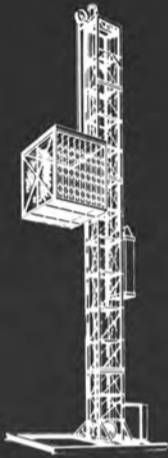
**"Trouble Saver"[®]
Sectional Steel Scaffolding**

Pre-fabricated frames of several heights and 2', 3' and 5' widths are quickly joined by pivoted diagonal braces to provide spacing between frames of 5', 6', 7' and 10'. No tools needed for erection or dismantling, so you save on labor costs. For fixed or rolling scaffolds.



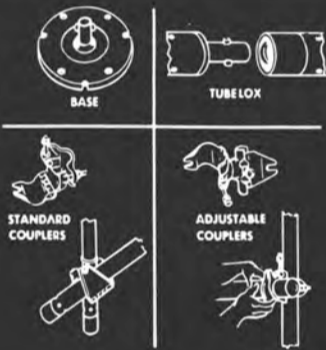
PE-500T Workmen's Hoist

This rugged, economical hoist can take 30 men topside at speeds up to 190 fpm. No time wasted in climbing . . . no fatigue from climbing. Each 6'8" section is self-contained, complete in one piece and requires only 4 bolts for installation. Inside cage dimension: 9'4" x 5'4".



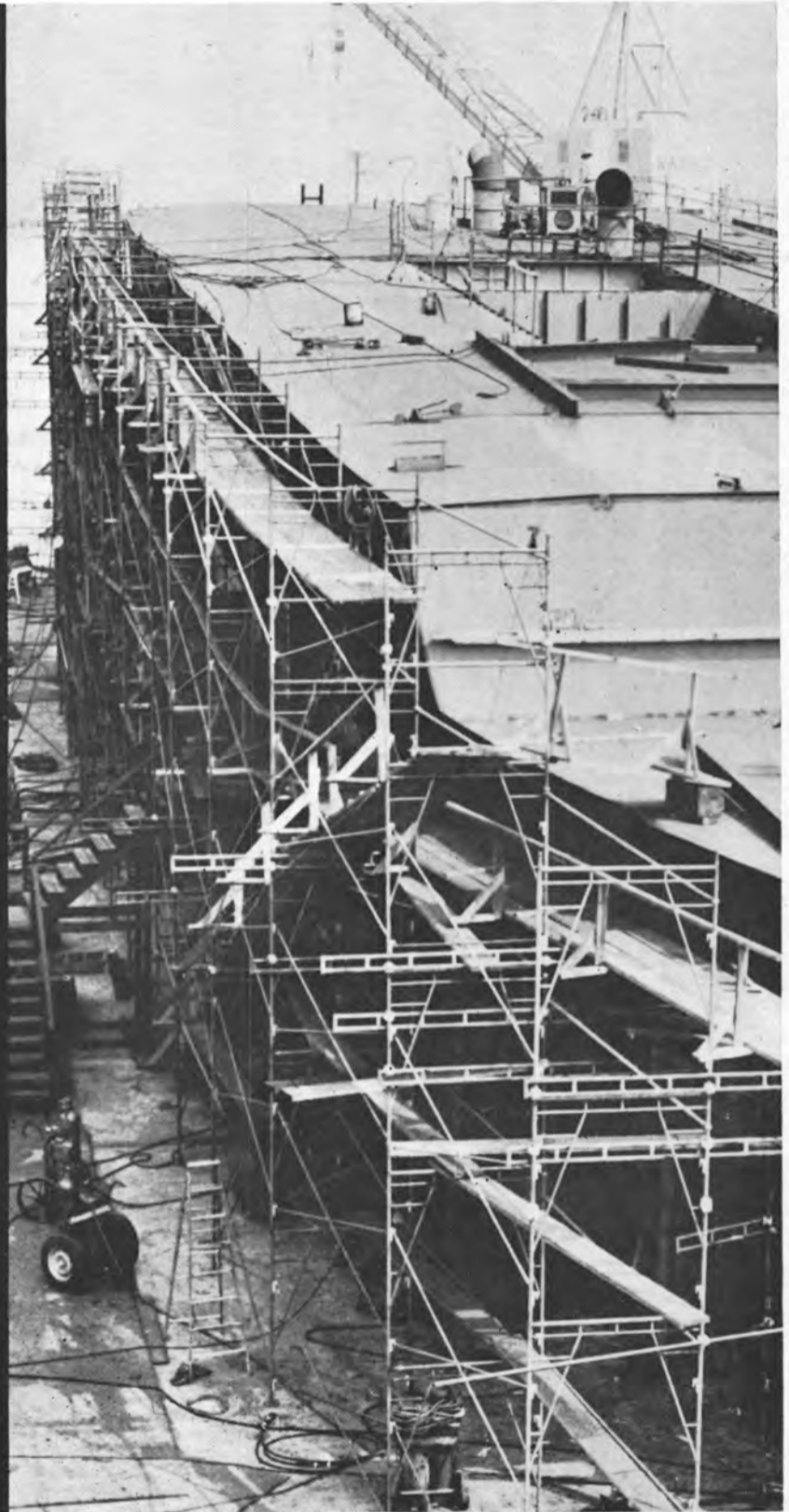
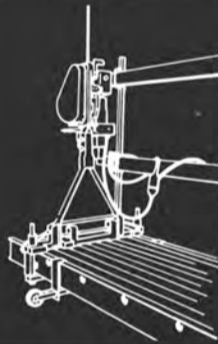
"TubeLox"[®] Scaffolding

With "TubeLox" Scaffolding you can erect work platforms around any vessel using just four basic parts: 2" or 2½" interlocking tubular members from 6' to 20'; right angle couplers; couplers for angles other than 90°; and base plates. All components are made in both steel and aluminum. Adaptable for a variety of shipyard jobs.



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"Cable Climber"[®] Scaffolds make any job — short or tall—quicker and easier. These easily-handled and installed scaffolds climb any height of cable at a constant speed with constant lifting power. Two types — electric or air powered — can be installed on PSCo. Swing Scaffold platforms, one-man work baskets, bosun's chairs or specially-built platforms.



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Patent Scaffolding Co. is a leading supplier of scaffolding and related products for shipbuilding and maintenance. PSCo. has 30 direct factory branch offices in all major U.S. cities, including all shipbuilding and repair centers. Above are four of the many fine PSCo. products designed to the highest safety and quality standards. For more specs or data, contact your nearest PSCo. distributor or

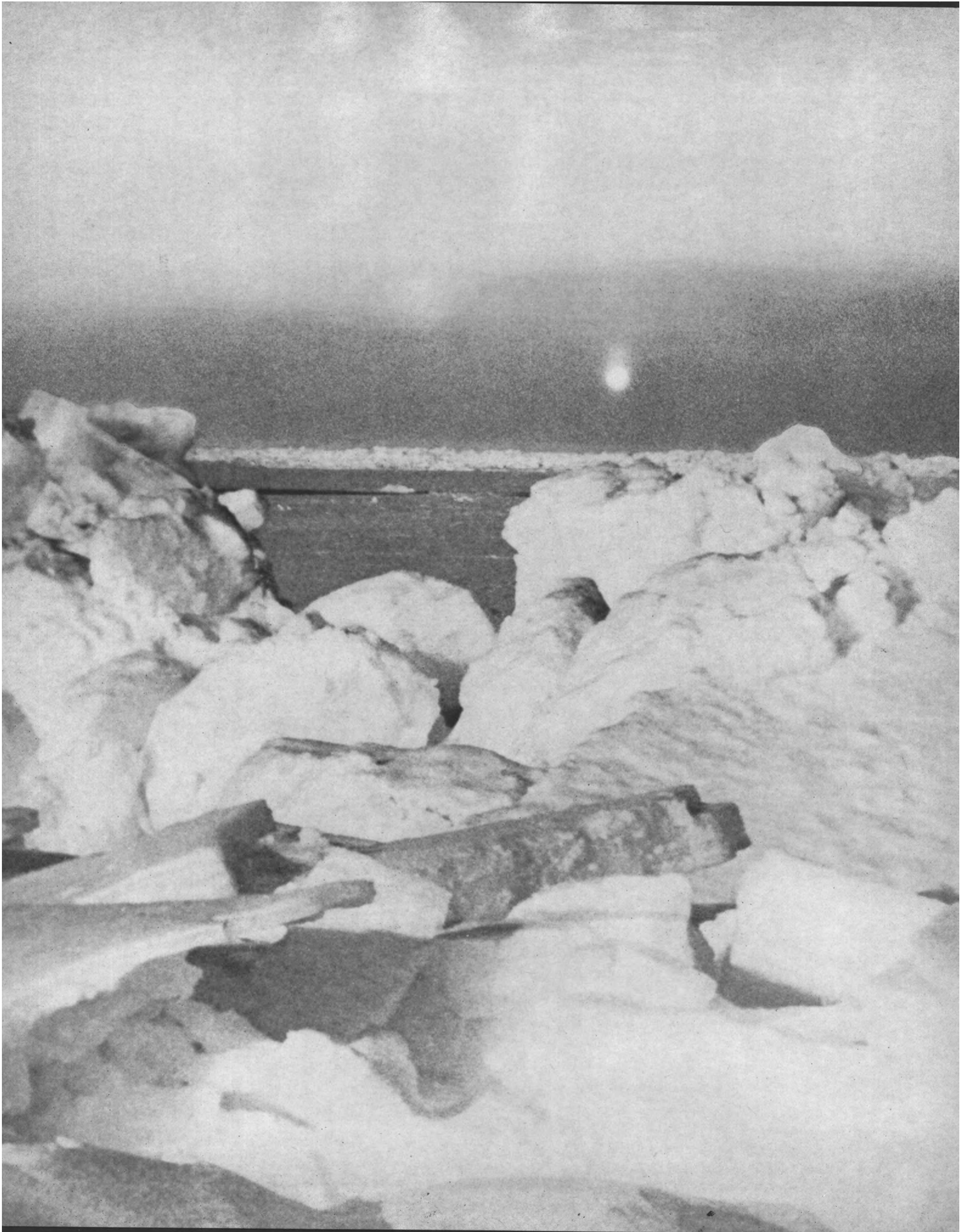
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The problem here isn't finding the oil, it's getting the oil out.

There may be more oil up in the Arctic than anywhere else in the Western Hemisphere.

Exploring and drilling for it in sub-zero temperatures is tough enough. Having to force your way through yards-thick ice or lay down miles of pipeline in frozen tundra doesn't make things any easier.

Any way you look at it, getting crude oil out of the North is a matter of fighting the arctic weather.

Any way but one.

With a nuclear-powered submarine. We've built 37 of them since we launched the *Nautilus* in 1954. Our new concept is for a submarine tanker 900 feet long. It could economically and efficiently travel from the Arctic to ice-free North Atlantic ports the way *Nautilus* and other nuclear submarines proved it could be done. Under the ice.

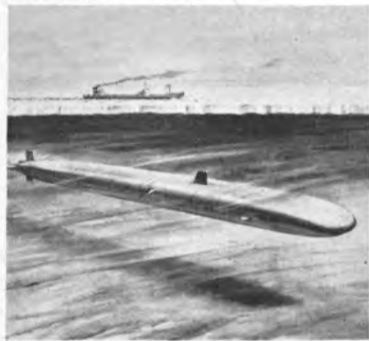
It could transport oil the year round, at a sustained speed underwater, where bad weather and arctic surface ice conditions don't exist. It could even load its 170,000-ton cargo underwater. Larger

submarine tankers carrying up to 300,000 tons of oil could be built from the same design.

It's another challenging example of how we can put technology to work solving problems from the bottom of the sea to outer space...and a good bit in between.

GENERAL DYNAMICS

1 Rockefeller Plaza, New York, N.Y. 10020



Propeller Club Port Of New York Elects Officers

O. John Weber, president of United States Hydrofoils Co., Inc., was reelected for his third term as president of the Propeller Club of the United States, Port of New York. His reelection took place at the annual meeting of the membership on Monday, May 11, 1970 at the Downtown Athletic Club.

At the same time Douglas Mansell, general manager Hoboken Yard, Bethlehem Steel Corporation, was reelected vice-president of the 47-year-old marine organization. Warner Lumbard was reelected secretary-treasurer.

Thomas S. Chapman of Bethlehem Steel Corporation was elected a member of the board of governors for a one-year term; and Joseph G. Barkan, executive vice-president of American Export Isbrandtsen

Lines, Inc., was elected a governor for a two-year term.

Thomas J. Smith, president of Farrell Lines, Inc., was elected to the board of governors for a three year term; and Charles L. Dutoit of J.J. Henry Company, Inc., J. Ward O'Neill of Haight, Gardner, Poor & Havens, and Richard C. Schnepf of Mobil Oil Corporation were reelected governors for a three year term.

Future plans of the Propeller

Club, Port of New York, call for the hosting of the American Merchant Marine Conference, and the National Propeller Club Convention in New York in 1974.

Nashville Bridge Elects Wesley A. King VP



Wesley A. King

The board of directors of Nashville Bridge Company, Nashville, Tenn., has announced the election of Wesley A. King as vice-president. Mr. King continues as chief engineer, a position he has held since 1969. He has served his company in various engineering responsibilities since 1957, and in 1959 he was the project engineer on the Saturn Gantry.

Mr. King, who is a native of Chattanooga, Tenn., received his B.S. degree in civil engineering at the University of Kentucky and did graduate work at the University of Tennessee. He served in the European theatre of World War II with the United States Army Corps of Engineers.

Mr. King's professional affiliations include: Tennessee Society of Professional Engineers; American Welding Society, Nashville, Tenn. (past president); Society American Military Engineers; A.I.-S.C. Bridge Committee (member); A.I.S.C. Sub-Committee on Towers (member); Tau Beta Pi Honorary Fraternity. He is a licensed professional engineer in the states of Tennessee and Mississippi, and is listed in Marquis' Who's Who in South and Southwest.

Nashville Bridge Company is a subsidiary of The American Ship Building Co., Inc. of Lorain, Ohio.

Newport News Awarded \$10-Million Contract To Jumboize Tanker

A \$10-million contract to jumboize the tanker Baltimore Trader for American Trading & Production Company, New York, has been awarded to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

The tanker will be increased in length from 575 feet to 800 feet. Her present capacity of 190,000 barrels of oil will be increased more than double to 460,000 barrels.

A new 600-foot forebody for the tanker will be constructed by Newport News and joined to the existing stern structure.

Keel-laying of the new section is scheduled for this Fall with delivery scheduled for the Summer of 1971.

Meet your NEW OMEGA Navigation Receiver



DYNELL MODEL 200

FEATURES

- ◆ Positive identification of transmitter stations
- ◆ Simple and rapid synchronization
- ◆ Simultaneously tracks up to eight (8) OMEGA stations
- ◆ Rapid availability of position data for any selected station pair
- ◆ Simultaneous reception of a second frequency for resolving position ambiguity
- ◆ Continuously updated digital readout
- ◆ Thoroughly reliable — all solid state
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- ◆ Dual channel recorder
- ◆ Antenna and coupler are provided with each receiver
- ◆ Bench or 19" rack mounted

PHYSICAL DETAILS

Width	16¾"	Height	8¾"
Depth	17⅞"	Weight	53 lbs

The OMEGA navigation system, currently under the direction of the U. S. Navy, will provide free world-wide navigation to users possessing OMEGA receivers. This system will be capable of providing positional fixes with an accuracy of 1-2 miles anywhere on earth. Having served the U. S. Navy for ten years, in the design and manufacture of shipboard equipment, Dynell now serves the commercial community with the same degree of pride and professionalism. The Dynell Model #200 OMEGA Navigation Receiver has been designed for high reliability and extreme simplicity of operation. Extensive research has been done to identify user needs and requirements.

Price FOB Melville, N. Y. excluding Federal and State taxes:

Single frequency receivers	\$5900.00
Dual frequency receivers	\$6700.00

prices subject to change without notice



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SNAME Awards Three Graduate Scholarships

The award of three graduate scholarships for the 1970-71 academic year has been announced by The Society of Naval Architects and Marine Engineers, now in its 77th year of continuous activity. The recipients were selected from a total of 25 applicants by the Society's scholarship committee, chaired by Frank L. Pavlik, and

approved at a recent meeting of the executive committee of the Society.

The first recipient is **James Michael Patell** who will study ocean engineering at the Massachusetts Institute of Technology and who is also designated as the Society's Wilbur N. Landers' Scholar for 1970.

The recipient of the second award is **Steven Gustave Buttner** who plans advanced study in naval architecture at the Massachusetts

Institute of Technology. He is a graduate of Webb with a B.S.E. in naval architecture.

The recipient of the third award is **Michael Owen Poynor** who will study marine engineering at the University of Michigan.

Named as alternates, in order, were: **Joseph Krulikowski**; **Thomas J. Sherman**; **Paul D. Chapman**; and **James M. McCarthy**.

The competition for the scholarships was nationwide and open to

all who could qualify. The scholarships committee of the Society carefully studied the merits of each applicant. The winners were selected on the basis of character, leadership, and general promise for a future in the marine industry, as well as for scholastic ability and the desire to pursue advanced study. The total monetary value of the three graduate scholarships is \$13,450. Included in each award is the tuition fee plus a living expense stipend of \$2,100.

In addition to the above scholarships for graduate study, the Society is continuing its program of Undergraduate Scholarship Awards started 12 years ago. This undergraduate plan is now maintained with scholarship grants at the Massachusetts Institute of Technology, the University of Michigan, and the University of California at Berkeley. Under this program it is anticipated that a total of 10 undergraduates will each receive \$1,000 during the 1970-71 academic year.

Interested high school and preparatory school students should inquire directly from these three colleges and not with the Society.

The basic objective of the undergraduate scholarship program is to encourage new men to enter the maritime industry, particularly in the technical fields of naval architecture and marine engineering.

The Society is again making an annual grant to Webb Institute of Naval Architecture, Glen Cove, N.Y., to assist in training young men at this specialty school for a future in the maritime industry.

We do a rush job everytime the Overseas Audrey turns around.



Vital problem for any tanker in port: how fast can the cargo be unloaded? To meet tight turnaround schedules while keeping costs in line, builders of the Overseas Audrey chose four Worthington 8LNS main cargo pumps.

The 37,000-dwt tanker Audrey and her sister ships, Overseas Alice and Overseas Vivian, were built at Bethlehem Steel Corporation's Sparrows Point Shipyard and are operated by Maritime Overseas Corporation. For each vessel, Worthington supplied four main cargo pumps

with their gears and turbines, as well as stripping-pump turbines and an instrument-air compressor.

Larger main cargo pumps (type LNS) in 14" to 16" sizes, with capacities to 26,000 USGPM, have become standards for the largest tankers now being built.

Are you planning a new tanker? Worthington can help you build in fast turnaround, too. Worthington Corporation, Dept. 106-92, Harrison, New Jersey 07029.

WORTHINGTON



Incres Line Names Miguel A. Rondina VP



Miguel A. Rondina

Incres Line, New York, N.Y., operators of the cruise ship m/s Victoria, has announced the appointment of **Miguel A. Rondina** as vice-president, technical and purchasing.

Mr. Rondina, who has been with Incres Line for the past four years, is a retired senior officer of the Argentine Navy where he was chief of naval material. He has had extensive experience both on shipboard and in shipyards, and is considered a specialist in steam turbines and diesel engines. He taught both subjects at the Naval Academy, and has co-authored the text book, "Marine Turbines". During his career, he was the recipient of several commendations.

The m/s Victoria maintains a year-round schedule of luxury cruises to the Caribbean, sailing from New York.

Taylor To Head New Department At Newport News



Robert N. Taylor

Newport News Shipbuilding and Drydock Company, Newport News, Va., has announced the appointment of **Robert N. Taylor** as manager of the newly established progress analysis and manpower planning department.

Mr. Taylor had served as a program manager for the company since September 1969. According to **W.F. Wilson**, vice-president for administration at the shipbuilding division of Tenneco, Inc., Mr. Taylor's new duties include developing and controlling the operations of progress analysis and manpower planning systems.

Mr. Taylor, who is a native of Wilmington, N.C., received a degree in naval architecture and marine engineering from Massachusetts Institute of Technology in 1946 and an M.B.A. degree in industrial management from the University of Pennsylvania in 1949. He served in the Naval Reserve from 1943-46, and from 1951-53, attaining the rank of lieutenant.

Before coming to Newport News, Mr. Taylor served as assistant to the president of Mathiasen's Tanker Industries, Inc., Philadelphia, Pa., from 1953-55. He was personnel manager and assistant to the vice-president for engineering at Sun Shipbuilding and Dry Dock Co. from 1966-69.

Mr. Taylor is a member of The Society of Naval Architects and Marine Engineers.

French Yard To Build LNG Tankers For Shell

Shell Oil recently ordered two 75,000 cubic meter LNG tankers from CNIM (La Seyne) Shipyards in France for transportation of liquefied natural gas between Brunei and Japan.

These tankers will be built with the Gaz-Transport Invar membrane system for the tanks, using the same technique that was successfully applied on the Polar Alaska and Arctic Tokyo built in Sweden for Phillips Petroleum and Marathon Oil, and which will also be applied on the two 120,000 cubic meter LNG tankers ordered last month from France-Gironde Shipyards in Dunkirk for El Paso Natural Gas.

Permal Gas, 7 West 57th Street, New York, N.Y. 10019 is the United States representative for Gaz-Transport, Paris.

Midland Elects Two Executives

Miles S. Chenault, president of Midland Insurance Company, New York, N.Y., has announced the election of **William F. Immen** as assistant secretary, and **John F. Milliken** to the post of vice-president.

Mr. Immen, whose insurance career spans 20 years, directs and coordinates all Midland services—

engineering, underwriting, claims—related to port accounts involved with shipping and stevedoring activities. He is a graduate of the United States Merchant Marine Academy at Kings Point, holds a master's license, and has served as a first officer on several lines before entering the insurance field.

Mr. Milliken is a vice-president and director of the Midland Casualty Insurance Company, Chicago, Ill., a wholly-owned subsidiary. He

serves the parent company as regional manager of the midwest region, is a member of the Chicago Board of Underwriters, and has served as chairman of the Workmen's Compensation Committee of the state of Illinois. He is a graduate of Yale University.

Midland Insurance Company is a multiple-line company serving industrial and commercial accounts, and is licensed in 44 states.

RUDOLPH ADDS ANOTHER PLUS. RATED CAPACITY 80 TONS



The new Rudolph floating crane (R12) handles containers with speed and efficiency. The (R12) is capable of handling bulk cargo with a 12 cu. yard bucket.

Rudolph offers another plus by maintaining the most modern floating cranes, revolving chutes, grapples and magnets for handling all types of scrap iron.

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Containership For Caribbean Operation Launched At Equitable Madisonville Shipyard



Present at the christening of the M/V Manati, left to right, are: Comdr. **Frank Williams**, vice-president, Equitable Equipment Co., Inc.; **Fred Martin**, president, Berwind Lines, Inc.; **Michael Martin**; Capt. **Neville Levy**, president, Equitable Equipment Co., Inc.; **Mrs. Fred Martin**; and **Doug Peter**, Supt., Equitable Equipment Co., Inc.

Equitable Equipment Company, Inc., New Orleans shipbuilder and manufacturer of a diversified line of marine products, has launched a 208-foot trailer/containership at its Madisonville, La., shipyards.

The new ship, the M/V Manati, was built for Berwind Lines, Inc., San Juan, Puerto Rico. It will operate among the islands of the Caribbean and between New Orleans and San Juan, ferrying overland roll/on-roll/off trailers and carrying dry and refrigerated cargo. The new ship will carry 22 eight feet by eight feet by 40 feet trailers and 18 automobiles.

The 2,250 horsepower, twin-screw M/V Manati has overall dimen-

sions of 208 feet by 53 feet and an operating draft of 10 feet six inches. The latter permits the shallow draft operation in areas inaccessible to conventional cargo and containerships.

The M/V Manati was designed and built to American Bureau of Shipping Maltese Cross A-1 Trailer Ship, Maltese Cross AMS specifications, and USCG requirements. It will carry a crew of eight men. The vessel is completely automated with full pilothouse control and monitoring systems.

The M/V Manati was christened by **Mrs. Fred Martin**, wife of the president of Berwind Lines, Inc., San Juan.



The M/V Manati, shown above being launched at the Madisonville, La. shipyards, will operate among the islands of the Caribbean and between New Orleans and San Juan.

Satellite Positioning Offers New Brochure

A new brochure, describing its Portable Satellite Positioning System, has been published by Satellite Positioning Corporation.

The portable surveying system gives precise positioning for hydrographic, geophysical, topographic and oceanographic surveys. It is ideally suited for exploration drilling, surveying for pipelines, placing surveying monuments in the desert, core sampling and bathymetry studies, underwater photography, and calibration of other positioning systems.

Continuous absolute accuracy, worldwide in all weather condi-

tions, is made possible by the system. The positions obtained are absolute geodetic and are always repeatable. Necessary software to determine position fixes from satellite data is included in the system. A computer program reduces the accumulated individual satellite fixes to obtain a single point fix for the dwell at each site.

The system is packaged for operation and shipment in weather-sealed cases with integral shock and vibration isolators. The components are packaged into separate units to facilitate portability.

The brochure features photographs of the various components of the portable positioning system, a dimensional data chart, and a

graph illustrating a statistical analysis of system accuracy and dwell time.

Copies of the brochure are available from Satellite Positioning Corporation, 7923 Burning Hills, Houston, Texas 77071, and 16033 Ventura Blvd., Encino, Calif. 91316.

Colt Industries Names Woodard To New Post In Power Systems Div.



Grant C. Woodard

The appointment of **Grant C. Woodard** as general manager, marketing services for Colt Industries' Power Systems Division, Beloit, Wis., has been announced by **Philip Wallach**, president.

In making the announcement, **Mr. Wallach** stated, "In his new assignment **Mr. Woodard** will have the entire responsibility for planning and directing the marketing service activity of our complete line of diesel, gas and dual fuel engines."

Mr. Woodard received his degree in mechanical engineering from Cornell University in 1948. He brings to this newly created position many years of experience in capital goods marketing in the United States and Canada.

From 1948 to 1966 he was employed by Cooper Bessemer Com-

pany, Mt. Vernon, Ohio and became vice-president of marketing. From 1965-66 he was president of their Canadian operation. Since 1966 he has been president and general manager of the Cooling Tower Division of Havens Steel Company, Kansas City, Mo.

Mr. Wallach also commented, "The new position will provide an expanded market research activity for the Power Systems Division in the many areas which use our equipment. The organizational expansion is aimed to take advantage of the company's increasing opportunities in the world's engine market."

Otis Gravem Joins PACECO



Otis Gravem

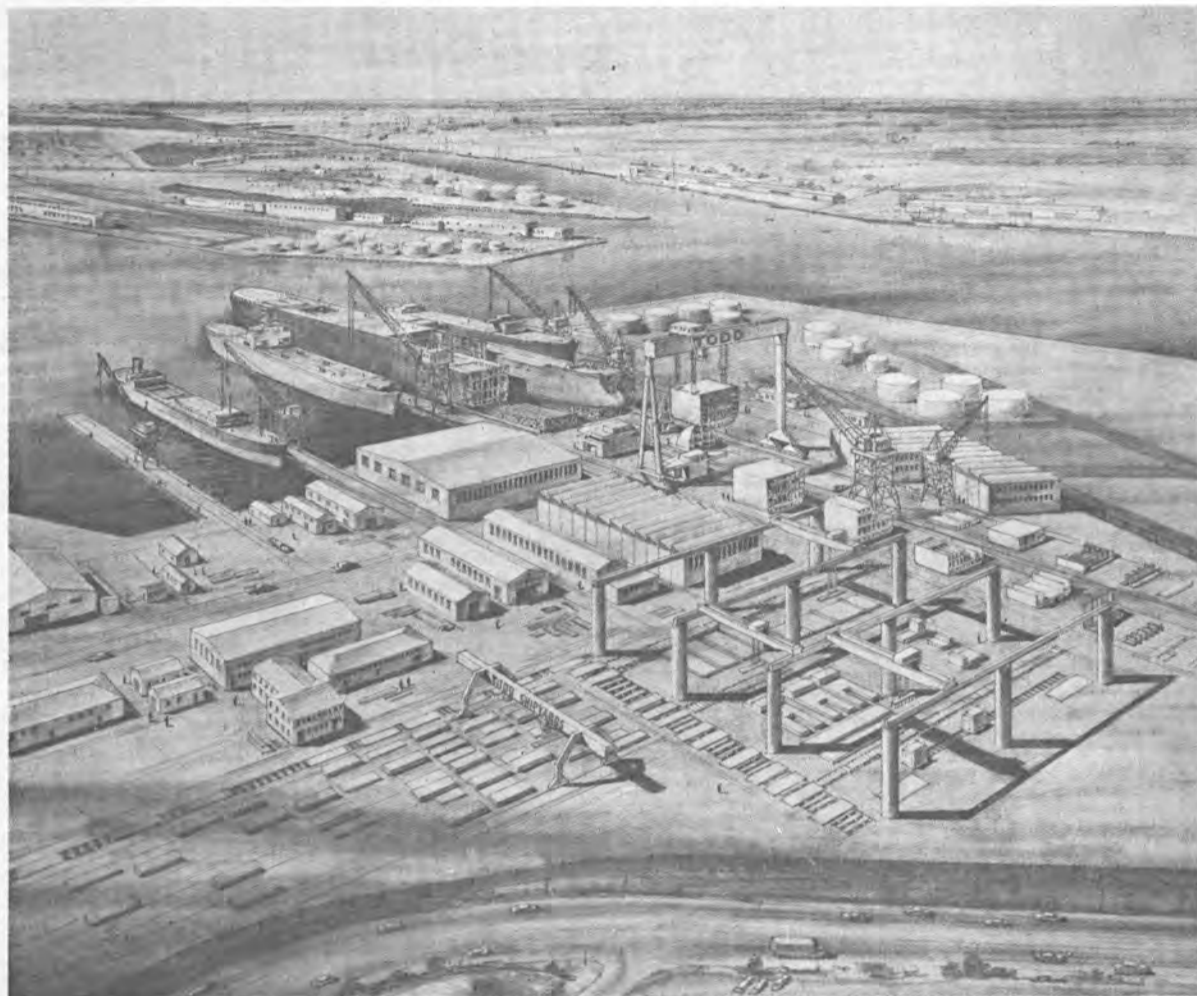
PACECO, a Division of Fruehauf Corporation, has announced the appointment of **Otis Gravem** as sales engineer for the Paceco-Mohr line of Clamshell Dredgers.

Mr. Gravem, a sales engineer in the heavy equipment field for the past ten years, was formerly a general partner in a San Francisco ship brokerage firm for 14 years. He is a retired Naval Reserve lieutenant commander, having served in World War II and in Korea.



SAN DIEGO SNAME FIELD TRIP: The San Diego Section of The Society of Naval Architects and Marine Engineers held its monthly meeting on Saturday, May 9, 1970, in the form of a field trip at Campbell Machine, Inc. After refreshments, an introduction to the U.S. Naval research ship Melville was given by **James G. Pollock**, consultant during the building of the vessel. Major problems encountered in the building and sea trials of the Melville were discussed. The discussion included problems of ship vibration and weight factors due to the large quantity of scientific equipment. After the introduction, a guided tour on board the ship, which was dry-docked at Campbell Machine, Inc., was conducted by **Mr. Pollock**. Special emphasis was given to the unique cycloid propellers and the ship's propulsion system. Pictured at the San Diego yard, left to right, are: **Klemme Jones**, Section meetings chairman; **Charles Sinclair**, chairman; **James G. Pollock**, speaker; **Lieut. Kinnear**, secretary-treasurer; and **David Rodger**, papers chairman.

New Construction Yard At San Pedro Capable Of Building 250,000-Dwt Tankers Announced By Todd Shipyards Corporation



Artist's rendering of the new shipbuilding facilities being built by Todd Shipyards at San Pedro, Calif.

Todd Shipyards Corporation has entered upon a construction program at its Los Angeles Division's San Pedro yard which will provide a new shipbuilding facility capable of meeting the challenge for new and larger U.S. ships in the 1970s and future years. The announcement was made by **J.T. Gilbride**, president.

The new San Pedro yard will incorporate the most advanced shipbuilding techniques and equipment. Emphasis will be placed on machine and equipment-intensive operations which will be computerized whenever possible.

The San Pedro yard has participated in many commercial and naval shipbuilding programs but with the advent of large tankers, containerships, bulk and special-purpose vessels, larger and more efficient facilities are required. The present yard has three shipways capable of handling ships 550 feet long with 83-foot beams. The new facility will have shipways capable of accommodating ships up to 950 feet in length with beams to 146 feet. By a slight modification, these two new shipways can be used as one so that 250,000-dwt tankers or large offshore drilling rigs can be built.

It is anticipated that the daily steel fabrication tonnage will be quadrupled through the use of steel handling equipment and high-capacity cranes. All steel entering the fabrication shop will be automatically surface prepared by shot blasting and a controlled coating process. A high-capacity magnetic yard-storage crane will operate in conjunction with a transfer-car and roller-table transport system to deliver material to high-capacity shears, rolls and steel-forming equipment.

Assembly schedules will be used to control the production of processed steel from minor subassemblies, to fabricated sections, to complete hull modules. Assembly efficiency will be

achieved through the use of automated welding methods, large unit positioners, straddle carriers and cranes. A "Goliath" gantry crane will straddle the new shipways. This crane will be capable of lifting pre-outfitted hull modules weighing up to 350 tons from the subassembly area and aligning them for joining to other hull units for final erection on the ways.

In addition, a new wharf structure will be built containing the facilities necessary to complete outfitting. A 75-ton crane will provide the necessary lifting capacity to complete the outfitting stages.

The new yard has been designed as a completely integrated, highly automated facility capable of economically and efficiently providing a total capability for future shipbuilding requirements.

In announcing this program, Mr. Gilbride stated: "We feel that San Pedro is the most realistic location for a shipbuilding plant of the planned dimensions. Our Los Angeles Division has extensive experience and proven capabilities in the art of ship construction, and possesses the necessary expertise at the management and supervisory levels as well as an available and trained work force."

Completion of this facility is scheduled for 1971—a date Todd Shipyards consider to be well in advance of any currently contemplated large shipbuilding projects. While the new yard is being constructed, the present facility will continue to maintain shipbuilding, ship repair and conversion capabilities.

Mr. Gilbride pointed out that "this is not an expansion of present facilities but rather an entirely new ship construction plant which will place Todd Shipyards Corporation in a competitive position in the construction of ships of the future."

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Per Carlsson Named Chairman Of ACL —Van Houten Retires

Atlantic Container Line, Ltd., New York, N.Y., has announced the retirement of **Pieter C. Van Houten** as chairman. Mr. **Van Houten**, who is also retiring as managing director of Holland-America Line, had been ACL chairman since February 1966.

He will be succeeded in his ACL

post by **Per Carlsson**, managing director of Swedish Transatlantic Line. **Jacques Ribiere**, managing director of the French Line, has been appointed deputy chairman of Atlantic Container Line.

Commenting on his retirement, Mr. **Van Houten** stated, "I am sorry that I cannot stay with Atlantic Container Line, which I have seen grow from its earliest days to become the largest European container operation on the North Atlantic.

My greatest personal satisfaction is that we have been able to join six major shipping companies from four different nations into one friendly circle."

Mr. **Per Carlsson** who is 58 years of age, has been managing director of the Swedish Transatlantic Line since 1953. He has taken the chairmanship of ACL at a time when the company is completing its fleet of 10 roll-on/roll-off containerships to introduce a three-ship per week

service on the North Atlantic. He said, "Undoubtedly we are reaching the most challenging period in the company's development. During the last three years ACL has developed into the largest European container operation on the North Atlantic with more direct services than any other company. At the same time we are providing a unique roll-on/roll-off service for modern, efficient handling of wheeled cargo, oversize and heavy lift goods and other cargo which does not lend itself to containerization."

ACL, which introduced its RO/RO and container service in 1967, is a consortium formed by six major international steamship companies: Cunard Steam-Ship Company, Ltd.; French Line; Holland-America Line; Swedish American Line; Swedish Transatlantic Line; and Wallenius Line.

Bid Date For Three AEIL Containerships Set For June 30

The Maritime Administration, Washington, D.C., will receive bids for the construction of three containerships for American Export Isbrandtsen Lines, Inc., New York, on June 30.

The new vessels are to be identical in design to the three Sea-Witch-class ships delivered in 1968 and 1969 by Bath Iron Works Corporation, Bath, Maine.

Invitations for bids were issued on May 15 by MarAd for the construction of these C5-S-73b containerships.

Dravo Names Courtsal Contract Manager For Engineering Works Div.



Donald P. Courtsal

Donald P. Courtsal has been appointed chief contract manager for the Engineering Works Division of Dravo Corporation, Pittsburgh, Pa.

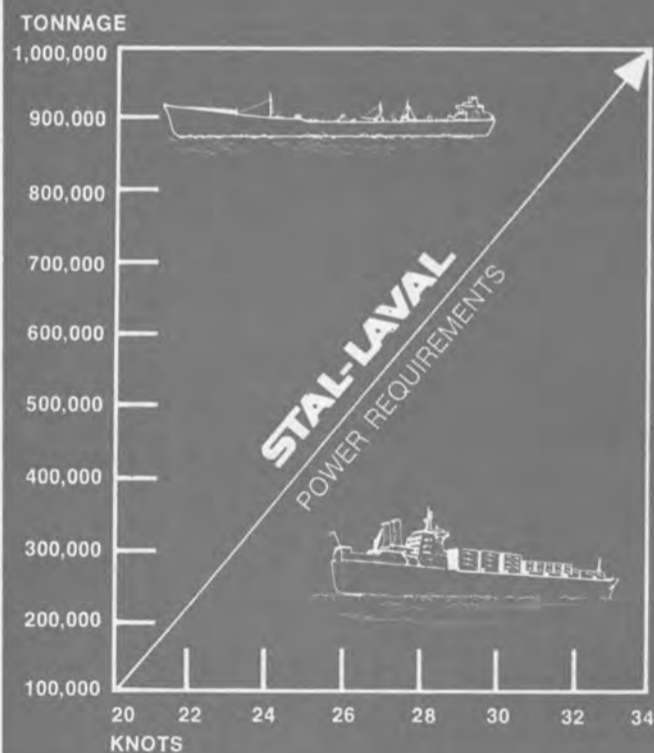
Mr. **Courtsal** has been with Dravo since 1965, serving most recently as assistant chief engineer in the Engineering Works Division's marine department. He is a graduate of the United States Coast Guard Academy and the Massachusetts Institute of Technology. He is a registered professional engineer in Massachusetts, and a member of The Society of Naval Architects and Marine Engineers.

The Engineering Works Division designs and fabricates a wide variety of materials handling, steel processing and marine equipment.

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Admiral Land Awarded Navy League Citation

The Navy League's Robert M. Thompson Award for outstanding civilian leadership was presented to Vice Adm. Emory Scott Land, USN (ret.), on May 21.

The 91-year-old admiral, who launched 5,600 merchant ships while chairman of the Federal Maritime Commission in World War II and was war shipping admini-

strator, is still active as a special consultant for General Dynamics.

Admiral Land was among 12 recipients of various awards at the League's annual meeting, held this year in Memphis, Tenn. The award honored him as "an outstanding citizen who has always been effectively mindful of sea power's importance to our country's defense." The citation declared: "Over a prolonged period, from his entrance as a midshipman to

the United States Naval Academy in 1898, throughout an active and distinguished naval career, and subsequently in other government service and private life, he has served the United States Navy, maritime and aviation interests of the nation as a naval officer, selfless public servant and recognized business man."

Though the major portion of Admiral Land's naval career was devoted to naval construction, he

also served as assistant chief of the Bureau of Aeronautics of the Navy from 1926 to 1928. In October 1933, Admiral Land was assigned as chief constructor of the Navy and chief of the Bureau of Construction and Repair.



James M. Hannon, national president of the Navy League (left), presenting the Robert M. Thompson Award to Adm. Land.

President Franklin D. Roosevelt appointed Admiral Land to the United States Maritime Commission in 1937, and until 1946 he served as chairman for all but one year. He later became president of the Air Transport Association of America.

Newport News Ship Appoints John H. Adams



John H. Adams

L.C. Ackerman, president of Newport News Shipbuilding and Dry Dock Company, Newport News, Va., has announced the appointment of John H. Adams to his staff. An extension of the president's office, staff positions are advisory and concerned with company planning and organization.

Mr. Ackerman said that Mr. Adams, formerly of Walker Manufacturing Company, another Tenneco subsidiary, will concentrate his efforts on production planning at the shipyard.

A native of Pittsburgh, Pa., Mr. Adams has been with Walker Manufacturing Company since October 1965 as coordinator of manufacturing computer services, manager of data processing and communications, and most recently as mid-south distribution manager in Memphis, Tenn.

He received a degree in liberal arts from Trinity College, Hartford, Conn., in 1954. After two years of service in the United States Army, he joined Jones & Laughlin Steel Corp. in September 1956 as a management trainee, and progressed to systems analyst, supervisor of scheduling, and finally to manager of production planning when he left to join Walker Manufacturing Company.

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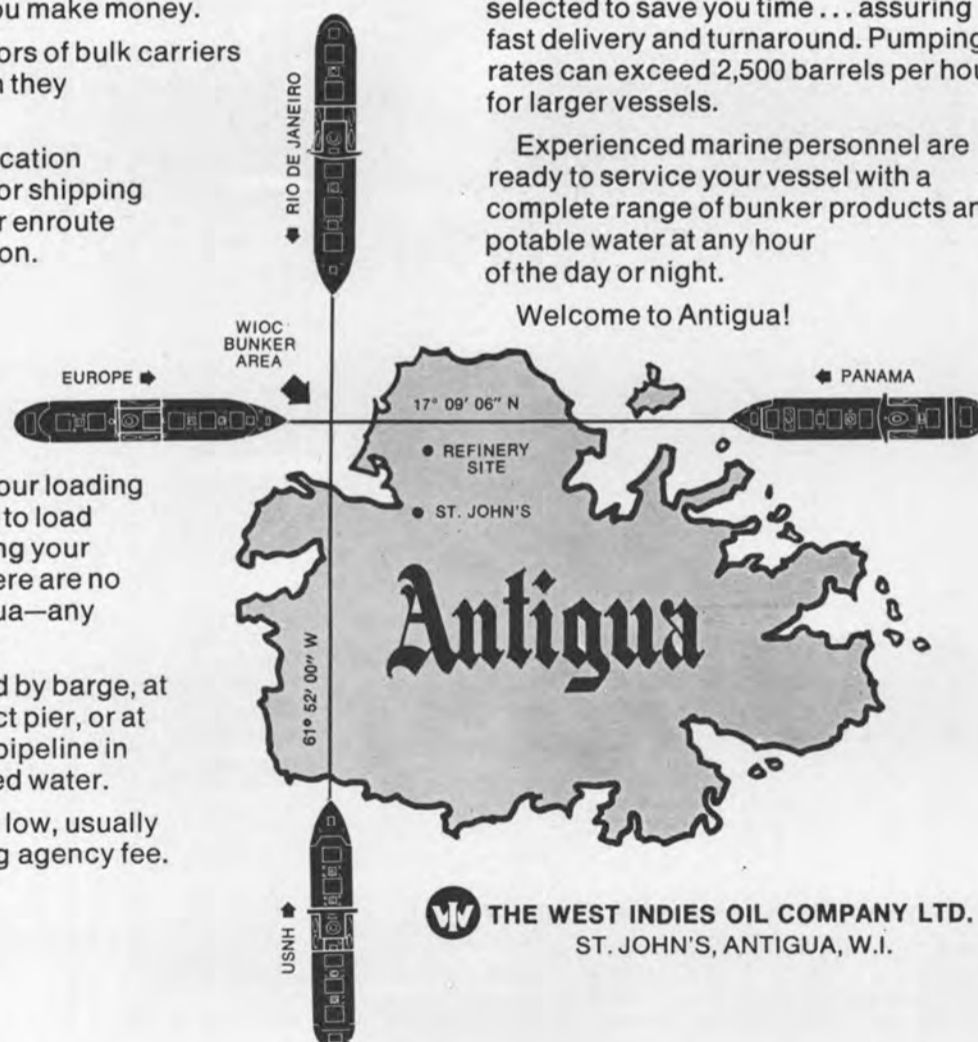
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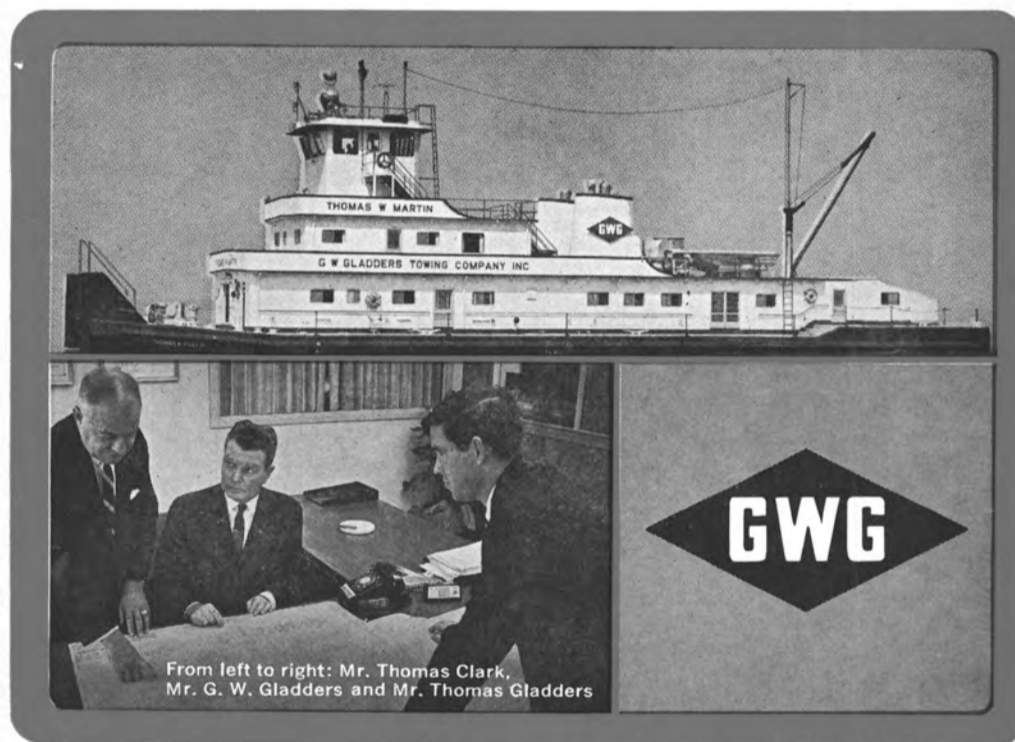
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The 3800 h.p. M/V Thomas W. Martin, is the latest addition to the Gladders Towing Company fleet. It was ordered from St. Louis Ship, only after a thorough performance study was made. Mr. G. Warren Gladders, president of the firm, along with Mr. Thomas Gladders and Mr. Thomas Clark, personally observed the efficiency and performance of late model St. Louis Ship towboats, designed and built with the exclusive Hydrodyne Hull. G. W. Gladders, who was recently Chairman of the American Waterways Operators Association, studied competitive towboats as well. Then, based on these actual performance records, the M/V Thomas W. Martin was ordered from St. Louis Ship.

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From left to right: Mr. Thomas Clark,
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Zim Israel To Add 33 New Ships By 1980

The board of directors of Zim Israel Navigation Co. recently announced a fleet development program for 1970-80. The board approved orders for 33 additional cargo ships with a total capacity of 2,100,000 dwt at a cost of \$300 million.

By 1980 Zim's fleet will include 170 cargo ships totaling 4 million tons dwt. The present fleet is made up of 140 ships totaling 1.4 million tons dwt.

The new orders will include three tankers: one 300,000 tons dwt, and the other two 250,000 tons; eight bulk ships of 120,000 tons each;

two roll-on/roll-off ships of 4,000 tons each; 12 container ships, six 25,000 tons and six 15,000 tons each; and eight cargo ships totaling 100,000 tons dwt.

Development plans in connection with the expanded fleet involve the following: a training center will be established to provide professional manpower equipped to handle the most modern fleet, while the company's commercial activity will be strengthened and widened in order to make full utilization of the new ships. In the meantime, the possibility of self-insurance of part of the fleet is being checked out, in view of the steep rise in the fleet's value and a similarly steep rise in insurance expenses.

Todd Shipyard Announces Four Management Changes



Angel Garate



Austin D. Shean



Joseph A. Kochanczyk



Lester V. Martin

John T. Gilbride, president of Todd Shipyards Corporation, has announced a number of management changes affecting the company's Brooklyn and San Francisco divisions, to be effective July 1.

The present general manager of Todd's Brooklyn Yard, Angel Garate, will be transferred to the same position in the company's rapidly expanding San Francisco Division. He will succeed Austin D. Shean in this position. Mr. Shean will transfer to the company's New York office as director of safety and compensation control, replacing John S. Smith Jr., who will retire as assistant to the president and safety director.

Joseph A. Kochanczyk will succeed Mr. Garate as general manager of Todd Brooklyn, and that yard's project engineer, Lester V. Martin, was named as the new assistant general manager.

Mr. Garate joined the Todd organization at its New Orleans yard in 1940. He was transferred to Todd's central estimating department in New York in 1945. In 1949, he was transferred to the Brooklyn Division, becoming general manager in 1961. He has had long experience in all phases of shipyard work, including production, engineering, and estimating. Before joining Todd, he held supervisory positions in Johnson Iron Works of New Orleans.

Mr. Shean began his Todd career at the company's San Francisco yard in 1948. He held a number of administrative and management posts before his appointment as general manager in 1958. Mr. Shean was formerly assistant to the commander of the San Francisco Naval Shipyard.

Mr. Kochanczyk, the new Brooklyn general manager, began with that division in 1944. He is a graduate of Webb Institute of Naval Architecture and has held various technical and engineering positions at the yard prior to reaching his present post as assistant general manager in 1961.

Mr. Martin was educated at Stevens Institute of Technology. He started with the company in 1938. His present responsibilities include supervision of the Brooklyn yard's major ship conversion contracts.



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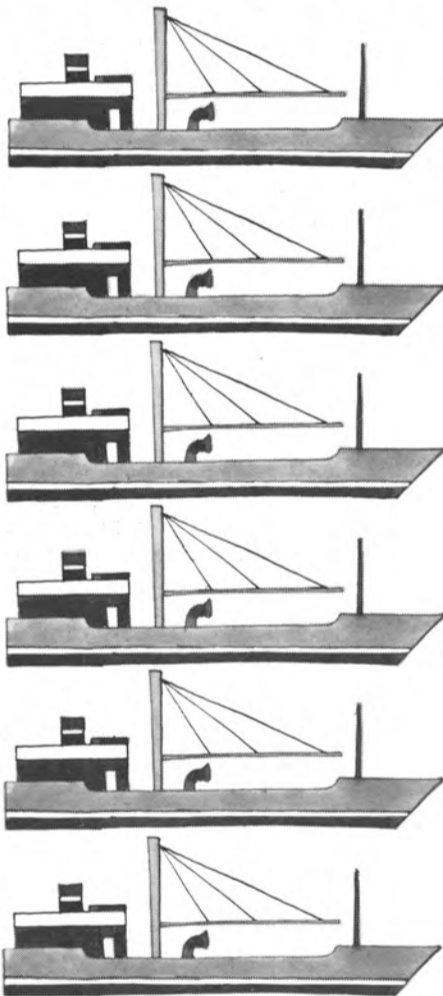
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120 VDC—1800 RPM. TURBINE: M-20-EH—20 lbs—dry & saturated—25" vacuum. 7283 RPM. GEAR: 7283/1800. GENERATOR: 60 KW—120 VDC—500 amps—SK—stab. shunt wound.

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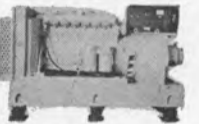
6 **VICTORY 300 KW WESTINGHOUSE TURBO GENERATOR SET**



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DIESEL GENERATOR SETS

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



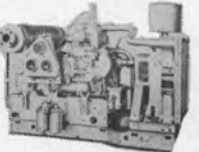
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11 **200 KW G.M. 8-268A DIESEL GEN. SET**



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

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

18 **KINNEY MOLASSES PUMP**



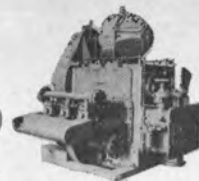
430/215 GPM—size 8x8—pressure 60 lbs.—142/280 RPM. Motor RPM 875/1750. Falk 6.25:1 reducer. G.E. 30/15 HP motor.

19 **R-2418 WATEROUS CARGO PUMP**



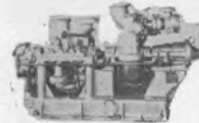
Bronze—14"—top discharge—capacity 2500 GPM—20 PSI. Bilge service—oil service—2400 GPM—75 PSI. Reduction gear. ENGINE: Cummins JN-130M—6 cylinder—4 1/8 x 5—130 HP—air starting.

20 **UNUSED BOILER FEED PUMP**



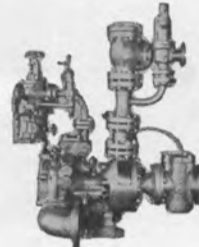
Worthington Triplex—36.5 GPM—590 PSI—variable stroke—2 3/4 x 5—P₂—S₂—R₂ vessels. 40 HP—230 VDC—1800/2400 RPM.

21 **UNUSED SIZE 4 BUFFALO FEED PUMPS**



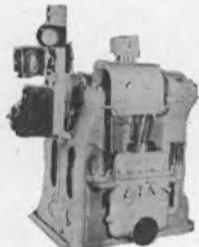
Terry Turbine—BM—273 HP—5500 RPM—exhaust 15 lbs—590 PSI—superheat 0°—425 GPM Buffalo Pump—discharge pressure 750 lbs.—5" x 4"—built for USN DD destroyers.

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



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

23 **SELF-PRIMING RECIPROCATING BILGE PUMP**



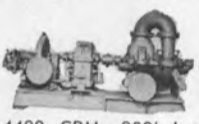
80 GPM @ 60 lbs.—5" x 8"—4" suction—3" discharge—22 HP motor—230 VDC—air dome.

24 **UNUSED WARREN BRONZE PUMP**



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

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



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

26 **BRONZE 14x14x12 CARGO STRIPPING PUMPS**



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

27 **NEW WORTHINGTON VERTICAL SUBMERSIBLE BILGE PUMP**





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

28 **RECIPROCATING VERTICAL DUPLEX PUMP**




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

MISCELLANEOUS

- 29**  **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.
- 30**  **EXCELSIOR MOLASSES PUMP—SIZE 5 1/2"**
6" Suction and discharge—210 GPM—45 PSI—125 RPM. MOTOR: 10 HP—230 VDC—Frame 67—with gear.



- 41**  **UNUSED DOCK CAPSTAN**
15 HP—220/440/3/60—3000 lbs @ 100 FPM. Gypsy 8"—waterproof box—floorplate.
- 42**  **HYDE 30" DOCK CAPSTAN**
10" x 10"—reversible—W.P. 125 lbs—2 1/2" steam—3" exhaust.

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


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


WINCHES AND WINDLASSES

- 31**  **AH&D SINGLE SPEED WINCHES**
7250 lbs. @ 220 FPM—50 HP—230 VDC—with control. \$1750 as is.
- 32**  **VICTORY UNIT WINCHES**
50 HP—230 VDC—U-1, U-2, U-4, U-5—reconditioned.
- 33**  **MODEL U-6 DOUBLE DRUM WINCHES WITH GYPSIES**
50 HP—230 VDC—reconditioned.
- 34**  **WATERMAN STEAM DECK WINCH—COMPOUND GEARED**
Compound-geared "Valle Type"—9 1/2 x 10. 7000 lbs.—185 FPM—single geared. 12,800 lbs. 101 FPM—compound geared.
- 35**  **WATERMAN STEAM DECK WINCH—SINGLE GEARED**
Single-geared "Valle Type"—9 1/2 x 10—10,720 lbs. @ 238 F.P.M.
- 36**  **HYDE NO. 7 WINDLASS**
1 3/4" Chain—Wildcat centers 3'3"—Handles 3000 lb. anchors. MOTOR: 8.7/35 HP—440/3/60—1800/450 RPM.
- 37**  **NEW — UNUSED LINK BELT WINDLASS**
1 5/8" and 7000 lb. anchors. 56" Centers—50 HP—230 VDC—spares.
- 38**  **IDEAL WINDLASS—UNUSED**
1-5/16" Chain—36" Centers—15 HP—115 VDC—1750 RPM—6000 lb. line pull.
- 39**  **UNUSED 70 HP McKIERNAN-TERRY WINDLASSES**
2 3/4" Chain and two 10640 lb. anchor & 30 fathoms chain @ 30 FPM. 70 HP—230 volts—shunt DC motors—233 amps—550 RPM—55°C rise. Wildcat centers 47 1/2". Base 9'5" wide x 11' long. Weight 36,000 lbs.


- 43**  **LORIMER 75 KW 120/240 D.C. DIESEL GENERATOR SET**
Lorimer engine FN—5 cylinder—7.5 bore—9.5 stroke—720 RPM—radiator cooled. GENERATOR: Ideal type DD—75 KW—120/240 VDC—720 RPM—313 amps—frame 350-27. CAN ALSO OFFER SAME GENERATOR WITH 75 KW 440/120/3/60 A.C. Emergency sets from T-2 tankers.
- 44**  **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.

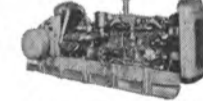
- 50**  **GRISCOM-RUSSELL EVAPORATOR**
12,000 evap.—230 VDC pumps or 440 A.C. pumps. Complete with Weir automatic water valve.

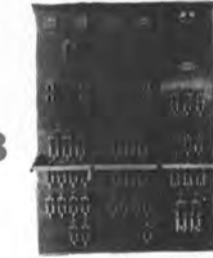
- 45**  **VICTORY AP2 — WESTINGHOUSE MAIN PROPULSION GEAR**
6000 SHP—Serial 4A-1620—Medina Victory.

- 51**  **UNUSED 1135 SQ. FT. C.H. WHEELER CONDENSER**
20" Ex. inlet—5/8" Cu-Ni tubes—with or without air ejector.


- 46**  **MURRAY & TREGURTHA DIESEL PROPULSION UNITS**
Model 02-D—with 6-cylinder GM engine & gear. Propeller 48" x 24".

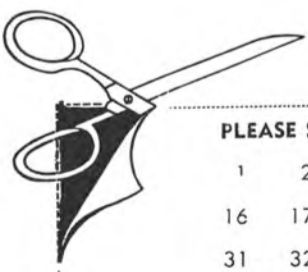
- 52**  **UNUSED GEARHEAD MOTORS**
20 HP — 230 VDC — 30 RPM output.

- 47**  **DIESEL DRIVEN INGERSOLL-RAND AIR COMPRESSOR**
I.R. Compressor—315 cu. ft. @ 125 lbs. Driven by International Harvester UD-18 diesel. Tank mounted on skid—radiator cooled—from Corps. of Engineers salvage vessel.

- 53**  **UNUSED 20 KW SWITCHBOARD**
20 KW 120 volt switchboard for two generators in parallel with distribution.

- 40**  **3-TON CLYDE DOUBLE DRUM WINCH**
3-Ton double drum winch—10 HP—115 VDC—de-clutchable drums—with controls. Drum is 16" in diameter and 28" wide. Winch OAW 10' 2"—OAL 8'1".

- 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.



6/15/70

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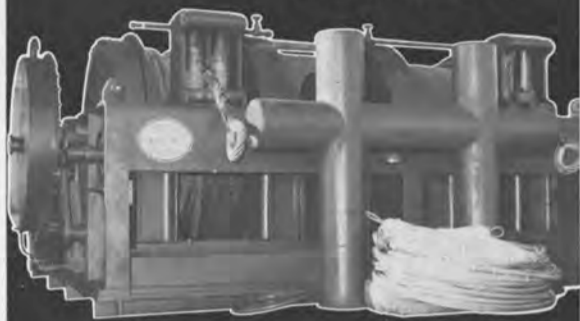
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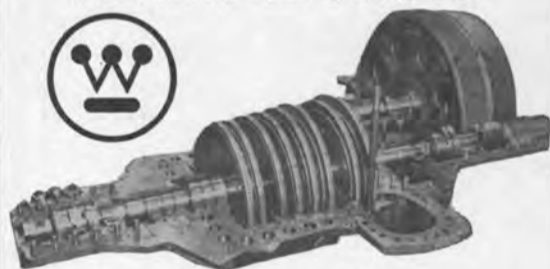
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Paceco Division To Build \$9 Million Gulf Facility For Cranes And Barges

The Fruehauf Corporation has announced plans for a new \$9 million production facility to be constructed at Gulfport, Miss. for the firm's Paceco Division. In making the announcement, **William E. Grace**, president, said that the plant will manufacture container handling cranes and barges, and will be operational next year.

The plant will be constructed on 100 acres of land in the Bernard Bayou industrial area of the Biloxi-Gulfport region. It will be financed by a \$7,905,000 industrial revenue bond issue. The Economic Development Administration of the United States Department of Commerce is providing \$6,045,000, and 11 Jackson, Miss. and Gulf Coast financial institutions another \$1,860,000 for purchase of the industrial revenue bonds.

C. Dean Ramsden, president and general manager of the Paceco Division, said that approximately 700 people will be employed as rapidly as the facility can be completed and the personnel trained. Employment will begin this fall. Sales are expected to reach a level of \$25 million annually.

At the same time, Mr. Ramsden announced the appointment of **Jack I. Joyner** as general manager of the Gulfport facility. Mr. Joyner, a native of Mobile, Ala., was most recently vice-president and general manager of City Iron Works, Division of Goslin Birmingham in Connecticut.

An international leader in the container handling field, Fruehauf's Division makes specialized container handling cranes called Portainers, Transtainers, and Shipstainers. They also manufacture dredges, barges, and tugboats, as well as gates, hoists, and cranes for hydroelectric power dams.

The Division's main offices and plant are in Alameda, Calif. Its products are also manufactured through licensees and subsidiaries in England, Australia, Japan, Italy, and India. Fruehauf Corporation, headquartered in Detroit, designs, builds, and markets diversified transportation equipment and systems throughout the world for all modes of transportation—road, rail, sea, and air.

LeTourneau To Build \$4-Million Drilling Rig

A new oil-well drilling unit and workover rig, to be built at a total cost of more than \$4-million, will be constructed by R.G. LeTourneau, Inc., Vicksburg, Miss., for The Western Company, Houston, Texas.

Designed to work in water depths up to 120 feet, the new mat-supported rig will be capable of drilling to depths of 15,000 feet with 4½-inch drill pipe.

This rig, the second in Western's fleet, will have an electrically positioned cantilever design. Plans call for the rig to be propulsion-assisted, thereby permitting the rig to be moved into position with one tug.

The Western Star, the company's first rig, is capable of working in 80 feet of water and drilling to depths of 12,000 feet.

Dow Chemical Orders Two Supply Boats From Zigler

Zigler Shipyards, Inc., Jennings, La., has received an order for the construction of two 1,700-total-bhp diesel powered offshore, oil-well supply boats from the Dowell Division of Dow Chemical Company.

Designated Hull Nos. 212 and 213, each vessel will have a length of 149 feet 11 inches, beam of 36 feet and depth of 15 feet.

Captains O'Byrne And Hudson Promoted By AEIL To Senior Marine Executive Posts



Capt. Francis X. O'Byrne



Capt. Joseph Hudson

Capt. Francis X. O'Byrne has been named assistant vice-president, operations, it was announced by **Manuel Diaz**, president of the American Export Isbrandtsen Lines. Capt. **Joseph Hudson** will succeed Captain O'Byrne as marine superintendent.

Captain O'Byrne joined AEIL in 1951 after 12 years with the United Fruit Company. He served as master of cargo and container vessels and was at one time staff captain of S/S Independence, the 30,000-ton luxury liner formerly operated by the company. In addition, he has been associated with the trucking industry for a period of 20 years as owner-operator of an intrastate motor carrier. Since being assigned to shore duties in 1968, he has served as port captain, manager of operations, and marine superintendent. He is a member of the New York Marine Society.

Captain Hudson, who joined AEIL in 1950, is also a former master of freighters and containerships. He was the first master of CV Sea Witch, AEIL's first major modern container vessel which was built in Bath, Maine, in 1968. He was transferred ashore in February 1969 as port captain for the line, a position he held until his promotion to marine superintendent.

Beth-Beaumont To Build 384-Foot Oil Tank Barge From T-2 Tanker Midbody

Bethlehem Steel Corporation's Beaumont, Texas yard has been awarded a contract by Tidewater Morgan City, Inc., New Orleans, La., to create an oil tank barge out of the discarded midbody and bow of the former T-2 tanker Abiqua that recently was jumboized. The barge, to be named Tide Mar (XIX), will be 384 feet 10½ inches long, have a beam of 68 feet, and a depth of 39 feet 3 inches.



MPE EXPANDS FACILITIES: Marine Propulsion Engineering, Inc., has moved into a new and larger facility (shown above) at 22 B Street, Burlington, Mass. 01803. This centralized location will permit the consolidation of marketing, engineering, production and warehousing activities. With additional engineering and manufacturing space available, the company plans to announce new production models of the Wilkinson Controllable Pitch Propeller which will join the present Model 180 (60-70 inch) and Model 130 (42-52 inch) in the product line. The new telephone number is (617) 272-8088.



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JEFFBOAT

Division of Texas Gas Transmission Corporation

Salvage Union Elects Executive Committee

The 20th General Meeting of the International Salvage Union was held in Amsterdam, Netherlands on May 20-21, 1970.

Questions of general interest were discussed by the members representing 17 salvage companies from all over the world. Concern was expressed by the members regarding the rapidly increasing costs of maintaining and operating their salvage fleets, and the great problem for salvors in the long delay experienced between the time of rendering the salvage services and the ultimate receipt of payment.

The following executive committee was elected: Dr. **W.F.P.C. Vietor** of Holland, president; **B. Goth-Bendtzen**, Denmark; **O. Beijer**, Norway; and **A. Letzer**, Belgium.

Peter Rubel Joins Rule Industries, Inc.

Peter A. Rubel has joined Rule Industries, Inc. of Gloucester, Mass., as senior engineer specializing in the development of new marine products. Rule is a leading manufacturer of marine pumps, switches and associated products.

Mr. **Rubel** comes to Rule Industries from the Cabot Corporation where he was senior project engineer. Prior to that, he was a biochemical engineer specializing in polymers with Dewey & Almy Inc., a division of the W.R. Grace Company.

Mr. **Rubel** is a member of the American Chemical Society and the American Association for the Advancement of Science. He is a graduate of Harvard and has a B.A. degree in biochemical sciences.

Todd Shipyards Houston Div. To Build Two Large Barges At A Cost Of \$7 Million

Arthur W. Stout Jr., general manager of Todd Shipyards Corporation, Houston Division, recently announced the receipt of two new contracts totaling in excess of \$7,000,000 for the construction of two large barges.

One contract is for a 510-foot by 75-foot by 31-foot 6-inch hopper barge to be constructed for a large midwest corporation with delivery scheduled for the summer of 1971. This barge will be self-loading and self-unloading and will have a total full load displacement of approximately 28,000 long tons. In addition to heated and air-conditioned accommodations for 14 persons, special spaces will be arranged and outfitted for a laboratory, control room, office, completely equipped galley, walk-in cooler and a walk-in freezer. Machinery will include two 8,000-hp 16-cylinder diesel engines for powering the 33-inch suction by 30-inch discharge main pumps, 24,000-pound thrust bow and stern thruster units, and a diesel-driven 2,040-kw electric generator. A sewage disposal system, meeting requirements of the USPHS and Department of the Interior and the Federal Water Pollution Control Administration, will also be installed. This will be the largest barge ever constructed at the Todd Houston Division.

The other new contract is for one 40,000 barrel 300-foot by 60-foot by 17-foot tank barge which is to be constructed for an east coast company.

The addition of these contracts to the current workload assures the Todd Houston Division of a full production schedule well into 1971.

Rowan Drilling Rig Contract Awarded To R.G. LeTourneau

Rowan International, Inc., Houston, Texas, has placed an order with R.G. LeTourneau, Inc., Vicksburg, Miss., for the construction of a mobile offshore, oil-well drilling rig.

The contract price for the new rig, to be named Rowan-New Orleans, was \$7,200,000.



API HONORS MUIR: **William E. Muir**, right, director of technical services and inspection, Marine Division, Gulf Oil Corporation, New York, receives an American Petroleum Institute Certificate of Appreciation at the 15th Annual API Tanker Conference held recently at the Seaview Country Club, Absecon, N.J. Presenting the certificate is **Rexford S. Blazer**, chairman of the board of Ashland Oil Inc., Ashland, Ky., and API vice-president for transportation. Mr. **Muir** was honored specifically for service to API. He has been a member of the Committee on Tank Vessels, chairman of the Tanker Conference Program Committee, and chairman of the Tanker Corrosion Committee.

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\$18.5 Million Program For 16 New Tugs Announced By OSA

A new \$18.5-million building program for 16 seagoing tugs was announced in Houston, Texas, by Offshore Supply Association, Ltd., one of the world's leading operators of supply and service vessels for the offshore oil drilling industry.

In a press conference at the Houston Club, Richard E. England,

director and chief executive, reported that the 1970-71 expansion of the London-based company would increase OSA's fleet to 50 vessels with a total cost value of approximately \$45 million.

Built to highest class Lloyds 100 A-1, or equivalent, the OSA vessels are specially designed for servicing oil drilling rigs around the world under all types of weather conditions.

The new vessels will vary slight-

ly in size and power, but specifications of a typical ship, the Polar Shore, are: length overall, 183.8 feet; breadth, 38.6 feet; horsepower, 7,300; grt, 699. The new construction will add 78,000 hp to the OSA fleet.

According to Mr. England, OSA estimates the search and production of oil, gas and other hydrocarbons from offshore areas will at least double during the next 10 years from the present 17.5 percent

of total world production (7 million barrels per day) to at least 35 percent of world production—and perhaps twice that.



Richard E. England

Mr. England stated that he expected the offshore supply industry and his company to participate in this growth; and that to achieve such oil production figures, the supporting service companies will have to perform in even greater quantity and quality.

The new vessels have a cargo capacity of 770 short tons on deck and in cargo holds. The specially strengthened decks can carry up to 363 short tons of drilling equipment, while bulk cargo is carried in three holds and in 16 tanks used for fuel oil, drill water and potable water.

The vessels will be equipped for towing and anchor handling, and several will have full ice-breaker capability (Ice Class I). All vessels will be fully air-conditioned.

The present OSA fleet numbers 34 vessels. The fleet is deployed in support of drilling operations around the world, including off the Nova Scotia Grand Banks, East Coast of South America, North Sea, Mediterranean, Adriatic, East and West Coasts of Africa, Persian Gulf and Malaysia. Customers include most of the major international oil companies (Esso, Gulf, Shell, Texaco, Mobil, BP, AGIP, etc.) and other American companies such as Union Carbide, Brown and Root, Tenneco, and Reading and Bates.

Chief Engineer Named At C-E Controls Optimum Division

C-E Controls, a division of Combustion Engineering, has recently appointed A.E. Forest as chief engineer of its Optimum Division.

Mr. Forest will report to J.F. McMahon Jr., manager of the Optimum Division, and will have responsibility for systems and product engineering functions.

Mr. Forest has a broad background in the fuel burning and steam generating field, and extensive experience in the burning of waste fuels. He holds several patents on shop-assembled boiler equipment. Before joining C-E Controls, he held numerous engineering posts. He was chief engineer at the Murray Iron Works in Burlington, Iowa, and Springfield Boiler Co., Springfield, Ill. He received his degree in engineering at Armour Institute of Technology.

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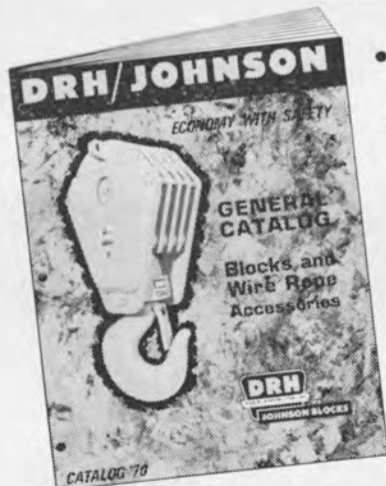
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SNAME New York Section Hears Paper On Slamming Characteristics Of Ship Design



Shown at the Overseas Press Club, left to right: **Robert G. Mende**, SNAME national secretary; **J.J. Henry**, SNAME president; **Monroe D. Macpherson**, chairman N.Y. Metropolitan Section; **Dr. Michel K. Ochi**, author; **Warren I. Signell**, section vice-chairman; **Norman R. Farmer**, secretary-treasurer, and **Robert F. Klausner**, papers committee.

The New York Metropolitan Section of The Society of Naval Architects and Marine Engineers held its April meeting at the Overseas Press Club, 54 West 40th Street, New York City.

At the technical session, which followed the cocktail hour and dinner, **Dr. Michel K. Ochi**, NSRDC, Washington, D. C., presented a paper entitled "A Method to Estimate Slamming Characteristics of Ship Design."

This paper discusses a method to estimate slamming characteristics of a ship in its early design stage, using the ship lines. The first section of the paper deals with the derivation of a regression equation which yields a coefficient neces-

sary to estimate impact pressures for any given hull form. The second section discusses the procedure of application of the regression equation in conjunction with other computer programs to estimate frequency and severity of slamming for ship design. An example of the method using a mariner type vessel is developed to estimate limiting sea state or limiting ship speed below which the ship can be safely navigated without suffering from slamming.

Copies of the paper may be obtained at \$2.50 per copy by contacting **Norman R. Farmer**, secretary-treasurer of the New York Section, c/o George G. Sharp, Inc., 100 Church Street, New York, N.Y. 10007.

McClatchy Appointed Sperry Marine Systems Field Engineering Mgr.



Alfred C. McClatchy

Alfred C. McClatchy has been named manager of field engineering and service operations for Sperry Rand's Sperry Marine Systems Division, Charlottesville, Va. **Mr. McClatchy**, who formerly served as eastern regional manager for Sperry's marine field service organization, is stationed at the division's headquarters in Charlottesville. He succeeds **Warren C. Judge**, who has been promoted to operations manager of the division.

Among **Mr. McClatchy's** new responsibilities will be implementation of an expansion program for the marine service network, according to **James A. Nottingham**, Sperry Marine Systems vice-president and general manager.

Mr. McClatchy has 28 years of

experience in Sperry's Field Engineering organization, having started as a marine service engineer in 1942. He served as manager of its eastern district office in Brooklyn, N.Y., before transferring to Charlottesville in 1968. He attended Columbia and Long Island Universities, and is a member of The Society of Naval Architects and Marine Engineers and the Institute of Navigation.

Sperry Marine Systems Division is a leading supplier of marine navigation aids and control equipment. It maintains an extensive world-wide sales and service network.

Kenneth M. Childs Jr. Opens Own Office In Medfield, Mass.

Kenneth M. Childs Jr. announces the opening of his office for the practice of waterfront and structural engineering. His address will be Box 204, Medfield, Mass. 02052. Services will include complete design of new projects, evaluation of existing structures, feasibility reports, etc. **Mr. Childs** will be available also as a marine surveyor for the inspection and evaluation of piers, pipelines, pile foundations, dry docks, and similar structures. This service will include investigation both above and below water, as **Mr. Childs** is an experienced diver who has made similar inspections in North America, Europe,

the Caribbean, and the Society Islands in the Pacific Ocean.

From 1956 until the opening of his office in May of this year, **Mr. Childs** was associated with **Crandall Dry Dock Engineers** as a vice-president, and with **Crandall's** subsidiary, **Crandall Marine Corporation**, a marine contracting company, as its president. During this period he was involved in the design and construction of several marine railway dry docks, float-

ing dry docks, and other waterfront structures.

Mr. Childs is a graduate of the Massachusetts Institute of Technology, holding a degree in civil engineering. He is a registered professional engineer in Massachusetts and in the provinces of New Brunswick and Newfoundland. He is a member of The Society of Naval Architects and Marine Engineers and the American Society of Civil Engineers.

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Southeast Regional Propeller Clubs Hold Three-Day Convention

A prediction that America's merchant marine is heading for far better days and a plea for stepped-up action to complete the Cross-Florida Barge Canal highlighted the annual convention of the Southeast Regional Propeller Clubs in Mobile, Ala.

With some 160 persons regis-

tered from ports throughout the southeastern part of the country, the representatives of various facets of the maritime industry heard an optimistic report from United States Maritime Administrator, **Andrew E. Gibson**.

"Legislation under sponsorship of President **Nixon**," said Mr. **Gibson**, "will restore the United States as a major and viable maritime power."

"It will insure," he asserted,

"that our merchant marine, now threatened with near extinction by the preponderance of obsolete, World War II-Vintage ships, will be one of the most modern and efficient in the world by the end of this decade."

Maritime policy makers have decided the United States no longer will be content as a fifth-rate maritime power, Mr. **Gibson** declared, adding, "we will no longer be satisfied with the crumbs that fall from

the European shipowners' tables."

British maritime interests, he warned, already are raising questions over the "wisdom" of new United States plans to construct 30 ships a year over the next decade. "They are claiming," he said, "that this could produce serious over-tonnage on United States foreign trade routes." He added, "Such claims are both presumptuous and inaccurate."



G.A. Brunelle, of San Juan, newly elected Southeast Regional vice-president is congratulated by **Andrew E. Gibson**, United States Maritime Administrator.

"These remarks," he declared, "are viewed by some as a growing effort to persuade the United States to turn away from its determination to rebuild its merchant marine — to abandon the advantages of the American-developed technological revolution in total transportation systems. I am here to announce we will not do that."

The convention went on record as urgent "earliest possible completion" of the Cross-Florida Barge Canal. Member ports were asked to use their influence to insure immediate appropriations by Congress for that purpose.

Emphasizing the importance of the canal to the shipping industry, the Propeller Club delegates claimed opposition to the canal emanates primarily from conservationists with limited interest. Any impeding of the canal project, they said, will "be to the detriment of the entire nation."

The convention named **G.A. Brunelle**, president of the Propeller Club of San Juan, Puerto Rico, as its regional vice-president. **Jack Campbell** of Mobile, Ala., is the outgoing regional vice-president.

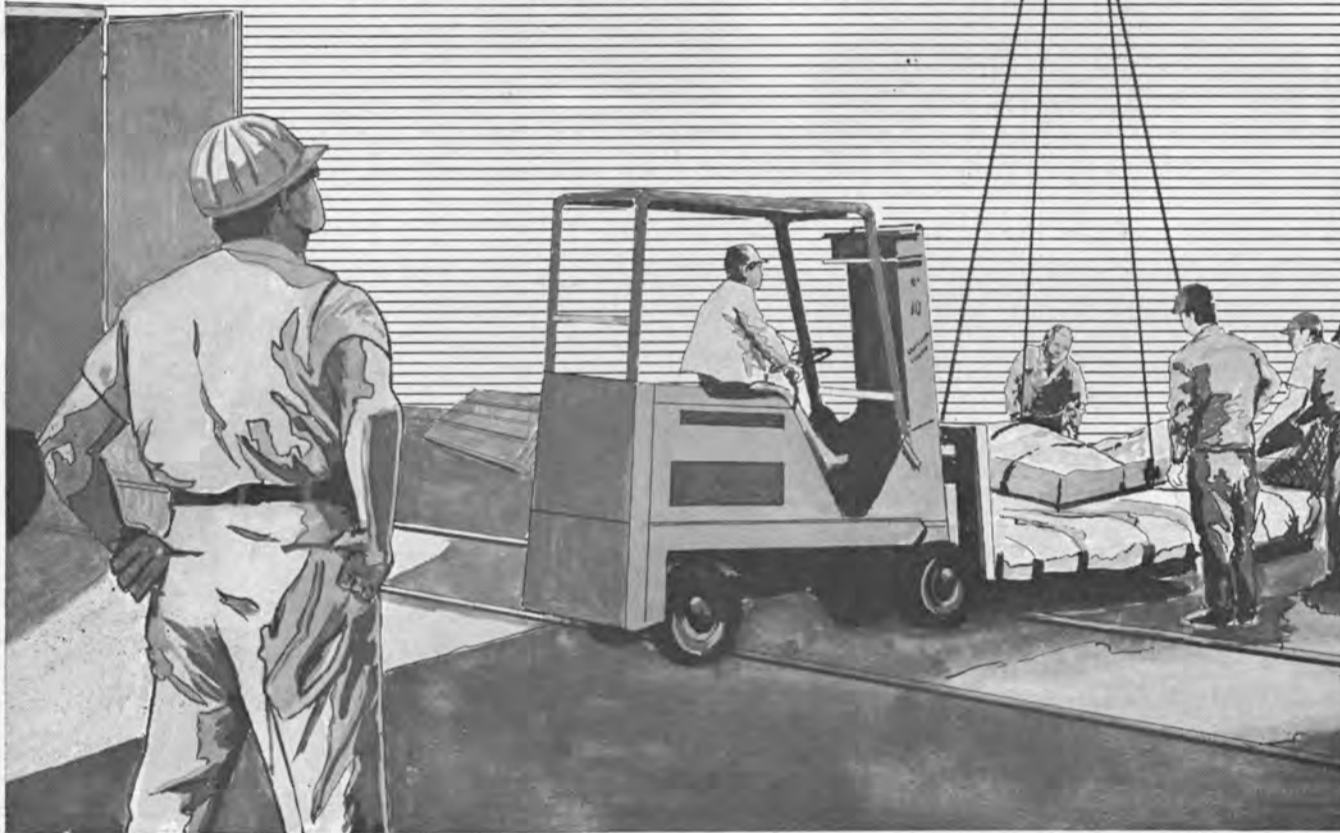
State docks director, **Houston H. Feaster**, was general convention chairman. The major ports on the East and Gulf coasts from Wilmington, N.C., to Mobile, Ala., were represented at the three-day convention. The 1971 convention will be in San Juan, Puerto Rico.

Towboat Contract Awarded To Brent

National Marine Service, Inc., St. Louis, Mo., has placed an order with Brent Shipyard, Greenville, Miss., for a twin-screw river towboat measuring 80 feet by 24 feet by 9 feet.

To be named the Beaver Island, the vessel will be powered by Caterpillar diesels of 760-total-hp.

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Thompson Reassigned As Superintendent USCG Academy



RAdm. John F. Thompson

Rear Adm. John F. Thompson has been reassigned by the Commandant of the United States Coast Guard to be Superintendent of the Coast Guard Academy at New London, Conn., where he will succeed Rear Adm. Arthur Engel on or about July 1, 1970.

Rear Admiral Thompson will be coming from Miami, where he has been stationed for the past three years—the last two as Chief of Staff of the Seventh Coast Guard District.

Rear Adm. Thompson has served primarily in marine inspection functions, including Officer-in-Charge, Marine Inspection, Philadelphia; Officer-in-Charge of the Merchant Marine Detail in Yokohama, Japan; and as an inspector, investigator, and license examiner in the ports of New York, Jacksonville, Tampa, San Juan, and Savannah.

In addition, his career has included five commands at sea, ranging from a destroyer escort in World War II; a weather ship, the CGC Mendota out of Wilmington, N.C.; and the cutter Cherokee out of Norfolk, Va.

Tacoma Boat Appoints Frank R. Boskovich



Frank R. Boskovich

Arnold J. Strom, president of Tacoma Boatbuilding Company, Inc., has announced the appointment of Frank R. Boskovich to the position of public relations director and advertising manager for the company.

Mr. Boskovich comes to this position after 18 years with Tacoma Boat, during which time he moved from design, supervision, shipyard manager and, most recently, plant development manager for the new shipyard at 1840 Marine View Drive.

He will also manage the public relations and advertising activities of Northern Line Machine and Engineering, a division of Tacoma Boat.

Mitsubishi Converting Whale Factory/Tanker Into 2 Drilling Barges

The first of two drilling barges to be completed from the conversion of a combined whale factory and oil tanker will soon go into service for Fluor Drilling Services, Inc., a subsidiary of Fluor Corporation.

The \$7-million Wodeco VII, one of the world's largest and most up-

to-date drilling barges, was christened May 15 at ceremonies held in Yokohama, Japan. Wodeco VII was converted from Fluor's 665-foot Cruz del Sur, by cutting 215 feet from the vessel's stern and slicing the remainder of the hull horizontally. The upper portion of the hull became Wodeco VII. The lower part of the hull will also become a drilling barge.

Cruz del Sur was purchased by Fluor three years ago. Fluor op-

erated the ship as an oil tanker until last fall, when Mitsubishi Heavy Industries, Ltd., began conversion.

Wodeco VII is 446 feet long, with an operating displacement of 13,400 tons. It is capable of drilling down to 25,000 feet in water depths of up to 600 feet.

The new drilling barge already has an assignment off the north coast of Borneo near Sandakan, for Societe Nationale des Petroles d'Aquitaine.

Here's to the next 100 years!

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The South Street Seaport Pier near Brooklyn Bridge, from a 1969 painting by Charles Lundgren, noted marine artist. This is part of the South Street Seaport restoration to preserve the days of sail for New Yorkers. Shown is the Schooner CAVIARE and the retired AMBROSE Lightship. The

Rogers' derrick boat George B. White is remodeling the Pier, built by an earlier generation of the Rogers firm. Many individuals and organizations are making substantial contributions to the restoration; more will be welcomed by The South Street Seaport.

Unique Catamaran Survey Passenger Vessel



The 65-foot catamaran survey vessel Schuman underway at 25 mph.

Departing Grafton, Ill., and bound for Philadelphia, Pa., on April 28, was the aluminum combination passenger/survey vessel Schuman, designed and built by Grafton Boat Co., Inc. for the Philadelphia District of the United States Army Corps of Engineers.

The Schuman represents Grafton Boat's solution to the Philadelphia District's requirement for a vessel to serve in three capacities: as a survey vessel for charting channel depths in harbors along the east coast; as a high-speed crew-launch, capable of transporting 56 passengers between shore bases and dredges; and as an inspection vessel. Employing the "two-step" procurement method, the Philadelphia district solicited design proposals from American boat yards. On the basis of their acceptable design and low price, Grafton Boat was awarded a contract for the construction of the vessel. An extensive parametric study of possible hull forms was conducted at the University of Michigan Ship Hydrodynamics Laboratory, and a hull form designed by Charles W. Bond, noted catamaran designer of Tampa, Fla., was selected. Grafton engineers then developed detail plans and optimized the hull structure and arrangements.

To achieve the specified 25 mph cruising speed, General Motors Detroit Diesel turbocharged 12V-71 engines developing 510 shaft hp at 2100 rpm were selected. The specifications called for extremely low noise levels on board, and consequently resilient mounts, Vibration Eliminator Company Morflex marine radial shaft couplings, and large Maxim sil-

encers were installed. The Twin Disc MG 521 reverse/reduction gears are 2:1 ratio, and turn Federal Equi-poise three-blade stainless steel propellers 34 inches in diameter. The propeller shafts are 17-4PH Armco stainless steel, two and one-half inches in diameter.

The entire hull is fabricated of alloy 5086-Hill. Framing is on the longitudinal system, using Tee bars with transverse web frames four feet on centers. The disposition of the transverse and longitudinal centerline watertight bulk heads provides for one-compartment subdivision. The shell plating is 5/16 of an inch thick on the bottom, 1/4 of an inch on top-sides, and 3/16 of an inch on the deck. The superstructure has 1/8 of an inch sides, with a 3/16 inch main cabin top. The starboard hull houses twin berths and the galley area which is fitted with a Crane-Chef Model 529 compact galley unit. Just aft of this compartment is located the starboard engine room which houses one main propulsion engine and a standby electric steering pump. The aftermost compartment in the starboard hull houses a 550-gallon fuel tank and the steering gear. The hydraulic-assisted manual follow-up steering system is normally powered by a Vickers pump flanged to the starboard main engine. The Vickers steering valve is actuated through a Saginaw series 549 mechanical steering gearbox, and directs hydraulic pressure to Hydro-Line cylinder. A long drag link connects port and starboard rudders.

The port hull contains a head and locker room in the forward compartment. The port machinery compartment includes the port main propulsion engine and the General Motors 2-71 30KW/120/240 volt single-phase diesel generator set. The main electrical panel is mounted on the aft port engine room bulk head. A second fuel tank is carried in the port tank compartment.

The pilothouse is arranged for maximum visibility in all directions and includes a large amount of sophisticated electronic gear, all directed toward maximum utilization of the craft in her assigned survey and mapping work. A Raytheon DE730A depth sounder was installed and a second depth sounder, having an autotape digital readout system for simultaneous position plotting and depth sounding, will be installed by the Philadelphia district. Other electronic equipment installed by Grafton includes a Radio Marine N7A radar, R. F. Communications single sideband radio, R.F. VHF-FM communications radio including a second channel-16 monitor, a Motorola VHF radio, and Talk-A-Phone intercommunication and public address system. A nine-inch Danforth/White compass is mounted in a binnacle directly in front of the operator.

A large monitoring panel, extending across the pilothouse directly above the windshield, includes gages for the main propulsion and generator engines, bilge pump control with indicator lights, and engine malfunction monitoring panel with indicator lights and test

buttons. Aft in the pilothouse are installed two chart desks and an electronics cabinet.

The main salon, of large proportions, includes a large drafting table, chart stowage lockers, 56 removable fiber glass passenger seats, a life jacket stowage cabinet and luggage rack. All of the accommodation spaces are air-conditioned with a Westinghouse five-ton unit, which also provides electric heating.

On the weather deck, a 90-pound Danforth anchor, roller chocks and an Ideal Anchor windlass are installed on the foredeck. Baier aluminum-hinged flush hatches measuring 15 by 24 inches provide access to all compartments.



Main Salon: seating capacity 56 passengers. Passenger compartment is completely soundproofed, air-conditioned and paneled with fire-retardant Marlite. Large double doors aft provide for fast boarding and exit.

Surmounting the pilothouse is a surveyor's flying bridge with four EEZ-IN swivel seats. A large bipod mast carries the radar antenna, radio antennas and navigation lights. A Kahlenberg D-2 air horn and a Perko 884 searchlight are installed. To assist in survey operations, two oceanographic winches and davits are provided on the quarters.

Designed and built to the highest standards, this catamaran vessel represents Grafton's entry into the most interesting and promising area of marine transportation. Grafton's engineers have prepared preliminary designs for other catamaran vessels to serve as crewboats, research vessels, excursion boats, and party fishing boats. The firm invites inquiries relative to other applications of this craft.

Grafton personnel who were intimately involved with the design and construction of the vessel include Edward D. Fry, president; Timothy Graul, naval architect/sales; M.E. (Gene) Thompson, vice-president/manufacturing; and Robert Kappler, plant superintendent. Commanding the Schuman on her 2,600-mile delivery trip was Everette D. Fry, founder of Grafton Boat.

Grafton Boat is a wholly-owned subsidiary of Continental Boiler and Sheet Iron Works, St. Louis, Mo. The yard and main offices are located at Grafton, Ill. 62037, telephone: (618) 786-3371.



Looking aft in starboard engine room showing turbocharged 12V-71 Detroit Diesel main engine. Also visible in the photograph are the engine room exhaust blower, hydraulic reservoir and fixed CO₂ extinguisher system.

Hillman Barge Delivers Two Double Raked Deck Barges



The Loveland 28 features Hillman heavy construction to transport concentrated loads.

Hillman Barge & Construction Company, Pittsburgh, Pa., recently delivered two double-raked barges to the S.C. Loveland Co. of Philadelphia, Pa. Each barge is 143 feet nine inches by 43 feet six inches by 10 feet nine inches.

Classed by the American Bureau of Shipping as Maltese Cross A-1 barge with load line assignment for unlimited ocean service, and certificated by the United States Coast Guard for ocean service, this Hillman barge design features heavy construction to transport heavy concentrated loads. The nine midbody compartments are provided with interconnecting flooding pipes for ballasting to facilitate loading and off-loading operations, as well as to maintain an even trim in the event a compartment is accidentally holed.

The stern ends are fitted with two skegs for ocean-towing. The barges are equipped with ground tackle, consisting of a hand-operated winch, wire rope, and anchor on the stern rake.

These barges are one of the many types and sizes of deck barges that Hillman has designed and built for inland waterway, Gulf, and ocean service.

New Corrosion Resistant Alloy Detailed In Armco Booklet

An eight-page booklet is available from Armco Steel Corporation's Advanced Materials Division describing a new Armco Stainless Steel alloy that offers a combination of very high corrosion resistance and strength.

The Cr-Ni-Mn alloy—Armco 22-13-5—is commercially available in bar, wire, and forging billets. Its high corrosion resistance makes it especially suited for use in the petrochemical, chemical, pulp and paper, textile, food processing and marine industries.

Typical yield strength is 65,000 psi at room temperature, along with tensile elongation of at least 40 percent. The alloy has good elevated temperature properties and excellent toughness at cryogenic temperatures. It remains non-magnetic after 60 percent cold reduction.

Armco 22-13-5 is priced competitively with Type 316L. The alloy is fully austenitic and can be fabricated by the same techniques used on other austenitic stainless alloys. It is a stabilized alloy, which means it can be welded without a post-weld anneal.

Armco 22-13-5 is recommended for use in equipment now receiving only marginal protection from Types 316 and 316L stainless steel or where higher strength is required. This includes pumps, valves, fittings, fasteners, cables and chains, chemical and petrochemical processing equipment, marine hardware, and corrosion-resistant springs.

For a copy of the booklet write Armco Steel Corporation, Advanced Materials Division, Dept. LA-1970, P.O. Box 1697, Baltimore, Md. 21203.

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FIRST LASH SHIP FOR PFEL: The laying of the keel of the SS Thomas E. Cuffe at Avondale Shipyards, New Orleans, La., was marked by the presence of the men who pioneered the concept of LASH (lighter aboard ship handling) and the steamship line which will be first in the Pacific with the revolutionary 814-foot vessels. Top ranking officials of Pacific Far East Line, Inc., Avondale Shipyard executives, the man who designed the LASH cargo system, and a representative of the United States Maritime Administration gathered for keel-laying ceremonies for the ship named after the first president of Pacific Far East Line. Scheduled for service in the fall of 1971, the SS Thomas E. Cuffe will be the first of six LASH vessels owned and operated by Pacific Far East Line, headquartered in San Francisco. The pioneering steamship line with the familiar California bear stack insignia on their 20 other ships honored their founding president by naming the first LASH ship after him, whereas all other PFEL ships have the word BEAR in their names. Seen above, from left are: **Edwin Hartzman**, executive vice-president of Avondale Shipyards; **Jerome L. Goldman**, president of Friede & Goldman (designers of LASH); **George J. Gmelch**, vice-president, operations, of PFEL; **Leo C. Ross**, president of PFEL; **Henry Z. (Zac) Carter**, president of Avondale Shipyards; and **Alexander M. Brown**, representative of the Maritime Administration. Avondale is currently constructing a total of eleven LASH ships; the other five are being built for Prudential Grace Lines.

Tretout To Manage New Zinc-Lock Eastern Regional Office



Marc W. Tretout

The Zinc-Lock Company of Emeryville, Calif., has announced the opening of its eastern regional offices and warehouse. The new facilities are located at 320 Market Street, Kenilworth, N.J.

In addition, **Eugene B. Rode**, general manager of the Zinc-Lock Company, announced the appointment of **Marc W. Tretout** as eastern regional manager. Mr. Tretout is a graduate in business administration from Ithaca College. He is a member of the National Association of Corrosion Engineers, The Society of Naval Architects and Marine Engineers, and the Washington Paint Technical Group.

The Zinc-Lock Company, manufacturers of marine and industrial protective coating systems, is a subsidiary of Gulf Resources & Chemical Corporation, Houston, Tex. The main plant is located at 6460 Hollis Street, Emeryville, Calif. 94608.

Westinghouse Names Cabral Gen'l Manager Of Marine Division



Herbert J. Cabral

Herbert J. Cabral has been appointed general manager of Westinghouse Electric Corporation's marine division with headquarters in Sunnyvale, Calif.

James E. Hammerstone succeeds Mr. Cabral as manager in Sunnyvale of the Westinghouse missile launching and handling department, part of the company's undersea division. Mr. Hammerstone was department program director.

Mr. Cabral joined Westinghouse in 1946 in Pittsburgh, and came to Sunnyvale in 1948. In 1958 he was placed in charge of Polaris launcher field installation and testing. In 1963 he became deputy project manager, missile launching and handling. From 1967 to 1968 he was a member of the staff of **Thomas J. Murrin**, executive vice-president, defense, in Pittsburgh, Pa.

Mr. Cabral was graduated from California Institute of Technology with an electrical engineering de-

gree, and has a master of business administration degree from Harvard.

Mr. **Hammerstone**, who served for 23 years with the United States Navy, joined Westinghouse in 1965 at Sunnyvale as Poseidon program manager. He became program director for the missile launching and handling department in 1967.

Albert L. Bethel, formerly marine division general manager, was appointed recently as director of manufacturing for the company, with headquarters in Pittsburgh.

Bart Elected President Of Matson Terminals



Gordon E. Bart

The board of directors of Matson Terminals, Inc., San Francisco, Calif., has announced the election of **Gordon E. Bart** as president.

Mr. Bart has been vice-president and general manager of the terminals and stevedoring firm since November, 1966. Before that, he served as assistant general manager for three years. He started with the company in 1959 as a project engineer.

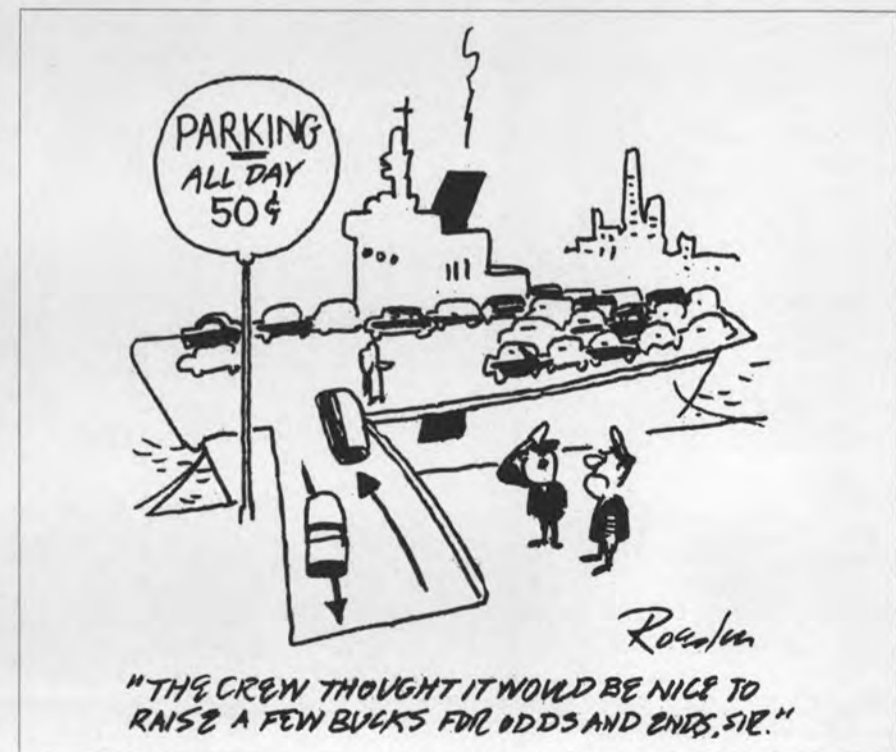
Bludworth Building Tug For Jackson Marine

Bludworth Shipyard, Inc., Houston, Texas, has received an order from Jackson Marine Corporation, Aransas Pass, Texas, for the construction of a 118-foot by 33-foot by 19-foot-six-inch tugboat.

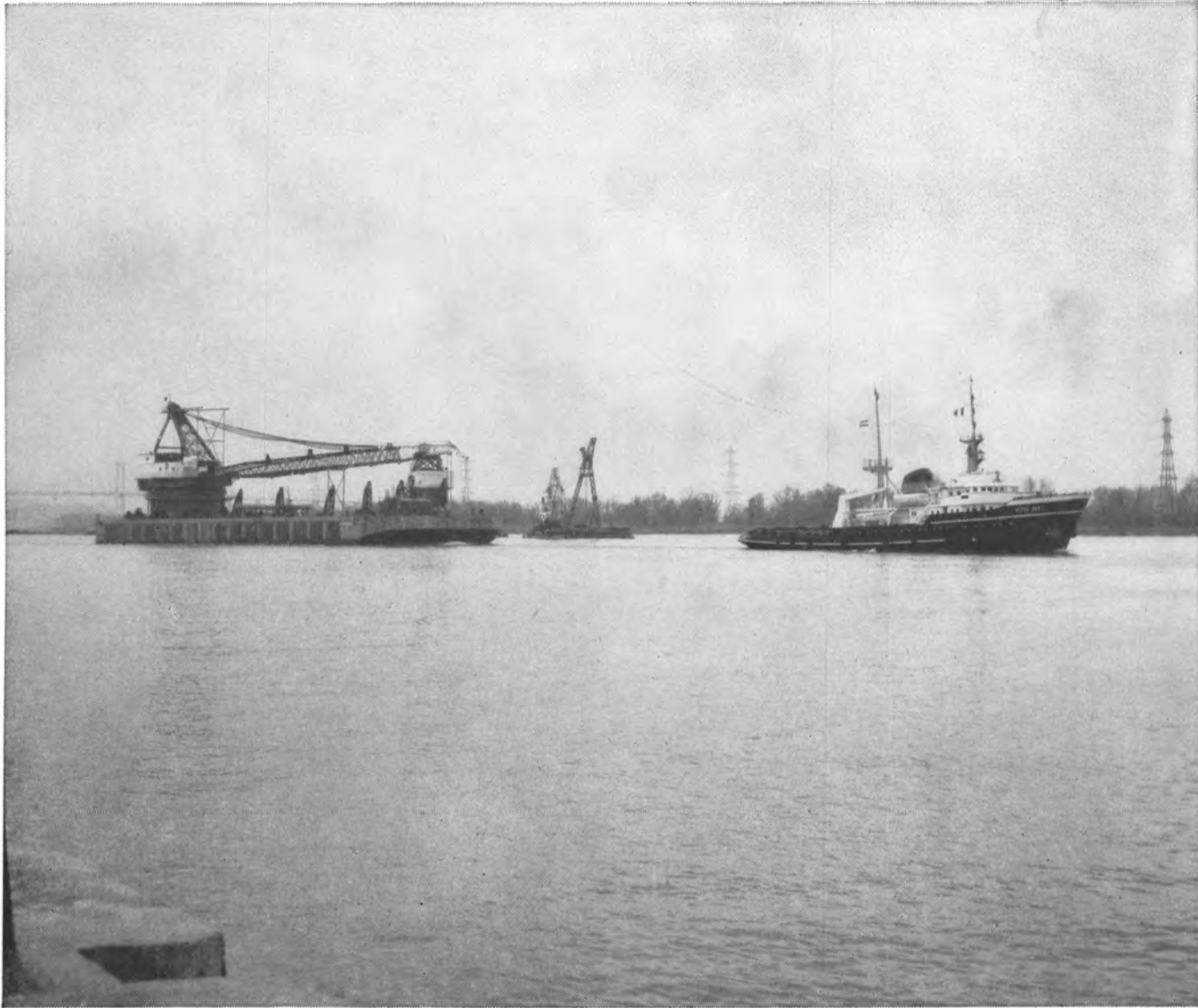
Designated Hull No. 7100, the twin-screw vessel, to be named Mr. Richard, will be equipped with 2,000-total-bhp diesels.



IHI DELIVERS ORE/OIL CARRIER: The Docebay, a 130,892-dwt ore/oil carrier, was recently delivered to the Seaman Shipping Corp. of Brazil at the Aioi Shipyard of IHI (Ishikawajima-Harima Heavy Industries Co., Ltd.) of Japan. The main specifications of the ship are: length (b.p.), 853 feet; molded breadth, 146 feet; molded depth, 74.8 feet; and draft, 52.8 feet. The main engine is an IHI-Sulzer 12RD90-type diesel engine of 27,600 bhp, and the ship runs at a service speed of 15.5 knots.



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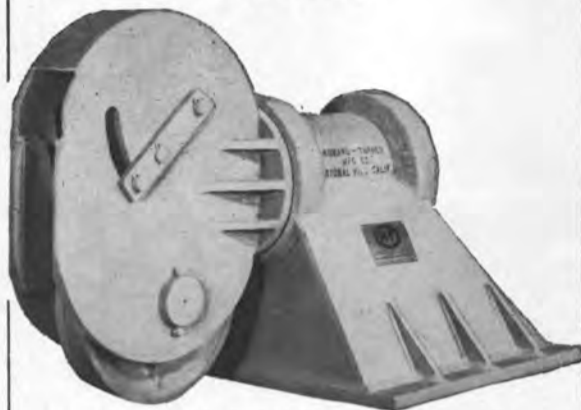
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Three Papers Presented At Great Lakes/Rivers Section Spring Meeting In St. Louis



Benjamin F. Tracy Jr., (left) retiring chairman of the Great Lakes and Great Rivers Section is shown above with incoming chairman R. A. Stearn.

The spring meeting of the Great Lakes and Great Rivers Section of The Society of Naval Architects and Marine Engineers was held at Stouffer's Riverfront Inn in St. Louis, Mo. on May 7, 1970.

R.A. Stearn of R.A. Stearn Inc. was named Section chairman, replacing Benjamin F. Tracy Jr. of the Ashland Oil & Refining Co.

The following papers were presented in the morning session: "On the Dynamics of Cables with Application to Marine Use" by Dr. Michail Alexandrov, visiting scholar, University of Michigan; "Pollution of World Harbors, Docks and Inland Waterways with Particular Reference to Ships" by John H. Stokes, managing director, Elsand Sewage Systems; "Market Study Concerning Controllable Pitch Propeller Drive Systems" by Richard C. McRoberts, development engineer, Twin Disc, Inc.



Section papers chairman John B. Woodward III (seated) is pictured with the three authors, standing left to right: Dr. Michail Alexandrov, John H. Stokes, and Richard C. McRoberts.

In the afternoon, the Section toured the General Motors Corvette assembly plant while the ladies enjoyed a luncheon on the riverboat Robert E. Lee and a tour of the Gateway Arch. The meeting concluded with a reception and dinner.

The fall meeting will be held in Ann Arbor, Mich., on October 2, 1970.

Barge Conversion Contract Awarded To Bushey Yard

A contract for the conversion of an existing deck cargo barge (built in 1957) into an offshore, oil-well drilling barge has been awarded by Dunbar & Sullivan Dredging Company, Detroit, Mich., to Ira S. Bushey & Sons, Inc., Brooklyn, New York.

To be named J. K. 80-440, the drilling barge will have a length of 250 feet, beam of 40 feet and depth of 10 feet.

Burton Shipyard Constructing 200-Foot Offshore Vessels For Offshore Logistics, Inc.

Two of the world's largest and the oil industry's fastest ocean support vessels are under construction for Offshore Logistics, Inc., Lafayette, La. The vessels, named Great Republic and Joseph Conrad, are 200 feet in length. They were designed by Offshore Logistics to provide the offshore oil operator with 20 miles per hour delivery of over 5,000 cubic feet of bulk materials in below deck storage or 800 tons of drill pipe, tubing, or other deck cargo.

These requirements are considered to be essential, as the search for offshore oil expands to the remote areas of the world. Dependability of the equipment was given high priority in the design, and a complete reserve system has been included for all major components.

The Great Republic and Joseph Conrad are each powered by two General Motors EMD engines furnishing 5,600 total horsepower. The use of high horsepower propulsion system and a hydraulically driven towing and anchor winch, give the vessels long-distance towing capabilities.

The first of the two new ships will be launched in July, and the second, in September of this year. Both are being built by Burton Shipyard, Inc., Port Arthur, Texas.

In addition to these vessels, Offshore Logistics has under construction two 175-foot towing and supply vessels with 4,000 horsepower at Zigler Shipyards, and two 185-foot towing and supply vessels with 5,600 horsepower at Halter Marine Services, Inc. These were designed following the same concept of large capacities with extremely fast delivery speed. They will be completed during July and August of this year and will be added to the international fleet. The company also has six vessels under construction for addition to its domestic service.

Offshore Logistics, Inc., presently owns and operates 32 crew and supply vessels in the Gulf of Mexico from operating headquarters in Morgan City, La. Executive and administrative headquarters are located in Lafayette, La. The company recently established an office in Singapore to serve the oil industry in southeast Asia, and is considering further expansion of its activities.



Nuclear-Powered Research Sub Design And Study Award To Gen. Dynamics/Electric Boat

RFP-70-Q-7652 has been issued by the Naval Ship Systems Command, Washington, D.C., to General Dynamics/Electric Boat Division for conceptual design work and optimization studies for deep-submergence nuclear-powered oceanographic research type submarines.

Direct contact should be made with General Dynamics/Electric Boat, Groton, Conn. 06340 by small business firms or others interested in subcontracting opportunities in connection with the above procurement.

Stow Flexible Shaft Engineering Handbook

Stow Manufacturing Co. has just published the fifth edition of their 74-page Flexible Shaft Engineering Handbook for engineers to use in many applications. This handbook contains information on the latest developments on Stow Flexible Shafting, including the all new .190 diameter standard power drive and remote control flexible shaft. Also included is information on the latest materials used to make flexible shafting for use in high temperature areas.

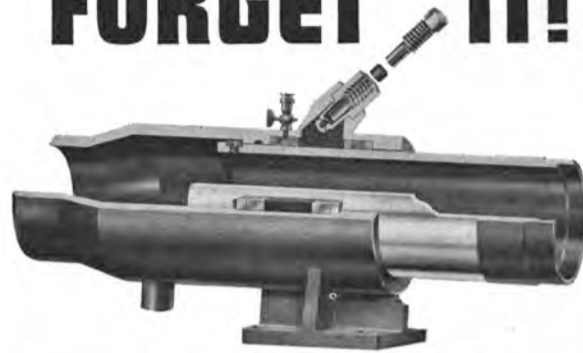
The Stow Flexible Shaft Engineering Handbook is divided into seven major sections as follows: (1) basic information on flexible shafts; (2) core selection; (3) casing selection; (4) standard flexible shafts; (5) value engineered flexible shafts; (6) customer engineered flexible shafts; and (7) appendix. In addition, complete charts and graphs are given for selecting the correct size shaft to suit the job.

For a free copy of the Fifth Edition Handbook, write to Stow Manufacturing Co., 86 Shear St., Binghamton, N.Y. 13902.



ANTI-POLLUTION DEVICE: Colt Industries' Water Processes Section in Beloit, Wis., manufactures this marine sewage treatment system to control water pollution by ships. This equipment was part of a display at a recent meeting of The American Society of Naval Engineers at the Shoreham Hotel in Washington, D.C. These compact units make any ship self-sufficient in preventing harbor pollution from sewage system discharges. The liquid discharge from these units meets current official requirements for preservation of water quality. The system is an electro-mechanical-chemical module which separates solid and liquid matter and treats each by appropriate methods including incineration. Unlike a biological system that depends on continual biological action, the unit can be started or stopped as desired. The single module, as shown in the photograph, has a 175-man capacity. The solids removed from the sewage are reduced to inert ash in an incinerator by odorless, smokeless combustion. Liquids are chemically treated and the pathologically safe effluent is discharged overboard. This does away with the necessity of emptying holding tanks of refuse when the vessel docks. Several of the modules can be used together to increase the total capacity. Units are available in sizes up to 17,000 gallons of influent per day. Only electric power and fuel oil supply for the incinerator are required to operate the units.

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Hampton Roads Section Hears Technical Paper On Deep-Ocean Exploitation Technology



Shown above at the Mariners Museum, left to right, are: **J.D. Deal**, secretary-treasurer of the Section; **D.A. Holden**, past-president of SNAME; **R.G. Mende**, secretary of SNAME; Rear Adm. **J.A. Brown**, Section chairman; **R. Kaufman**, author; **E.L. Pickler Jr.**, Section executive committee member; and **L.C. Robertson Jr.**, Section vice-chairman.

The Hampton Roads Section of The Society of Naval Architects and Marine Engineers held its final meeting of the 1969-70 season at the Mariners Museum, Newport News, Va. The meeting, which was preceded by dinner, was attended by 260 members and guests.

During the technical session, a paper entitled "Deep-Ocean Exploitation Technology" was presented by **Raymond Kaufman**, vice-president, technical, Deepsea Ventures, Inc.

In his paper, the author outlines the mineral resources of the sea, and discusses recent deep-ocean mining concepts. Deep ocean is defined as the sea beyond the continental shelf, particularly areas of the sea floor exceeding 1,200 feet in depth. The majority of the ocean technology and equipment in use today pertains to off-shore resources located in the relatively shallow water of the continental shelf.

Of the various minerals available in the deep sea, the principal candidates which have a possibility of being economically mined are: (a) Phosphorite—a source of phosphate for fertilizer and chemicals;

(b) Red Sea type sediments—metalliferous muds containing percentage of the more valuable metals; (c) Manganese Nodules—nodules containing relatively high percentages of manganese, copper, nickel, and cobalt.

It is the mining of the manganese nodules on which Mr. Kaufman focuses attention and outlines in principal some of the concepts which have been proposed. The air-lift concept as a "viable alternative for deep ocean mining" was asserted by Mr. Kaufman when explaining the results of tests in a flooded abandoned mine shaft in Galax, Va.

Based upon a careful technical and economic analysis of this pumping system, a prototype deep ocean mining project is presently under way by Deepsea Ventures. A C1-M-AVI general cargo ship, now renamed R/V Deepsea Miner, is undergoing conversion to a prototype mining ship with a 3,000-foot dredging capability. A test plan has been established and the actual mining experiment will be conducted this summer on the Blake Plateau of the Georgia/Florida coast.



FIRST ALUMINUM WARPING TUG: Moving men and materials from ship to shore is the job of the world's first aluminum warping tug—the U.S. Navy's LWT-1. Built by Campbell Machine, San Diego, Calif., the 85-foot-long vessel is rugged enough to "warp" or haul pontoon causeways from the bow of an LST for fast landing operations, yet light enough to be stored aboard an LST mother ship when not in use. Two 210-horsepower outboard engines provide enough power to pull a grounded LST free, if necessary. The hull was fabricated of marine aluminum alloy 5086 by Rohr Corporation, Chula Vista, with Reynolds Metals Company a major metal supplier. She carries a crew of six at a speed of nine knots and has a beam of 22 feet and a draft of two feet 4½ inches. Lighter weight aluminum construction provides ease of handling, lower maintenance, and easier sideloading of the tug aboard the mother ship. Campbell Machine is now building its second aluminum warping tug for the Navy.

Nippon Kokan Names Shoda To N.Y. Post

Masoyoshi Shoda has been appointed assistant manager, shipbuilding and heavy industries department, New York office of Nippon Kokan K.K., Japan's only integrated shipbuilder-steelmaker, and the nation's number two steelmaker.

Mr. Shoda will be responsible for sale and service of new ships and for promoting sales of heavy equipment manufactured by NKK. This includes the Munck loader, a high-efficiency gantry crane which sharply increases cargo handling capacity; ocean drilling machinery; steel

containers; rolling mills and electric arc furnaces for steelmaking; and mechanical presses.

Mr. Shoda, who is 34 years of age, has been assistant manager of the heavy industries division export section at NKK-Tokyo headquarters since January 1967. He joined the company in 1958 upon receiving a bachelor of arts degree in economics from Yokohama National University and served in the ship repair department of Assano Dockyard until 1965 when he became a member of the heavy industries division.

A native of Chiqasaki City, Kanegawa Prefecture, Japan, Mr. Shoda resides in Queens, N.Y.

NYSA Safety Bureau Awards To 15 Companies



Safety award winners shown above, left to right, are: (top row) **Joseph Bruschi**, Prolerized Schiabo-Neu Company; **Richard Weeks**, Weeks Stevedoring Co., Inc.; **Claude Wollen**, Standard Fruit & Steamship Co.; **William McCuen**, John W. McGrath Corp.; **Edward McIntyre**, Pittston Stevedoring Corp. **Sam Elia**, Pierside Repairs, Inc.; **G. Stueber**, Sea-Land Service, Inc.; (center row) **Charles Mele**, Mealli Protective & Investigating Service, Inc.; **August Vuillot**, United Fruit Co.; **Al Cash**, International Terminal Operating Co., Inc.; **Edward Ponek**, Maher Stevedoring Co., Inc.; **T.R. Alff**, Nacirema Operating Co., Inc.; (front row) **Capt. G.D. Barlow**, director, Safety Bureau, NYSA; **John L. Horton**, The Cleveland Cliffs Iron Company; Adm. **John M. Will**, president, NYSA; **A.P. Chopin**, chairman, NYSA; **Frank Grande**, Northeast Marine Terminal Co., Inc.

Adm. **John M. Will**, president of the New York Shipping Association Inc. and chairman of the board, American Export Isbrandtsen Lines, presented awards to 15 Port of New York employers of waterfront labor who had outstanding records in accident reduction last year.

The presentations were made on May 7, at the 17th annual luncheon sponsored by the NYSA Safety Bureau at the Downtown Athletic Club. **Capt. George D. Barlow**, Safety Bureau director, assisted in the presentations.

Those receiving awards were: John W. McGrath Corp.; International Terminal Operating Co. Inc.; Maher Stevedoring Co. Inc.; Pittston Stevedoring Corp.; United Terminals Inc.; Nacirema Operating Co. Inc.; Standard Fruit & Steamship Co.; United Fruit Co.; Northeast Marine Terminal Co. Inc.; Pierside Repairs Inc.; Prolerized Schiabo-Neu Co.; Maintenance Associates Inc.; Sea-Land Service Inc.; Mealli Protective Service; and Weeks Stevedoring Co. Inc.

When making the awards, Ad-

miral **Will** commented on the substantial increase in the number of award recipients this year. He called this a significant indicator of the continued awareness on the part of managements that safety is an important part of their business.

Alexander P. Chopin, NYSA chairman, observed that the waterfront accident rate last year was the lowest since the establishment of the Safety Bureau in 1952. But he remarked also that eternal vigilance in accident prevention is still in order. He praised the cooperation given by employers and by the International Longshoremen's Association in promoting waterfront safety.

Special awards also were given to three ILA longshoremen for rescuing fellow-workers who had fallen overboard. The recipients were: **Peter Cundari Jr.**, Local 1814; **Angelo Marino**, Local 1814; and **Paul Castellano**, Local 824.

The guest speaker was **John L. Horton**, general chairman, marine section, National Safety Council and assistant manager, marine division, Cleveland-Cliffs Iron Co., Cleveland, Ohio.

Martinolich-Built Towboat Joins Western Transportation's Fleet



The Western Meteor is designed for general towing work and for the handling of multiple barge tows on the Columbia and Willamette rivers.

A new 2,250-hp river towboat, the Western Meteor, has been delivered to Western Transportation Co.'s moorage in Portland, Ore., according to an announcement by **George Jackson**, president. The vessel was brought down from the Tacoma, Washington yard of Martinolich Shipbuilding Corp. who were the builders.

The Western Meteor was christened by **Mrs. Nellie Springer**, wife of **William F. Springer**, long-time employee of Western and head of maintenance and construction for the firm.

The Western Meteor joins a fleet of modern towboats in operation by Western Transportation Co., including the two-year-old Western Comet. The company's fleet consists of eight towboats and forty-three barges handling a wide variety of commodities including lumber, wood chips, steel, paper, sulphur, fuel oil, general freight and ships' cargo.

Western Transportation Co. serves a number of industrial plants on the Columbia and Willamette rivers including lumber mills, canneries, paper mills, plywood plants, as well as steamship lines and others.

The Western Meteor was designed by Philip F. Spaulding and Associates, Inc., naval architects, of Seattle, Wash. It is equipped with modern systems for safety, instrumentation and control. It has a pilothouse forty-four feet in height to permit visibility over the tops of barges. The steering control system was designed and furnished by Matthews Hydraulics, Inc. of Portland, and the engine control system by Mathers Controls, Inc. of Seattle. These systems combine to give the utmost control and flexibility in the handling of multiple barge tows under all conditions. Construction is all steel, overall length is 108 feet, breadth 34 feet, and draft seven feet.

Main engine power for the Meteor is supplied by two Caterpillar diesel marine engines Model D 399, developing 1,125 hp each. The engines are controlled from the pilothouse with complete warning systems and instruments permitting pilothouse personnel to have complete knowledge of conditions in the engine room.

Navigation equipment includes a Danforth-White compass, Decca Model 202 radar, and Apelco MS 602 Fathometer. Communication is through an RF 401 VHF multi-channel radio Sonar Model HA-301 Intercom on the vessel, and deck crews will carry portable radios for communications with pilothouse personnel.

Electric power is supplied by two Caterpillar Model D 333-C diesel electric generator sets. Pilothouse control is provided for the deck equipment consisting of seven Beebe Model 65 barge connectors, used in making up multiple barge tows.

The Western Meteor is equipped for 24-hour operation with crews' quarters paneled in formica and indoor-outdoor carpeting on the decks. Galley equipment is all electric and includes Kitchen-Aid dishwasher, garbage disposal and a refrigerator-freezer combination. A clothes washer and dryer are also provided.

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LOCAL TIME: 11:00 a.m. DAY OF WEEK: Monday
DATE: JULY 13, 1970

and at that time publicly opened, read aloud and recorded for the following:

Bid Number: 919-69

TITLE: Purchase of City Fire Boat

Specifications and/or bid forms may be examined at the office of Eagle Marine 1935 E. Beaver St., Jacksonville, Florida (Mailing address: 1604 Kingswood Rd., Jacksonville, Florida) and may be obtained at said office for the sum of \$20.00 per set.

The payment for drawings and contract documents will not be refunded. Bid Security in the form of a Bid Bond executed by the bidder and a qualified surety or a certified or cashier's check on any national or state bank in the amount of five percent (5%) of the total amount bid and made payable to the City of Jacksonville must accompany each bid as a guarantee that the bidder will not withdraw from the competition after opening the bids, and in the event the contract is awarded to the Bidder he will within ten (10) days thereafter execute the contract and furnish the required bond, failing which the security shall become the property of the Owner as liquidated damages.

All bids must be made on the appropriate proposal forms, properly executed and placed in the envelope provided, marked to identify the bid and then shall be delivered or mailed to Room 301, City Hall, 220 East Bay Street, Jacksonville, Florida.

The City of Jacksonville reserves the right to reject any or all bids, waive formalities in any bid, make the award in part or whole and to make the award in the best interest of the City of Jacksonville.

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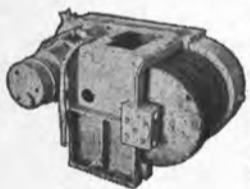
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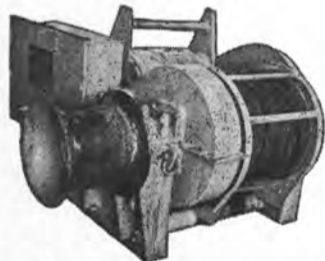
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24-American Hoist & Derrick Company Cargo Winches, 12-R.H., 12-L.H., single drum, single gypsy, Mfgs. No. 67696, rated 7400 lb. line pull at 220 FPM, total stowage capacity 709' of 7/8" wire rope, powered with Westinghouse Motors, 50 HP, 230 volts DC, 600 RPM, compound wound, Type CK, Frame 9, complete with Control Panel, Resistors and Master Switch. All units are of Recent Manufacture.

Contact: Ralph Ingram



3121 S.W. Moody Ave., Portland, Oregon 97201
Phone: 228-8691. Code 503 — Telex: 035-558

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Rebuilt to ABS and Coast Guard requirements

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440/3/60—with controls & Stearns magnetic brake. Drum 14" diam. for 450' ¾" wire rope. Single line pull 10,000 lbs @ 450 FPM. Mfg. by Lakeshore.
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G.E. DS 60	300 KW
Worthington	300 KW
De Laval	300 KW
Hendy (Terry Design)	300 KW
Westinghouse (Victory type)	300 KW
Westinghouse	250 KW
Worthington	150 KW
Westinghouse CA 20	100 HP
G.E. Main Turbine Rotor T2	6000 HP
G.E. HP & LP Turbine C2	6000 HP
G.E. HP & LP Turbine	8500 HP
Westinghouse Turbine & Gear C4, C3 Some AP3	8500 HP

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AH&D Model S-505—for 2 5/16" chain. Engine 12x14—operating weight 42,700 lbs. Recently removed from T-2 tankers at following locations: Bull Run at Todd Seattle; Petrolite at Todd Alameda; Roanoke at Willamette Shipyard, Portland, Oregon. All complete; good condition.

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C-1MAV	10 HP	Oilgear—DH811
C3—Seattle Tacoma	55 HP	Waterbury 5
Victory AP3	40 HP	Oilgear DH3511
Victory AP2	40 HP	Northern 5330—unused
Moore C3	50 HP	Amer. Engineering LP-18
Moore C2	20 HP	Waterbury 5A
T2—JLP-12—850 RPM—1200 lbs/sq in.—Heleshaw		
1 New Waterbury #5		
Mission Steering Gear—some parts—inquire		

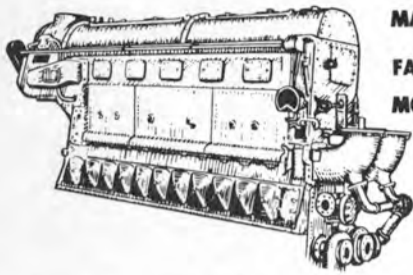
EMERGENCY STEAM PUMPS

For C-1MAV-1 and T2 Vessels

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MARINE DIESEL ENGINES



MATCHED PAIR . . .
FAIRBANKS-MORSE
MODEL 38D8-1/8

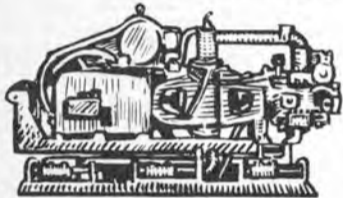
1 Port;
1 Starboard

Used condition, 1800 HP, 800 RPM, 2 cycle, 8 1/2" bore, 10" stroke, Air Start. Complete with Westinghouse Reduction Gears, 2.216:1 ratio—with hydraulic coupling.

4-COOPER-BESSEMER, MODEL LS-8-DR
1300 HP, 277 RPM, direct reversing, turbo charged.

HYDRAULIC PUMPS (STEERING), Hele Shaw, Type JLP 12, 1000 PSI, 850 RPM. Northern radial piston. Size 5430, 44 GPM, 1500 PSI, 850 RPM.

AIR COMPRESSORS



JOY CLASS WG82

JOY, Class WG82, 2-stage rated 100 CFM at 300 PSI, water cooled, size 7" x 3 3/8" x 7" with Reliance motor, 30 HP, 220/440/AC/3/60.

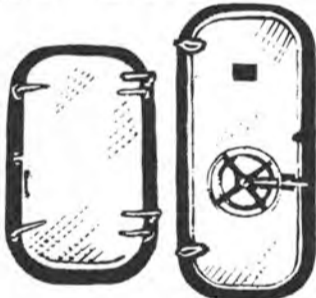
INGERSOLL-RAND, 50 CFM, 150 PSI, 20 HP, 440/3/60
INGERSOLL-RAND, 150 CFM, 600 PSI, Model 75, with Westinghouse Motors, 75 HP, 230 DC.
INGERSOLL-RAND, 50 CFM, 600 PSI, Model 30, with Westinghouse Motors, 15 HP, 230 DC.
CHICAGO-PNEUMATIC, 161 CFM, 100 PSI, 40 HP, 230 DC.
WESTINGHOUSE Air Brake, 246 CFM, 140 PSI, with 50 HP Motors, 440/3/60.
WORTHINGTON, 175 CFM, 125 PSI, with 50 HP Motors, 440/3/60.

STEAM AIR COMPRESSORS

Westinghouse Air Brake Company, Size 9 1/2 x 9 x 10 Vertical.

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As removed from reserve "moth-balled" vessels. Huge inventory of practically all sizes and types ready for immediate delivery . . . and more on the way. These doors have the frame trimmed and are suitable for re-use. Doors are available in 4, 6, 8 and 10 dog types; many are "Quick-acting-wheel controlled."



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

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

WESTINGHOUSE, 2.216:1 ratio, with hydraulic coupling; as used with 1800 HP, 800 RPM Fairbanks-Morse engine—Starboard.

FALK REDUCTION GEARS . . . Port and Starboard, interchangeable with T-3 Tanker Gears, Falk No. 148-300. Also interchangeable with Falk Gears on A051 Class Tankers (14 ships). Also on A097 to A0100 Tankers.

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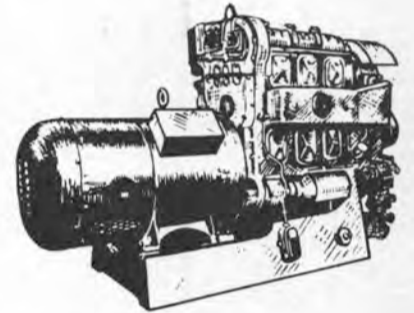
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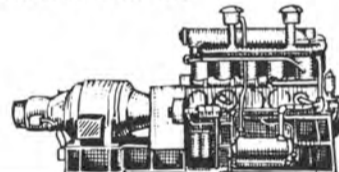
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MARINE DIESEL GENERATORS

SUPERIOR, 10 KW, 120 Volts DC.
HERCULES, D00C, 10 KW, 120 DC, Radiator cooled.
CATERPILLAR, radiator cooled, 15 KW, 120/240 Volts DC.
GM 4-71, 60 KW, 220/440 AC.
HERCULES DJXC, 25 KW, 120 DC.
CUMMINS A1, 30 KW, 120 DC.
MURPHY, Model ME 66, radiator cooled, 75 KW, 120/240 Volts DC.
CATERPILLAR DIESEL ENGINE, D13000, 85 KW, 220 AC.
LORIMER, F5SS, 75 KW, 120/240 DC, radiator cooled.
COOPER-BESSEMER, JS-5, 250 KW, 240 DC.
FAIRBANKS-MORSE, 38E5 1/4, 300 KW, 260/345 DC.
GM 8-268, 300 KW, 260/345 DC.

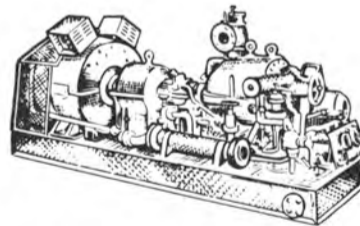


LORIMER 100 KW
450/3/60 Volts DC.



BUDA 6DHG691, 60 KW, 120 Volts DC.
GM-3-268A, 100 KW, 240/120 Volts DC.
SUPERIOR GBD-8, 100 KW, 240/120 Volts DC.
SUPERIOR, Model IDB-8, 100 KW, 450/3/60.
GENERAL MOTORS Model 3-268A, 152 BHP, 1200 RPM, with 100 KW Generators, 450 volts AC, 3 phase, 60 cycles.
GM 8-268A, radiator cooled, air start with Westinghouse Generator, 250 KW, 440/3/60, complete with switchboard.

TURBINE GENERATORS



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

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

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

GE DORV Turbines, with GE Generators, 200 KW, 440/3/60.

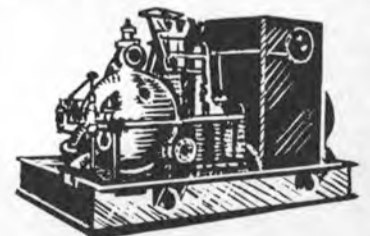
TERRY TURBINES, type TM5, 440 PSI, 750° F, with Crocker-Wheeler Generators, 300 KW, 120/240 DC.

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

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

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

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



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ZIDELL

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AC PUMPS—Horizontal Centrifugal

2—Goulds, 2000 GPM, 470' head, Size 8x10, with Westinghouse Motors, 350 HP, 2300/3/60.

1—Worthington, 400 GPM, 150 PSI, 5½" suction, 3½" discharge, with G.E. Motor, 75 HP, 440/3/60, 3550 RPM.

4—Worthington, size 3UB1, 400 GPM, 280' head, 50 HP, 440 AC.

1—Goulds, 300 GPM, 336' head, 3" suction, 2" discharge, with G.E. Motors, 50 HP, 440/3/60, 3550 RPM.

7—J.C. Carter, 365 GPM, 250' head, stainless steel, 3" suction, 3" discharge, with 220/440/3/60 Motors.

WORTHINGTON, 200 GPM, 100 PSI, 3½" suction, 3" discharge, with Wagner Motors, 25 HP, 440/3/60.

6—326 GPM, 138' head, C.I. pump housing, 3" suction, 3" discharge, with Westinghouse Motors, 20 HP, 220/440/3/60, 1755 RPM.

6—682 GPM, 60' TDH, C.I. pump housing, 5" suction, 5" discharge, with Westinghouse Motors, 15 HP, 220/440/3/60, 1700 RPM.

2—Worthington, 80 GPM, 60 PSI, 2½" suction, 2" discharge, with G.E. Motors, 8 HP, 440/3/60, 3450 RPM.

3—Worthington, 650 GPM, 9 PSI, 6" suction, 6" discharge, with Star Motors, 6 HP, 440/3/60.

1—Worthington, 175 GPM, 20 PSI, 3½" suction, 3" discharge, with G.E. Motor, 3.74 HP, 440/3/60, 3450 RPM.

4—Worthington, 60 GPM, 22 PSI, 3½" suction, 2" discharge, with G.E. Motors, 3 HP, 440/3/60, 3450 RPM.

3—Allis-Chalmers, 35 GPM, 100' head, 2" suction, 1½" discharge, with Allis-Chalmers Motors, 3 HP, 440/3/60, 3500 RPM.

1—Allis-Chalmers, 65 GPM, 80' head, 1½" suction, 1½" discharge, with Allis-Chalmers Motor, 3 HP, 220/440/3/60, 3500 RPM.

2—Worthington, 13 GPM, 51 PSI, 1½" suction, 1½" discharge, with G.E. Motors, 2.64 HP, 440/3/60, 3490 RPM.

5—Worthington, 30 GPM, 30 PSI, 1½" suction, 1½" discharge, with G.E. Motors, 1.75 HP, 440/3/60.

14—Warren, 6 GPM, 36 PSI, 1¼" suction, 1" discharge, with G.E. Motors, 1.25 HP, 440/3/60, 3450 RPM.

6—Worthington, 275 GPM, 56.6 PSI, 8½" suction, 3½" discharge, with G.E. Motors, 22.9 HP, 440/3/60, 1180 RPM.

AC PUMPS—Vertical Centrifugal

4—Worthington, 490 GPM, 35 PSI, 7" suction, 4½" discharge, with G.E. Motors, 19.6 HP, 440/3/60, 1175 RPM.

6—Chicago Pump Co., submersible, 400 GPM, 6 # suction, 30 # discharge pressure, with Wagner Motors, 15 HP, 440/3/60, 1740 RPM.

6—Dayton-Dowd, 1160 RPM, 15 PSI, 10" suction, 8" discharge, with Wagner Motors, 10 HP, 440/3/60.

4—Worthington, 100 GPM, 40 PSI, 5" suction, 3" discharge, with G.E. Motors, 7.37 HP, 440/3/60, 1750 RPM.

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

1—Worthington, 35 GPM, 62.4 PSI, 3" suction, 2" discharge, with G.E. Motors, 5.83 HP, 440/3/60, 1150 RPM.

7—Allis-Chalmers, 68 GPM, 114' head, Type SSV-C, 3" suction, 1½" discharge, with Wagner Motors, 7½ HP, 440/3/60, 1750 RPM.

3—Worthington, 350 GPM, 11.1 PSI, 10" suction, 3½" discharge, with G.E. Motors, 5 HP, 440/3/60, 1150 RPM.

12—Allis-Chalmers, 10 GPM, Size 2"x2½", with Wagner Motors, 3 HP, 440/3/60, 3600 RPM.

AC PUMPS—Horizontal Rotary

4—Warren, 197 GPM, 175 PSI, with Electro Dynamics Motors, 30 HP, 440/3/60, 1750 RPM.

2—Northern, 10 GPM, 350 PSI, 3" suction, 2" discharge, 200 RPM, with G.E. geared Motors, 5 HP, 440/3/60.

3—DeLaval, 25 GPM, 50 PSI, with G.E. Motors, 1.8 HP, 440/3/60.

AC PUMPS—Vertical Rotary

2—DeLaval, 550 GPM, 50 PSI, with G.E. Motors, 27.4 HP, 440/3/60, 1180 RPM.

7—Quimby, Size 2½, 10/6 GPM, 350 PSI, 2½" suction, 1½" discharge, with Wagner Motors, 6/3 HP, 440/3/60, 1160/865 RPM.

8—Blackmer, 50 GPM, 35 PSI, 420 RPM, with G.E. geared Motors, 2 HP, 440/3/60, 1750 RPM.

DC PUMPS—Horizontal Centrifugal

6—Worthington, Size 8L1, 2100 GPM, 138.5 TDM, with Westinghouse Motors, 100 HP, 230 DC, 1310/1750 RPM.

6—Worthington, Size 12 LA1, 4000 GPM, 67.3 TDM, with Westinghouse Motors, 100 HP, 230 DC, 1310/1750 RPM.

6—Worthington, Size 3UB1, 400 GPM, 280' head, with Westinghouse Motor, 50 HP, 230 DC, 1310/1750 RPM.

6—Worthington, Size 4L1, 400 GPM, 83' head, with Westinghouse Motors, 15 HP, 230 DC, 1225/1750 RPM.

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

3—Warren, 1175 GPM, 11.2 PSI, with Reliance Motors, 10 HP, 230 DC.

1—Westco, 100 GPM, 100 PSI, 2" suction, 2" discharge, with 10 HP Imperial Motor, 115 DC.

2—Yeomans, 135 GPM, 3" suction, 115' head, 3" discharge, with Kimble Motor, 10 HP, 230 Volts DC.

2—Warren, size 5, 600 GPM, with Electro-Dynamics Motors, 8/4.5 HP, 230 Volts DC.

1—Warren, 5" suction, 4" discharge, with Reliance Motor, 7½ HP, 115 Volts DC.

1—Dayton-Dowd, 3" suction, 2½" discharge, with Crocker-Wheeler Motor, 5 HP, 120 DC.

1—Ingersoll-Rand, Model A, 45 GPM, 125' head, with G.E. Motor, 5 HP, 115 Volts DC.

3—Ingersoll-Rand, Size 1MVR, 50 GPM, with Electro-Dynamics Motors, 3.9 HP, 230 DC.

1—Fairbanks-Morse, 250 GPM, 13' head, with Fairbanks-Morse Motor, 3.72 HP, 230 Volts DC.

2—Worthington, 150 GPM, 22 PSI, 3½" suction, 3" discharge, with Diehl Motors, 3.47 HP, 230 Volts DC.

DC PUMPS—Horizontal Centrifugal

1—Yeomans, 40 GPM, 75' head, 1½" suction, 1" discharge, with Master Motor, 2 HP, 230 Volts DC.

2—Westco, 20 GPM, 50 PSI, with Century Motors, 1½ HP, 120 Volts DC.

2—Worthington, 60 GPM, 23.7 PSI, 2½" suction, 2" discharge, with Diehl Motors, 1.43 HP, 230 Volts DC.

7—Warren, 4 GPM, 38 PSI, 1½" suction, 1" discharge, with Century Motor (4-230 DC, 3-115 DC), 1.25 HP.

DC PUMPS—Vertical Centrifugal

2—Buffalo, Size 3 SAV, 400 GPM, 125 TDH, with Electro-Dynamic Motors, 50 HP, 230 Volts DC, 1350/1800 RPM.

1—Gardner-Denver, 1500 GPM, 56' head, 8" suction, 6" discharge, with Century Motor, 30 HP, 230 Volts DC, 1750 RPM.

1—Ingersoll-Rand, Size 18VCM, 8500 GPM, with Electro-Dynamic Motor, 20/40 HP, 230 Volts DC, 410/545 RPM.

2—Worthington, 16" LAS-2, 5600 GPM, 10 PSI, with G.E. Motor, 20/40 HP, 230 Volts DC, 540/720 RPM.

1—Ingersoll-Rand, 10" suction, 10" discharge, 1050/2000 GPM, with G.E. Motor, 20 HP, 230 Volts DC, 805/1150 RPM.

1—Worthington, 340 GPM, 33.6' 6" suction, 3" discharge, with G.E. Motor, 15 HP, 230 Volts DC.

2—Ingersoll-Rand, 450 GPM, 15' head, 4" suction, 3" discharge, with G.E. Motors, 10/15 HP, 230 Volts DC, 1300/1750 RPM.

2—Buffalo, Size 3SLV, 425 GPM, 35 TDH, with Electro Dynamic Motors, 7½/15 HP, 230 Volts DC, 1310/1750 RPM.

1—Worthington, 175 GPM, 50 PSI, 4" suction, with G.E. Motor, 7½ HP, 230 Volts DC.

2—Ingersoll-Rand, Size 8 VCM, 1400 GPM, with Electro Dynamic Motors, 5/10 HP, 230 Volts DC, 950 RPM.

2—Ingersoll-Rand, Size 1½ VBM, 70 GPM, with Electro Dynamic Motors, 5/10 HP, 230 Volts DC, 1500/2000 RPM.

2—Ingersoll-Rand, Size 1MVR, 20 GPM, with Electro Dynamic Motors, 3/1.5 HP, 230 Volts DC, 1950/2600 RPM.

2—Worthington, 8" LS-1, 1400 GPM, 10 PSI, with G.E. Motors, 5/10 HP, 230 Volts DC, 875/1200 RPM.

2—Worthington, Type 1½ UZS-3, 20 GPM, 75 PSI, with G.E. Motors, 5 HP, 230 Volts DC, 1800 RPM.

2—Weil, 20 GPM, 40 PSI, 1½" suction, 1¼" discharge, with G.E. Motors, 3 HP, 230 Volts DC.

DC PUMPS—Horizontal Rotary

3—Worthington, Size 5GES, 400 GPM, 50 PSI, with Westinghouse Motors, 20 HP, 230 Volts DC, 1750 RPM.

1—DeLaval, 15 GPM, 350 PSI, 2½" suction, 2½" discharge, with Diehl Motor, 10 HP, 230 Volts DC.

2—Viking, Type EKK, 60 GPM, 70 PSI, 2" suction, 2" discharge, with Diehl Motors, 5 HP, 230 Volts DC.

3—National Transit, 50 GPM, 50 PSI, 3" suction, 2½" discharge, 3 HP, 230 Volts

DC PUMPS—Vertical Rotary

6—Quimby, Size 5, 400 GPM, 60 PSI, 6" suction, 5" discharge, with Westinghouse Motors, 30 HP, 230 Volts DC.

3—Worthington, Model 4GRVS, 225 GPM, 35 PSI, with G.E. Motors, 15/20 HP, 230 Volts DC.

1—Quimby, Size 4, 175 GPM, with Electro Dynamic Motor, 7.5/10 HP, 230 Volts DC, 865/1150 RPM.

2—Worthington, Type 3GRVS, 90 GPM, 75 PSI, 2¾" suction, 2½" discharge, with Diehl Motors, 7½ HP, 230 Volts DC.

1—Quimby, Size 2, 8 GPM, with Electro Dynamic Motor, 2/5 HP, 230 Volts DC, 575/1150 RPM.

2—Worthington, Type 2GRVS, 7 GPM, 400 PSI, with G.E. Motors, 2½/5 HP, 230 Volts DC, 900/1800 RPM.

BOILER FEED PUMPS — TURBINE & ELECTRIC

4—Worthington, Vertical type, single acting, triplex, constant speed, size 2¼ x 4, 47 GPM, 525 PSI, with G.E. Motors, 20 HP, 230 Volts DC.

2—Worthington, 5" UFD, 460 GPM, 750 PSI, 5" suction, 5" discharge, driven by Sturtevant Steam Turbine, Size CC-22',

Type 21, 2½" steam inlet, 5½" exhaust.

2—Aldrich Pump Co. Triplex, Vertical, Size 2½ x 4, 65 GPM, 575 PSI, with G.E. Motors, 25 HP, 230 Volts DC.

2—Ingersoll-Rand, 165 GPM, 575 PSI, with turbine drives.

TURBINE DRIVEN PUMPS — Various

2—Worthington, Size 20-LAL-18, Main Condenser, Centrifugal, 10500, 27' head, Vertical, with Whiton Turbines, 95 HP.

1—Ingersoll-Rand, Size SUV, Centrifugal, Horizontal, 1200 GPM, 225' head, 6" suction, 5" discharge, with Elliot Turbine, 84.3 HP.

1—Worthington, Fire, Flushing & Emergency Bilge, Centrifugal, Horizontal, Rating—Fire: 500 GPM, 150 PSI, Flushing: 1000 GPM, 60 PSI, Bilge: 750 GPM, 25 PSI, 5½" suction, 4½" discharge, with Whiton Turbines, 72.9 HP.

1—DeLaval, Fuel Oil Transfer, Vertical, Rotary, 250 GPM, 150 PSI, 7" suction, 6" discharge, with DeLaval Turbine, 35 BHP.

8—Goulds Main Circulating, Vertical,

Centrifugal, 3700 GPM, 13 PSI, Size 12", with Elliot Turbines, 30 HP.

2—DeLaval Fuel Oil Service, Vertical, Rotary, 50 GPM, 350 PSI, 3½" suction, 3½" discharge, with DeLaval Turbines, 14.4 HP.

4—DeLaval—IMO, L.O. Service, Vertical, Rotary, 300 GPM, 45 PSI, 6" suction, 6" discharge, with DeLaval Turbines, 14.1 HP.

8—Allis-Chalmers, Type SSC-V, 68 GPM, 114' head, 3" suction, 1½" discharge, with Carling Turbines, 7½ HP, 1750 RPM.

2—Warren, 85 GPM, 60 PSI, For Lube Oil Service, Turbine Driven.

2—Warren, Main Circulating, 3500 GPM, 13.5 PSI, Turbine Driven.

**STOCKLESS ANCHORS
USED, GOOD QUALITY . . . SAVE!**



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

ANCHOR CHAIN . . .

Used, good, with or without test certificate . . .



1" size
1 1/8" size
1 1/2" size
1 3/8" size
2 1/16" size
2 1/4" size

ANCHOR WINDLASS

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

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

American Engineering, horizontal, double 2 1/8" Chain, 65 HP, 230 DC, complete.

7—American Hoist and Derrick Company, horizontal, double wildcat—for 2 1/4" chain double gypsy, 70 HP, 230 Volts DC, with electric controls.

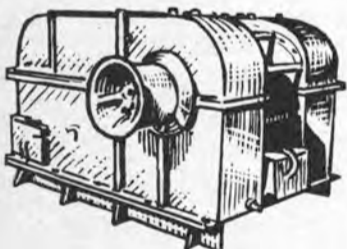
3—Hesse-Ersted, horizontal, double wildcat, 2 1/8" chain, 60 HP, 230 DC.

1—Hyde Horizontal Anchor Windlass double wildcat—for use with 2 1/8" Anchor Chain, and with General Motors Electric Motor, 60 HP, 230 volts DC, 560/1700 RPM, Type CDM 18831 AE. Complete with Contractor Panel, Resistors, and Master Switch.

ANCHOR WINCHES

2—Jaeger, single drum—capacity approximately 900' of 1 1/2" wire rope, double gypsy, with 35 HP Motors, 230 Volts DC, complete with electricals.

UNIWINCHES



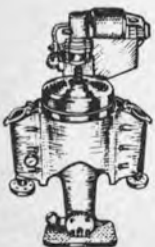
LAKESHORE UNWINCHES, with Allis-Chalmers Motors, 50 HP, 230 Volts DC, complete with Control Equipment.

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

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

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

CENTRIFUGES

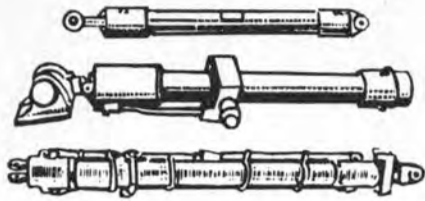


Sharples Purifiers—For Diesel Service or for Lube Oil Service.

150 GPH—440 AC, 230 DC
350 GPH—230 DC
600 GPH—230 DC

ALSO: De Laval, Size 65N131, 1 1/2 HP, 440 AC.

**HYDRAULIC
CYLINDERS**



3000 PSI	Bore	Stroke	Rod Diameter	Overall retracted length	Action
	10"	12"	3.75"	45 1/2"	double
	10"	26"	3.75"	58 1/2"	single
	2"	8"	1 1/2"	20"	double
	2.5"	15"	1.12"	25 1/2"	double
	3"	8"	1.37"	15 1/2"	double
	6"	8"	4"	144"	double
	13"	9'7"	5 1/2"	14'	double

STEERING STANDS



Brass Steering Stands. Complete with angle indicator on top, used, 11" base diameter by 35 1/2" high, and with 42" overall, 8-spoke brass steering wheel.

\$239.50 each

CAPSTAN WINDLASSES

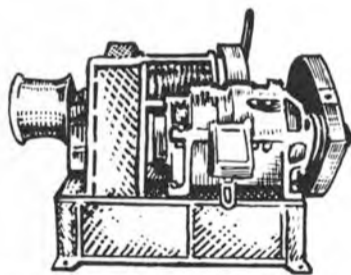
Model CWP-3, Vertical 24" Planetary Capstan Windlasses, Single Wildcat—using 1 1/4" Anchor Chain, Single Gypsy with 20 HP motor, 230 volts DC, complete with Contactor Panel, Master Switch, and Resistors.



3—Hesse-Ersted Vertical, Single Wildcat—for 1 3/8" Anchor Chain, single gypsy, with HP General Electric Motor, 230 Volts DC, complete with Controller equipment.

Hyde, Vertical, Single Wildcat, for 1 1/8" Anchor Chain, single gypsy, with 20/5 HP Motor, 440/3/60.

CARGO WINCHES

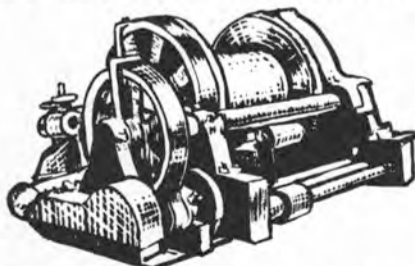


American Hoist and Derrick Company Winches with Westinghouse Motors, 50 HP, 230 Volts DC, complete with Contractor Panels, Master Switches, and Resistors.

Type 66—single speed, single drum.

Type 67—two speed, single drum.

STEAM TOWING WINCH



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

Contact Ralph E. Ingram

**IMMEDIATE
DELIVERY**

on all your needs!

ZIDELL EXPLORATIONS, INC.



(503) 228-8691

3121 S.W. Moody
Portland, Ore. 97201
Telex: 36-701

FAIRLEADS

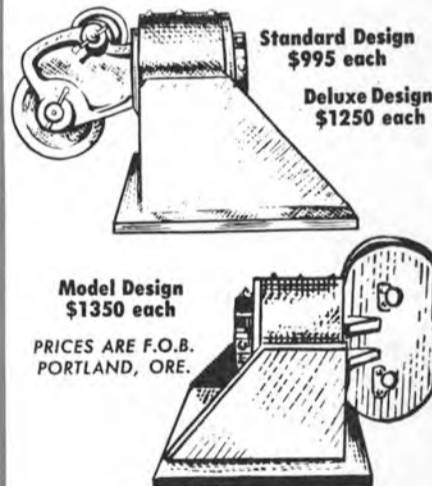
Designed and Manufactured by
ZIDELL EXPLORATIONS, INC.

To Give You These Features:

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

Self Aligning, Swivel Type Head.

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



Standard Design
\$995 each

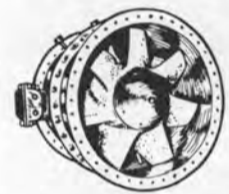
Deluxe Design
\$1250 each

Model Design
\$1350 each

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

AXIAL FLOW FANS

Rebuilt—Guaranteed



LaDel,
STURTE-
VANT
etc.

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

EXAMPLE LISTING:

Size A 1/4 @ \$160 each
Size A 1/2 @ \$185 each
Size A1 @ \$215 each
Size A2 @ \$290 each
Size A3 @ \$350 each
Size A4 @ \$410 each
Size A5 @ \$500 each
Size A6 @ \$550 each
Size A8 @ \$630 each
Size A10 @ \$695 each
Size A12 @ \$750 each
Size A16 @ \$900 each

Prices Are F.O.B. Portland, Oregon

**SPECIAL ITEMS
COUPLINGS**

(Flexible Couplings between Turbines and Reducing Gear)

1—Set from C3-S1-A3 Vessel

1—Set from C2-S-B1 (Moore built)

1—Set from AP2 Victory Ship

PROPELLERS

From C3-S1-A3 Vessel

From AP2 Victory

From C2-S1-B1 Vessel

From Liberty Ships and LST Vessels

PROPELLER SHAFTS

From C3-S1-A3 Vessel

From C2-S-B1 Vessel (Moore built)

From AP2 Victory

From Liberty Ships

**SPERRY GYRO
COMPASSES**



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

Contact
Ralph E. Ingram
 (503) 228-8691
 Telex: 36-701

Machinery and Equipment

as removed from
**S.S. JAMES
 O'HARA**
 (AP-179) C3-S1-A3
 and **S.S.
 FREDERICK
 FUNSTON**

FOR
**IMMEDIATE
 SALE**



ZIDELL EXPLORATIONS, INC.

3121 S.W. Moody
 Portland, Ore. 97201

MACHINERY AND EQUIPMENT FROM C2-S-B1 SHIPS

- TURBINES**, High Pressure and Low Pressure, manufactured by G.E., develop 6,000 HP (2 sets Available)
- REDUCTION GEARS**, G.E., 6,000 HP, RPM 6072-4048-882-92 (2 available)
- MAIN CONDENSERS**, Worthington, 5500 sq. ft. (2)
- LUBE OIL PURIFIERS**, De Laval, Model 55-13, 2 HP, 230 DC.
- MAIN FEED PUMP**, Worthington, Size 4 x 6, 35/50 HP, 230 DC (2)
- AUXILIARY FEED PUMP**, Worthington, steam, Size 11 x 7 x 24 (2)
- PORT FEED PUMP**, Worthington, steam, Size 9½ x 6 x 24 (2)
- AUXILIARY CIRCULATING PUMP**, Worthington, Size 8LS-1, 1240 GPM, 24.6' head, 10 HP, 230 DC (6)
- MAIN CONDENSATE PUMP**, Worthington, Size 2½-UZ-1, 120 GPM, 208 TDH, 15 HP, 230 DC (6)
- AUXILIARY CIRCULATING PUMP**, Worthington, Size 1½-UZS-3, 20 GPM, 208 TDH, 5 HP, 230 DC (6)
- LUBE OIL SERVICE PUMP**, De Laval-Imo, 250 GPM, 40 PSI, 15 HP, 230 DC (2)
- LUBE OIL SERVICE STANDBY PUMP**, Worthington, steam, Size 5½ x 2¾ x 6 (2)
- FUEL OIL TRANSFER PUMP**, De Laval, 225 GPM, 50 PSI, 15 HP, 230 DC (2)
- FIRE PUMP**, Worthington, Size 3-UBS-1, 400 GPM, 280' head, 50 HP, 230 DC (2)
- STANDBY FIRE PUMP**, Worthington, Steam, Size 12 x 11 x 18 (2)
- BILGE PUMP**, Worthington, Size 5LS-1, 415 GPM, 78.5 TDM, 20 HP, 230 DC (2)
- BALLAST PUMP**, Worthington, Size 5LS-1, 415 GPM, 78.5 TDM, 20 HP, 230 DC (2)
- GENERAL SERVICE PUMP**, Worthington, Steam, Size 10 x 11 x 18 (2)
- SANITARY PUMP**, Worthington, Size 2½ x 2, 2HP, 230 DC (4)
- DRINKING WATER PUMPS**, Size 2½ x 2, ¾ HP, 230 DC (4)
- VACUUM PRIMING PUMPS**, size MD537, 1½HP, 230 DC (4)
- FORCED DRAFT FAN**, Size 3½ AHS, 7880/5970 CFM, S.P.—6.2/14 with G.E. motors 5/25 HP, 230 DC, 1910/3120 RPM (7)
- STEERING GEAR WATERBURY PUMP**, Type A, Size 5, with 20 HP G.E. motor, 230 DC (4)

*Also Machinery and Equipment
 from VC2-S-AP2 VICTORY SHIPS*



CARGO HOISTER BLOCKS

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

\$34.50 each

\$39.50 each with pull test certificates.

**We have Bull Gear
 and matching Pinions
 for C3 FALK
 REDUCTION GEARS**

HP TURBINE, Allis-Chalmers, Impulse Reaction type, 5003 RPM, 740° F, 440 PSI, Serial #1737.

LP TURBINE, Allis-Chalmers, Straight Reaction, Type, 4289 RPM, 740° F, 440 PSI, Serial #1738.

CARGO WINCHES

- Jaeger, 2 drum, 2 speed, 50 HP, 230 DC.
- Parkersburg, 2 drum, 1 speed, 50 HP, 230 DC.
- O.C.S., 2 drum, 1 speed 50 HP, 230 DC.
- Vulcan, 1 drum, 2 speed, 50 HP, 230 DC.
- American Hoist & Derrick, 1 speed, 1 drum, 50 HP, 230 DC.

LAKESHORE TOPPING WINCHES, single speed, capacity 10,000 # at 67 FPM, 5 HP, 230 DC.

ANCHOR WINDLASS, Markey, Type CWA-4, horizontal, double wildcat—for 2 5/16" anchor chain, 70 HP, 230 DC.

FUEL OIL STANDBY PUMP, Worthington, horizontal duplex, Size 5½" x 3" x 6", 13 GPM, 410 PSI.

GENERAL SERVICE PUMP, Worthington, vertical simplex, Size 12 x 14 x 18, 600 GPM, 50 PSI.

BOILER FEED PUMP, Worthington Auxiliary, vertical simplex, Size 11 x 7 x 24, 120 GPM, 550 PSI.

FRESH WATER PUMPS, 2—Worthington, Size 4x6, horizontal duplex, 100 GPM, 80 PSI, 7½ HP, 230 DC.

BALLAST PUMP, Allis-Chalmers, Type SGV, Size 5 x 5, vertical centrifugal, 600 GPM, 30 PSI, 20 HP, 230 DC.

SUBMERSIBLE BILGE PUMPS, 2—Worthington, 5", vertical centrifugal, 600 GPM, 30 PSI, 20 HP, 230 DC.

BILGE PUMP, Allis-Chalmers, Size 5 x 5, Type SGV, vertical centrifugal, 600 GPM, 30 PSI, 20 HP, 230 DC.

EVAPORATOR TUBE NEST DRAIN PUMPS, 2—Allis-Chalmers, Type SS-LH, horizontal, Size 2½ x 2, 17 GPM, 127' head, 5 HP, 230 DC.

MAIN CONDENSATE PUMPS, 2—Allis-Chalmers, Type CF-2V, vertical volute, Size 6 x 3½, 170 GPM, 208' head, 20 HP, 230 DC.

DISTILLER CONDENSATE PUMPS, 2—Allis-Chalmers, Type SS-L, horizontal centrifugal, Size 4 x 2, 45 GPM, 2 HP, 230 DC.

AUXILIARY CONDENSATE PUMPS, 2—Allis-Chalmers, Type CF-2V, vertical volute, Size 2½ x 1½, 30 GPM, 208' head, 7½ HP, 230 DC.

DIESEL OIL PUMP, Viking, Type ZKK, gear type, Size 3 x 2½, 40 GPM, 30 PSI, 2 HP, 230 DC.

DISTILLER FRESH WATER DISTRIBUTION PUMPS, 2—Allis-Chalmers, Type SS-DH, horizontal centrifugal, Size 2½ x 2, 55 GPM, 51' head, 2 HP, 230 DC.

FIRE PUMPS, 2—Allis-Chalmers, Type B2-V, vertical centrifugal, Size 4 x 3, 400 GPM, 280' head, 50 HP, 230 DC.

MAIN FEED PUMP, Terry Turbine, Type ZS-1, 124 HP, with Ingersoll-Rand horizontal pump, Size 4 x 3½, 4 stage, 250 GPM, 1340' head.

STEERING GEAR PUMP, Waterbury, Size 5, Type K, with Westinghouse Motor, 55 HP, 230 Volts DC.

LUBE OIL SERVICE PUMPS, 2—Quimby, vertical screw, Size 5, 400 GPM, 48 PSI, 6 x 5, 25 HP, 230 DC.

FUEL OIL TRANSFER PUMP, Quimby, vertical screw, Size 4D, 225 GPM, 50 PSI, 15 HP, 230 DC.

FUEL OIL SERVICE PUMP, Quimby, vertical screw, Size 2½, 20 GPM, 400 PSI, 2½ x 1½, 10 HP, 230 DC.

ICE WATER CIRCULATING PUMP, Allis-Chalmers, Type SS-RH, 10 GPM, 81' head, 1" x ¾", vertical volute, 1 HP, 230 DC.

HOT WATER CIRCULATING PUMP, Allis-Chalmers, Type SS-HH, 35 GPM, 70' head, 1¼ x 1¼, vertical volute, 2 HP, 230 DC.

REFRIGERATION CONDENSER CIRCULATING PUMPS, 2—Allis-Chalmers, Type SJK, 180 GPM, 81' head, 2½ x 2, horizontal volute, 7½ HP, 230 DC.

MAIN CONDENSER CIRCULATING PUMP, Allis-Chalmers, Type LS-V, 12,550 GPM, 20' head, 20 x 20, vertical volute, 100 HP, 230 DC.

AUXILIARY DISTILLER CIRCULATING PUMPS, 2—Allis-Chalmers, Type SG, 650 GPM, 29' head, 5 x 5, horizontal volute, 7½ HP, 230 DC.

AUXILIARY CONDENSER CIRCULATING PUMPS, 2—Allis-Chalmers, Type SE-V, 2820 GPM, 29.2' head, 12 x 12, vertical volute, 40 HP, 230 DC.

FORCED DRAFT BLOWERS, —American Blower, Sirocco capacity 17560 CFM, 5½ SP, 75 HP, 230 DC.

FORGED STEEL LINE SHAFTING

ZIDELL has some Excellent Buys on used—Good Shafting, as shown listed below, for Re-Machining to your specific requirements.

- 9 Pieces Hollow, 2¼" Wall, 9" Diam, 23'-11" L.
- SECTIONS LISTED BELOW ARE SOLID STEEL**
- 11 Sections Flanged, 8½" Diam., 16'-6¼" Long
- 6 Sections Flanged, 8¾" Diam., 27'-4" Long
- 6 Sections Flanged, 19" Diameter, 23'-11" Long
- 1 Section Flanged, 19" Diameter, 23'-8" Long
- 3 Sections Flanged, 19" Diameter, 22'-10" Long
- 12 Sections Flanged, 19" Diameter, 22'-6" Long
- 6 Sections Flanged, 14½" Diam., 26'-6" Long
- 2 Sections Flanged, 14½" Diam., 18'-6" Long
- 2 Sections Flanged, 14½" Diam., 13'-9" Long
- 39 Sections Flanged, 13½" Diam., 22'-0" Long
- 9 Sections Flanged, 15¼" Diam., 12'-0" Long

OVERHAULED—TESTED

SALT WATER EVAPORATORS

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

- SIZE 48-23 SIZE 26-8
- SIZE 36-17 SIZE 20-5
- SIZE 36-14

PROMPT QUOTATIONS
 & DELIVERY

CLYDE 17-DE-90 WHIRLEY CRANE

Lifting Rate: 25 tons @ 50 Ft. Radius @ 50 to 60 FPM.—

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

Whip: 10 tons @ 125 FPM—2 part line

Track Centers: 20'—Engine: Cummins HBIS 601, 180 HP supercharged, elec. start—

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

Power: Diesel electric (DC)

ELECTRIC MOTORS

230 VOLT D.C. MOTORS

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

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

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

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

6—50 HP, Westinghouse, 600 RPM, Compd. Wd., Type CK, FR 9, Horizontal, 2 B.B.

1—40 HP, Allis-Chalmers, 1750 RMP, Compound Wound, Horizontal, 2 B.B.

1—65 HP, Westinghouse, 560 RPM, Type CK, Frame 10, 260 Amperes, B.B., D.P., Compound Wound.

2—220 HP, G.E., 1800 RPM, Type CDM-1348S, Model 25G339, 775 Amperes, B.B., D.P., Stab. Shunt.

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

120 VOLT D.C. MOTORS

1—304 HP, Westinghouse, 900 RPM, Shunt Wound, Horizontal, Pedestal Bearing.

3—25 HP, G.E., Type CDM, 1200 RPM, Horizontal, 2 B.B., unused. Removed from M.G. Sets.

6—7½ HP, Westinghouse Type SR, FR 43, Stab. Sh. Wd., 1750 RPM.

STEERING GEAR MOTORS

2—General Electric, 30 HP, 230 V, DC, 600 RPM, Stab. Sh. Wd., Type CDM, Fields Continuous Duty, Armature 1 Hr.

1—Westinghouse, 35 HP, 230 V, DC, 850 RPM, Stab. Sh. Wd., Type SK, Fr. 123, Fields Continuous Duty, Armature 1 Hr.

SHIP'S LIGHTING M-E SETS

230 V, DC/115 V, DC. Ship's Lighting M.G. Sets for C3-S1-A-3 150 K.W. and Moore built C2 100 K.W.

SPECIAL D.C. GENERATORS

3—Unused, G.E., 15 KW, 100 A, 15 V, Type CDM, 1200 RPM, 2 B.B., D.P. Generators.

MOTOR-GENERATOR SETS

Unused Surplus in Original Boxes



Janette M-G Sets. Input: 1.75 HP, 230 V, DC, 7.2 Amperes, 1800 RPM. Output: 1-KVA (.85 KW), 115/1/60, 4 ball bearing, with speed regulator, and with noise filters. Navy Type CJM-21151, continuous duty. Net weight 435#, Dimensions 44" L, 19½" W, 18½" H. Instruction book and parts list included.

D.C. MARINE CONTROLLERS

1—Cutler-Hammer, 250 HP, 230 V, DC, No. 232 793A14.

2—General Electric, 225 HP, 230 V, DC, CR 5430-B32D.

6—Westinghouse, 100 HP, 230 V, DC, Type 8585A SO-1B4636.

1—Cutler-Hammer, Unused, 50 HP, 230 V, DC, No. C280981A290, Contactor Panel for Stern Anchor Haulage Winch. Many others from ¼ HP and up—115 and 230 V.

CIRCUIT BREAKERS

2 and 3 Pole Air Breakers, 2 and 3 Pole Molded Case Navy Type Breakers, 2 and 3 Pole Trip Elements for Molded Case Breakers.

115 VOLT DC FANS

Boost your ventilation with these economical units as removed from service. These various brand products have been tested and are in operating order.



12" Bulkhead Mounting Oscillating \$15.00 ea.

12" Bulkhead Mounting, Non-Oscillating \$9.50 ea.

D.C. GENERATORS

2—500 KW, 120/240 V, Westinghouse FR. CB813.7, 750 RPM, 2 Pedestal Bearing, with Balance Coils. Removed from GM 8-278 Engines.

2—250 KW, 120/240 V, Westinghouse, 1200 RPM, Single Pedestal Bearings. Balance Coils not available, Type 12S18P107PH, removed from Turbines.

2—150 KW, 120 V, G.E., Type CDM-1348-S, Form HA, Model 25G 340, 1800 RPM, Compound Wound, Horizontal 2 B.B.

1—150, 120 V, G.E., Type CDM, Form AA, Model 24G, 1200 RPM, Compound Wound, Horizontal, 2 B.B.

6—100 KW, 120/240 V, Westinghouse, Type SK, FR. 143.8, 1800 RPM, Single Ball Bearings. Balance Coils available.

3—100 KW, 120/240 V, Delco, 1200 RPM, Single Bushed Bearings, with Balance Coils. Removed from Superior GDB-8 Engines.

1—100 KW, 120/240 V, Allis-Chalmers, 1200 RPM, Single Sleeve Bearing, Shunt Wound, Type 4-14-45-13, removed from GM 3-268A Engine.

10—90/165 KW, Westinghouse, 125/400 Volt, Type SK, FR. 185, Shunt Wound, separately excited (120 V), 1200 RPM, Horizontal, 2 B.B.

4—75 KW, 120 V, G.E., Type CDM-1234, Mod. 24GA71, 1200 RPM, 2 Ball Bearing, Tapered Shaft. Removed from Motor-Generator Sets.

6—60 KW, 120 V, Westinghouse, Type SK, FR 143, Style 3B2855-PH, 1800 RPM, 1 B.B. Removed from Turbines.

6—60 KW, 120 V, Westinghouse, Type SK, FR. 153-L, Style 1B4632, 1200 RPM, Compound Wound, Horizontal, 2 B.B.

A.C. OR D.C. M-G SETS

From 250 Watts to 500 KW in 115 Volt, 230 Volt and 120/240 Volt, 3 Wire DC. Any drive including Synchronous Motor. Let us have your inquiries.

ZIDELL for Electrical Equipt.

tremendous stock of electrical equipment at the right prices.

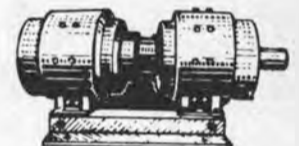
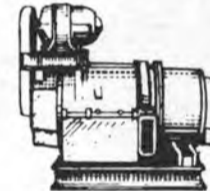
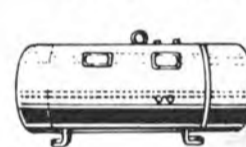
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RECONDITIONED MOTOR GENERATOR SETS



MANY SMALLER UNITS IN STOCK

Bogue. Input: 230 V, DC, 57A, 15 HP. Output: 10 KVA, PF .8, 120 V, 60 cy., 1Ø.

Fidelity. Input: 15 HP, 230 V, DC. Output: 12.5 KVA, 10 KW, 120/1/60.

Bogue Electric. Input: 15 HP, 230 V, DC. Output: 12.5 KVA, 10 KW, 120/1/60.

Burke Electric. Input: 20 HP, 230 V, DC. Output: 25 KVA, 12.5 KW, 120/1/60.

Star Kimble. Input: 30 HP, 230 V, DC. Output: 25 KVA, 20 KW, 120/1/60.

Ideal. Input: 40 HP, 230 V, DC. Output: 31.3 KVA, 25 KW, 450/3/60.

Star Elec. Input: 40 HP, 230 V, DC. Output: 33.4 KVA, 25 KW, 450/3/60.

General Elec. Input: 230 V, DC, 40 HP. Output: 25 KW, 480 V, 60 cy., 3Ø, 34A, 1800 RPM.

Star Elec. Input: 125 HP, 240 V, DC, Output: 93.75 KVA, 75 KW, 450/3/60.

Marathon. Input: 1 HP, 115 V, DC, Output: .500 KVA, .425 KW, 115/1/60.

Bludworth. Input: .75 HP, 115 V, DC, Output: .500 KVA, .450 KW, 115/1/60.

Century. Input: 1.5 HP, 115 V, DC. Output: .750 KVA, .600 KW, 125/1/60.

Elect. Prod. Input: 1.5 HP, 115 V, DC. Output: 1 KVA, 115/1/60.

Allis-Chalmers. Input: 14 Amp, 115 V, DC. Output: 1.250 KVA, 1 KW, 115/1/60.

Cont. Elect. Input: 6 HP, 115 V, DC. Output: 2.9 KW, 440/3/60.

Louis Allis. Input: 10 HP, 105/130 V, DC, Output: 7.5 KVA, 440/3/60.

Cont. Elect. Input: 12 HP, 120 V, DC. Output: 7.5 KVA, 440/3/60.

Continental. Input: 50 HP, 115 V, DC. Output: 50 KVA, 25 KW, 120/3/60.

Need 3 Wire 120/240 Volts DC for Shore Power? Motor-Generator Sets and Engine Driven Units from 15 KW to 500 KW . . . Let us quote.

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Dry Transformers • AC & DC Gear Motors • Centrifugal Fans • Propeller Fans • Port Hole Fans • Bracket Fans • Salinity Panels • Salinity Indicator Cells • Electric Telegraphs • Rudder Angle Indicators • Diesel Engine Starting Contactors • AC & DC Switchboards

ALSO RADIO, RADAR & ELECTRONIC EQUIPMENT

A.C. MAXIMUM SPEED CARGO WINCHES

For use where main source of power is 440/3/60
A.C. Maximum Speed System allows you to get all
the control available with 230 V.D.C.



ORIGINALLY DESIGNED FOR C4-S-10 MARINERS

(1 pr of cargo winches per hatch)

Each set consists of an A.C. to D.C. MG set & 2
50 HP 230 volt D.C. cargo winches.

M.G. SETS

G.E.—A.C. to D.C.—with controls & master switch.
MOTOR: 60 HP—440/3/60/1750—75 amps.
GENERATOR: 42 KW—230 VDC—183 amps—
1750 RPM.

WINCHES

3/5 Ton cargo winches—de clutchable drum—
single speed—rt. & left hand. RATING: 1½ tons
@ 290 FPM; 3 tons @ 220 FPM. ROPE CAPAC-
ITY: 1100'—¾"—7 layers; 800'—¾"—6 layers;
710'—¾"—6 layers.

THE BOSTON METALS COMPANY

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539-1900 (301) 355-5050

FROM T-2 TANKERS

MAIN CONTROL VALVE \$1150
Reconditioned ABS. First class condition.

MAIN TURBINE STRAINERS \$475
24" OVERBOARD DISCHARGE VALVE
Priced to sell.

REWOUND WESTINGHOUSE MAIN STATOR
Rewound 7/25/56 Westinghouse Hillside Service
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Western Gear Corp., Industrial Products Div., P.O. Box 126, Belmont,
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ITT Decca Marine, Inc., 386 Park Ave. South, New York, N.Y. 10016
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Marquardt Corp., 16555 Saticoy St., Van Nuys, Calif. 91406
National Marine Service, 1750 So. Brentwood Blvd., St. Louis, Mo
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Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014
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Western Gear Corp., Precision Products Div., P.O. Box 190, Lyn-
wood, Calif. 90262

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 Mobil Oil Corp., 26 Broadway, New York, N.Y. 10004
 Refineria Panama, S. A., 277 Park Ave., New York, N.Y. 10017
 Shell Oil Co., 50 W. 50 St., New York 10020
 Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017

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 Devoe & Reynolds, Subsidiary Celanese Coats Co., 224 E. Broadway,
 Louisville, Ky. 40201
 Enjay Chemical Co., 60 West 49th St., New York, N.Y. 10020
 Forbail Company, 90 West St., New York, N.Y. 10006
 International Paint Co., 21 West St., New York, N.Y. 10006
 Mobil Chemical Company, Metuchen, N.J. 08840
 Patterson-Sargent, P.O. Box 494, New Brunswick, N. J.
 Woolsey Marine Industries Inc., 201 E. 42nd St., New York, N.Y. 10017

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 Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017
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 Philadelphia Resins Co., 20 Commerce Dr., Montgomeryville, Pa. 18936
 Rotocast Plastic Products, Inc., 6700 N.W. 36th Ave., Miami,
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 Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y. N.Y. 10004
 Bird-Johnson Co., 883 Main Street, Walpole, Mass. 02081
 Federal Propellers, 1501 Buchanan Ave. S.W., Grand Rapids, Mich.
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 Marine Propulsion Engrg. Inc., Statler Office Bldg., Boston, Mass.
 02116

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 Gilbarco, Inc., Greensboro, N.C. Carolina 27420
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 Worthington Corporation, Harrison, New Jersey 07029

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 Frigitemp Corp., 329 Herzl St., Brooklyn, N.Y. 11212
 York Corp., Grantley Road, York, Pa. 17405

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 Jackson Rope Corp., 9th & Olay, Reading, Pa. 19604
 Tubbs Cordage Company, P.O. Box #709, Orange, Calif. 92669
 Wall Rope Works, Inc., Beverly, N. J. 08010

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 Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of
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 11106

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 Syntron, a division of FMC Corp., 398 Lexington Ave., Homer City,
 Pa. 15748

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 Snelson Oilfield Lighting Co., 1201 E. Daggett St., Forth Worth,
 Texas 76104

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

SHAFT REVOLUTION INDICATOR EQUIP.
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 National Metal & Steel Corp., 1251 New Dock St., Terminal Island,
 Cal. 90731

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 Gulf Coast Marine, Inc., P.O. Box 52987, Houston, Texas 77052
 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

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 Albina Engine & Machine Works, 2100 N. Albina Ave.,
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 Arma 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
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 Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
 Blount Marine Corp., P.O. Box 360, Warren, Rhode Island 02885
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 Detyens Shipyards, Inc., Route 2, Box 180, Mt. Pleasant, So.
 Carolina 29464
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 Dravo Corporation, Neville Island, Pittsburgh 25, Pa.
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 General Dynamics, Electric Boat Division, 99M Eastern Point Road,
 Groton, Conn. 06340
 General Dynamics, Quincy Division, Quincy, Mass. 02169
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 Grognard Shipyards, P.O. Box 829 Colbert, Marseilles, France.
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 Oregon 97208
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 La. 70126

Harbor Boat Building Co., 258 Cannery St., Terminal Island, Calif.
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 Miss. 39501
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 New York, N.Y. 10004
 Jacksonville Shipyards, 644 E. Bay St., Jacksonville, Fla.
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 Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W.,
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 Marine Industries, Ltd., 1405 Peel St., Montreal 2, Quebec
 Matton Shipyard Co., Inc., P.O. Box 428, Cohoes, New York 12047
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 ku, Tokyo, Japan
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 Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
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 Tokyo, Japan
 Northwest Marine Iron Works, P.O. Box 3109, Swan Island, Port-
 land, Oregon 97208
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 Pearson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Fla. 33156
 Perth Amboy Dry Dock Co., Perth Amboy, N.J.
 Rodmond Industries, Foot of Henderson St. Jersey City, N.J. 07302
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 St. Louis Shipbuilding—Federal Barge, Inc.
 611 East Marceau, St. Louis 11, Mo.
 Sasebo Heavy Industries Co., Ltd., New Ohtemachi Bldg., Chiyoda-
 ku, Tokyo, Japan
 Sumitomo Shipbuilding & Machy. Co., Ltd. 2-1 Ohtemachi 2-chome,
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 Todd Shipyards Corp., 1 Broadway, New York City
 Zigler Shipyards Inc., P.O. Box 492, Jennings, Louisiana 70546

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

SHIP MODEL BASIN
 Hydraulics, Incorporated, Laurel, Maryland 20810

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

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 Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of
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 M. J. Batty & Co., P.O. Box 2316, Singapore, 1
 Bay-Houston Towing Co., 805 World Trade Bldg., Houston,
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 Curtis Bay Towing Co., Mercantile Bldg., Baltimore 2, Md.
 G & H Towing Company, 509 Texas Building, Galveston, Texas 77550
 Henry Gillen's Sons Lighterage, 140 Cedar St., New York, N.Y. 10006
 James Hughes, Inc., 17 Battery Pl., New York, N.Y.
 Jackson Marine Corp., P.O. Box 1087, Aransas Pass, Texas 78336
 McAllister Bros., Inc., 17 Battery Pl., New York, N.Y.
 McDonough Marine Service, P.O. Box 26206, New Orleans, La.
 P. F. Martin, Inc., Mail Bldg., 325 Chestnut St., Philadelphia, Pa.
 Moran Towing & Transportation Co., Inc., 17 Battery Place, N.Y.
 L. Smit & Co., 11 Broadway, New York 4, N.Y.
 Suderman & Young Towing Co., 329 World Trade Center, Houston
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 M. & J. Tracy, Inc., 1 Broadway, New York, N.Y.
 Turcamo Coastal and Harbor Towing Corp., 1752 Shore Parkway
 Brooklyn, N.Y.
 Vancouver Tug Boat Co., Ltd., 10 Pemberton Ave., No Vancouver,
 B.C., Canada

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 Hooper Valve & Engineering Corp., 24th St. & Virginia Ave.,
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 Hubeva Marine Plastics-Lining, 435 Hamilton Ave., Brooklyn 31, N.Y.
 Hydresearch Co., Inc., Riva Rd., Annapolis, Md. 21401
 Marine Moisture Control Co., 39 Redfern Ave., Inwood 96, L.I., N.Y.
 Mechanical Marine Company, 45-15 37th St., Long Island City, N.Y.
 Todd Products, Div. of Todd Shipyards Corp.,
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 Bethlehem Steel Corp., Bethlehem, Pa. 18018
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