MARITIME
REPORTER
AND
ENGINEERING NEWS

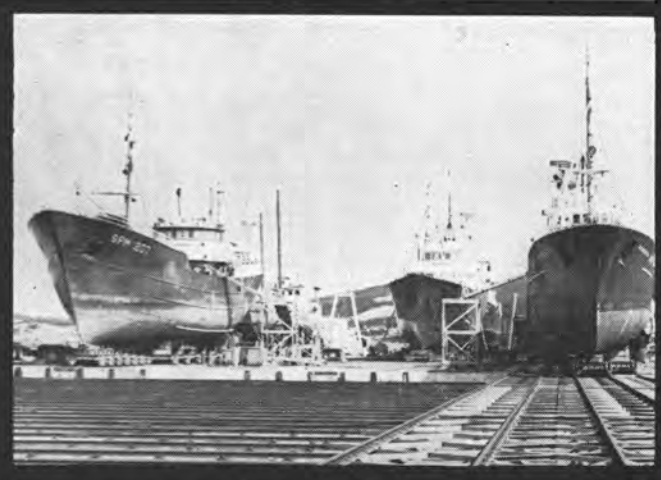
Todd Galveston Division Converts Seven Large Ships To Container Carriers Employing New Time-Saving System

(SEE PAGE 7)

MAY 1, 1969

SYNCROLIFT®

THE WORLD'S MOST MODERN DRYDOCKING & TRANSFER SYSTEM



MULTIPLE DRYDOCKING CAPABILITIES NOW A REALITY WITH SYNCROLIFT!

Never again do you have to turn away prospective customers because your drydocks are tied-up with one vessel being repaired or refitted.

WHATEVER YOUR NEEDS for drydocking and transferring vessels up to 60,000 tons deadweight, our engineers will help determine the best answers to those needs... will prepare estimates . . . even visit your yard, anywhere in the world, at no cost or obligation.

LLOYD'S REGISTER OF SHIPPING AND AMERICAN BUREAU OF SHIPPING CLASSIFICATION AVAILABLE

A Patented Product of

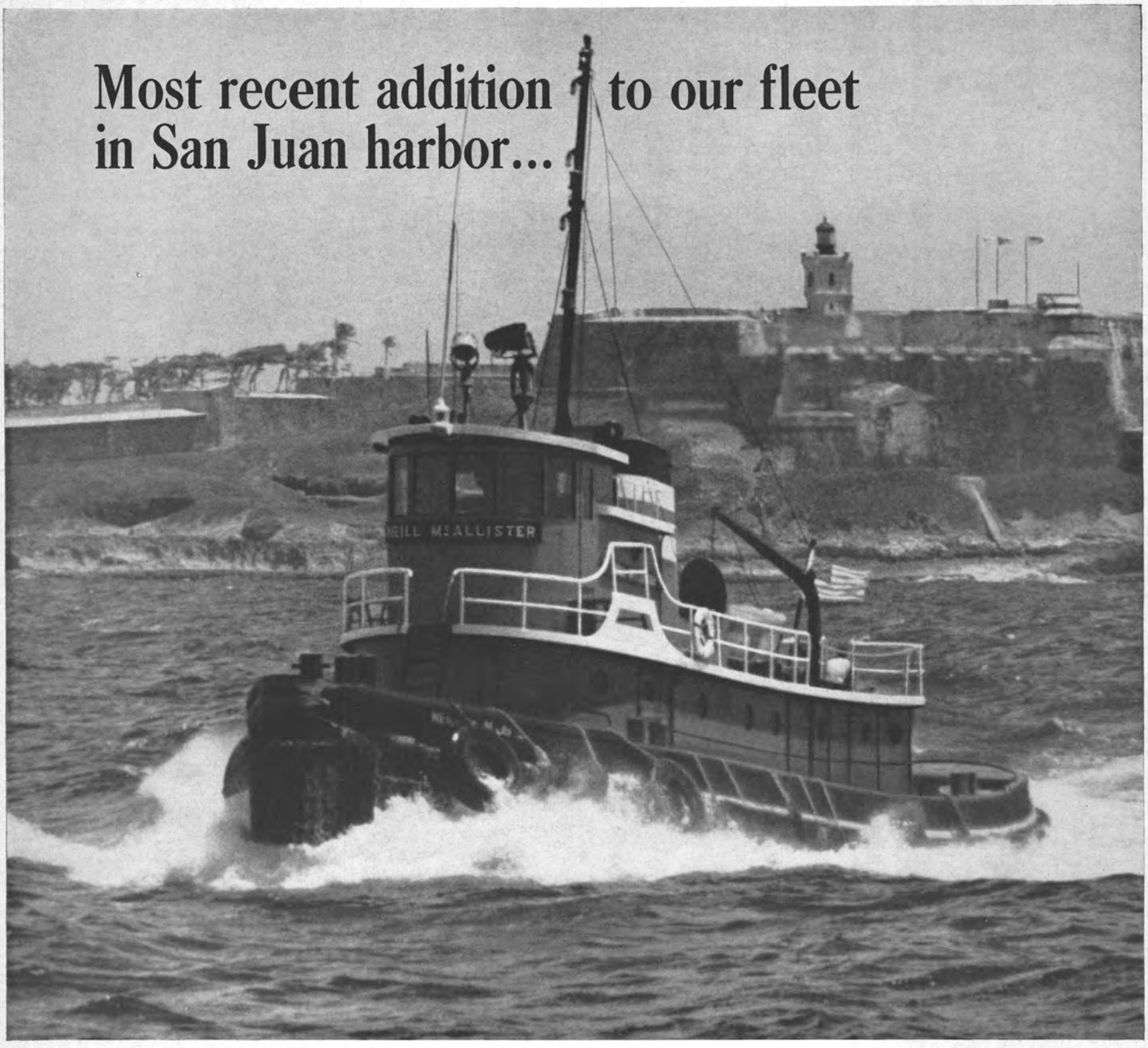
PEARLSON ENGINEERING CO. INC.

P.O. BOX 8 • 8970 S.W. 87th COURT • MIAMI, FLA. 33156

PHONE: 305/271-5721 TELEX: 051-9340 CABLE: SYNCROLIFT

SYNCROLIFT LOCATIONS

USA • CANADA • FRANCE
BAHAMAS • WEST INDIES
VENEZUELA • PERU
CANARY ISLANDS • JAPAN
SOUTH AFRICA • NIGERIA
REPUBLIC OF CHINA
CHILE • ARGENTINA
ICELAND • IRELAND
THAILAND • ENIWETOK
ISRAEL • IRAN • TRINIDAD



Most powerful tug now serving Puerto Rican shipping.

This 1800-hp tug, the "Neill McAllister," extends maximum versatility to the high-powered fleet of Port San Juan Towing Company...McAllister Brothers' new Puerto Rican division. This fleet of steel-hulled, diesel-powered tugboats provides the McAllister brand of expert docking and undocking of supercontainer and roll-on, roll-off ships.

Port San Juan Towing also specializes in inter-island tug-and-barge transportation. Whatever your Caribbean shipping needs, get in touch with McAllister Brothers, Inc., 17 Battery Place, New York, New York 10004. In San Juan, our address is: Port San Juan Towing Co., Pier 11, San Juan, Puerto Rico.

McAllister is on the move in the Caribbean

Oil Exposition Set For October 15-18 In Lafayette, La.

The show dates for the 1969 Louisiana Gulf Coast Oil Exposition (LAGCOE), to be held in Lafayette, La., have been set for October 15 through October 18, 1969, according to **Granvel O. Salmon** exposition chairman.

Mr. **Salmon** said contracts have been mailed to former exhibitors giving them priority to retain space occupied in previous shows according to LAGCOE policy.

This eighth biennial LAGCOE, "The Working Man's Oil Show", will be the biggest oil show this year anywhere in the United States.

Exhibitors will be showing products, services, and supplies, as well as the newest advances for exploration, drilling, production, refining, transportation, marketing, and pipeline operations.

For complete exposition information write to Herbert S. Benjamin Associates, 113 West Convent Street, Lafayette, La. 70501.

Sewart Seacraft To Build Fishing Boat For Nicholas Rosa

Sewart Seacraft Division (Teledyne, Inc.), Berwick, La., was awarded a contract for construction of a 50-foot, welded aluminum lobstering and crab fishing boat from Nicholas Rosa, Brooklyn, N.Y., at a price of $122,689, of which 42.1 percent will be a construction differential subsidy. MarAd received the bids for the boat on October 24, 1968. The boat will be equipped with a 700-V-16 diesel, giving it a speed of 23 mph.

Twin-Screw Tugboat To Be Built By Main Iron Works

Gulf Mississippi Transportation Co. of New Orleans has awarded a contract for the construction of a twin-screw tugboat to Main Iron Works, Inc., Houma, La. Designated Hull No. 220, it will have the following dimensions: 120 feet by 32 feet by 16 feet and will be powered with 2,450-total-bhp diesels.

Peterson To Build Five Motor Patrol Gunboats

The Naval Ship Systems Command is awarding a $2,166,660 multi-year, fixed price contract to Peterson Builders, Inc., of Sturgeon Bay, Wis., for the construction of five motor patrol gunboats (PGM). (N00024-69-C-0288).

MARITIME REPORTER AND ENGINEERING NEWS

No. 9 Volume 31

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

MUrray Hill 9-3266, 3267, 3268, 3269

ESTABLISHED 1939

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

Controlled Circulation postage paid at Hoboken, New Jersey 07030

Member BPA
Business Publications Audit of Circulation, Inc.

Operating costs getting you down?

Burn less fuel and arrive sooner with Decca Electronic Steering

Every mickle makes a muckle:*
Every rudder movement makes more drag.
Insidiously, cumulatively, continuously,
Through the hours and days,
Rudder movements cost fuel and time.
As much as 3%.

On the rivers, the lakes and the oceans,
Whether you are maneuvering or navigating,
Decca Electronic Steering
Means fewer rudder movements.

Steering in confined waters is computer aided:
Perfect maneuvers and course changes,
No overshoot, no corrections.

Decca Electronic Steering gives the helmsman:
A sensitive heading reference
Precise positive rudder control
Optimum automatic steering.
However difficult the vessel.
Whatever the conditions.

THE DECCA SIRIUS GYRO

The Sirius Gyro is a compact – no gyro room needed – electronic solid state unit of unrivalled accuracy and stability at a new low price.

Sirius is so sensitive that its large scale repeater makes a first class rate of swing indicator for tankers and tows.

Your helmsman or your Arkas pilot will hold a straighter course with the Sirius Gyro.

THE DECCA ARKAS PILOT

Arkas pilots comprise a range of all solid state models for use with gyro and or magnetic compass. Each model has four steering modes including full follow-up electronic steering.

The compass model includes a first class certified 8″ steering compass.

Models are available for supertankers to yachts and for any steering gear.

*For full information on mickles and muckles write:

DECCA RADAR Dept. A
386 Park Avenue South, New York, N.Y. 10016
Tel.: 212/685-5157

The 8 great advantages when you Bunker Antigua

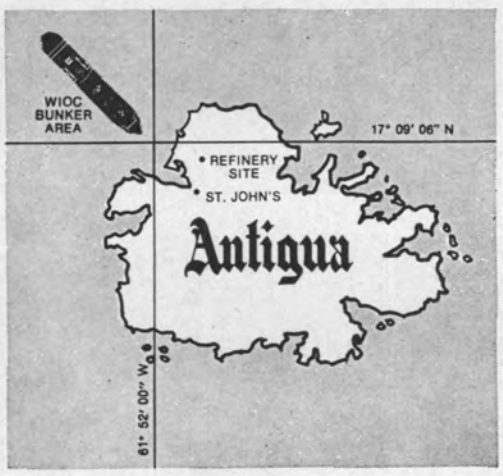
The Location

1. Antigua is strategic. It lies directly on several major shipping lanes saving you many hours of diversion compared to older Caribbean ports.

2. Our terminal is in Seasonal-Tropical Zone waters enabling you to maximize deadweight cargoes at loading ports. Draft is no problem.

The Equipment

3. Our equipment is designed for speed: pumping rates exceed 2,500 barrels an hour for larger vessels. Our average bunkering time for all vessels is under 6 hours based on a recent year's experience.



4. All grades of marine fuels and potable water are available day and night.

5. You can bunker: (1) by barge, (2) at the "Sea Island" Product Pier, or (3) at the off-shore submarine pipeline.

The Port Charges

6. Very low. Usually less than $130, including Agency fee.

7. The bunker site is in deep, calm and sheltered water.

8. There are several daily non-stop jet flights from New York for crew exchange, replacement parts and mail.

THE WEST INDIES OIL COMPANY LTD.

ST. JOHN'S, ANTIGUA, W.I.

To order, contact:

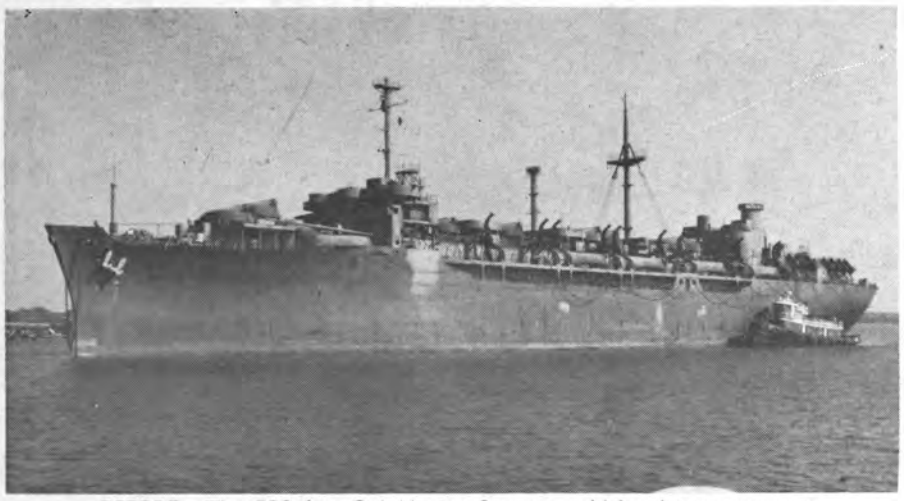
ips in New York:

INDEPENDENT PETROLEUM SUPPLY COMPANY

HEADQUARTERS
INTERNATIONAL BUNKER SALES
277 Park Ave., New York, N.Y. 10017
Telephone: (Area Code 212) 826-8870
Telex: 224888
Cable: OILSUPPLY N.Y. (Via RCA)

ips in Europe: INDEPENDENT PETROLEUM SUPPLY CO., Swan House, 34/35 Queen St., London E.C. 4, Eng. • Telephone: 01-236-4326 • Cable: OILSUPPLI LONDON • Telex: 884738

City	Bunker Agent	Cable Address	Telephone	Territory
Bergen	C. Kubon & Company	BONCO	32625	West Coast Norway
Bremen	Herm. Dauelsberg	DAUELSBURG	31671	Bremen area
Copenhagen	The Maritime Agency Ltd.	MARAG	15 15 04	Denmark
Genoa	Cia. Ital. Mar. Aer. (CIMA)	CIMARITTIMA	2099	Italy
Hamburg	Aug. Bolten	BOLTEN	36 10 41	Hamburg area
Oslo	A. Anker-Nilssen A/S	ANKERNIL	55 17 85	East Coast Norway
Paris	Petromar	PETROLEMAR	282 26 00	France
Rotterdam	Oil-Shipping Co.	OILSHIP	23 50 64	Benelux, Switzerland
Stockholm	Josef Nilsson AB	OILCHARTER	20 60 40	Sweden, Finland



BEFORE—The 523-foot C-4 Marine Serpent, sold by the government to Sea-Land Services Inc., is shown being towed into Galveston where it was converted into the containership Galveston in six months.

AFTER—McAllister Brothers' new powerful tug Jane McAllister nudges the completely converted containership Galveston into her berth at the Sea-Land container loading facility in Port Elizabeth.

Todd Tells How It Speeds Up Conversions

Containership Galveston Delivered

With Six Conversions Of World War II Vessels To Containerships Completed, Todd's Galveston Yard Delivered The Seventh Ahead Of Schedule And Pushes Ahead With Three More.

The newly converted containership Galveston was christened recently at the Galveston (Texas) yard of Todd Shipyards Corporation. The ship is owned by Sea-Land Services, Inc., a leading operator of containerships. Acting as sponsor for the vessel was **Mrs. Edward Schreiber,** wife of the mayor of Galveston, Texas. Capt. **Warren G. Leback,** Sea-Land vice-president, represented his company at the ceremony, and Todd's president, **John T. Gilbride,** attended from New York.

The Galveston becomes the seventh ship converted for container service for Sea-Land by Todd's Galveston Division in the past four years. Another three ships are presently in Todd yards for conversion.

The ship was originally built in 1945 as the C-4 troopship Marine Serpent. Sea-Land bought the vessel last year and had her towed to Todd's Galveston yard for the conversion work which involved extensive alterations and renewals to hull and machinery.

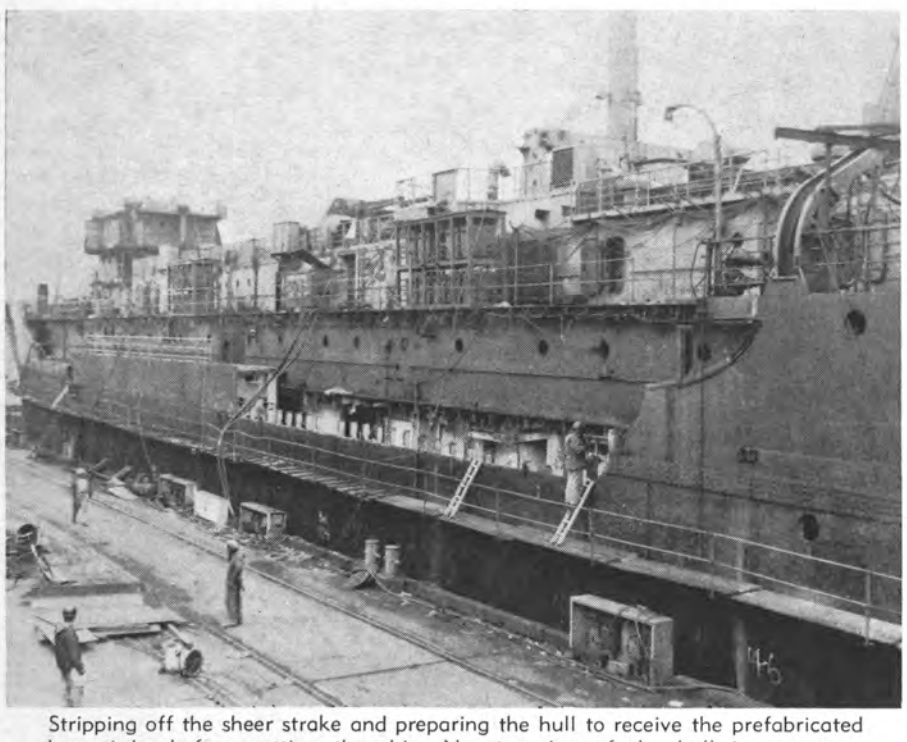
The Galveston will carry 360 cargo containers measuring 35 feet in length. Of these, 217 will be carried below deck and the remainder on deck. Equipment was installed to provide electric power for refrigerated containers.

Converting tankers, transports, and dry-cargo ships to containerships is becoming a booming business. There are a couple of big reasons why: it is the fastest and most economical way for an owner to expand the container capability of his fleet. A typical conversion costs between $7- to $10-million, or about half the cost of building a new ship. It also takes about one-third the time.

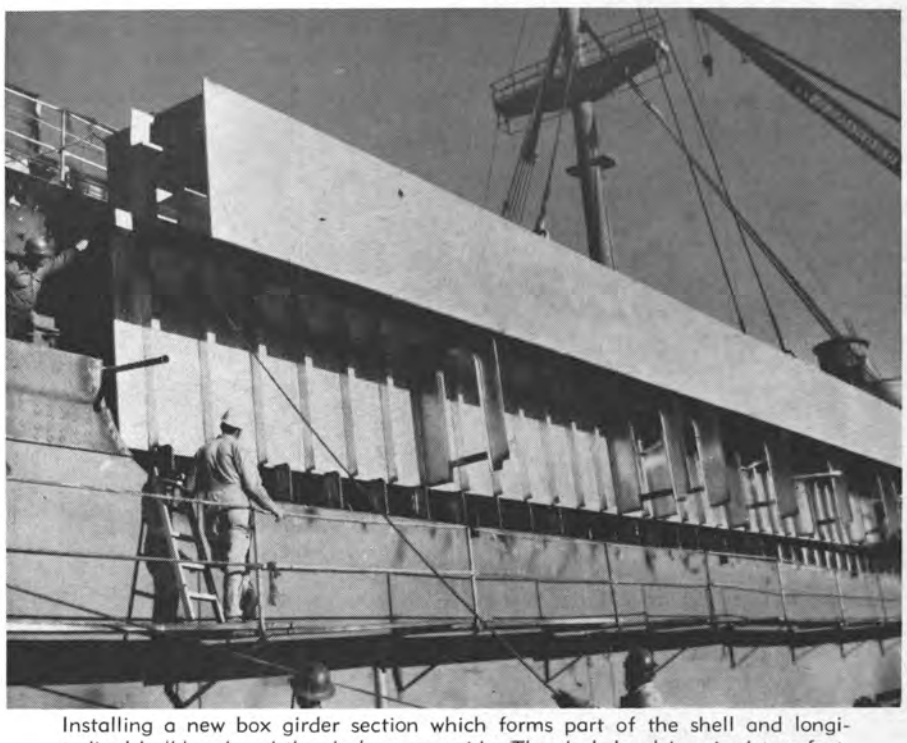
The full-fledged conversion of a C4 troopship to a containership like the Galveston is a big and complex engineering project.

Like the two C2s, two T2s, and two C4s before it, the Galveston was gutted and then rebuilt, although the original shell and engines were left intact. The vessels were given new bulkheads, decks, electric power, wheelhouse, bridge

(Continued on page 9)

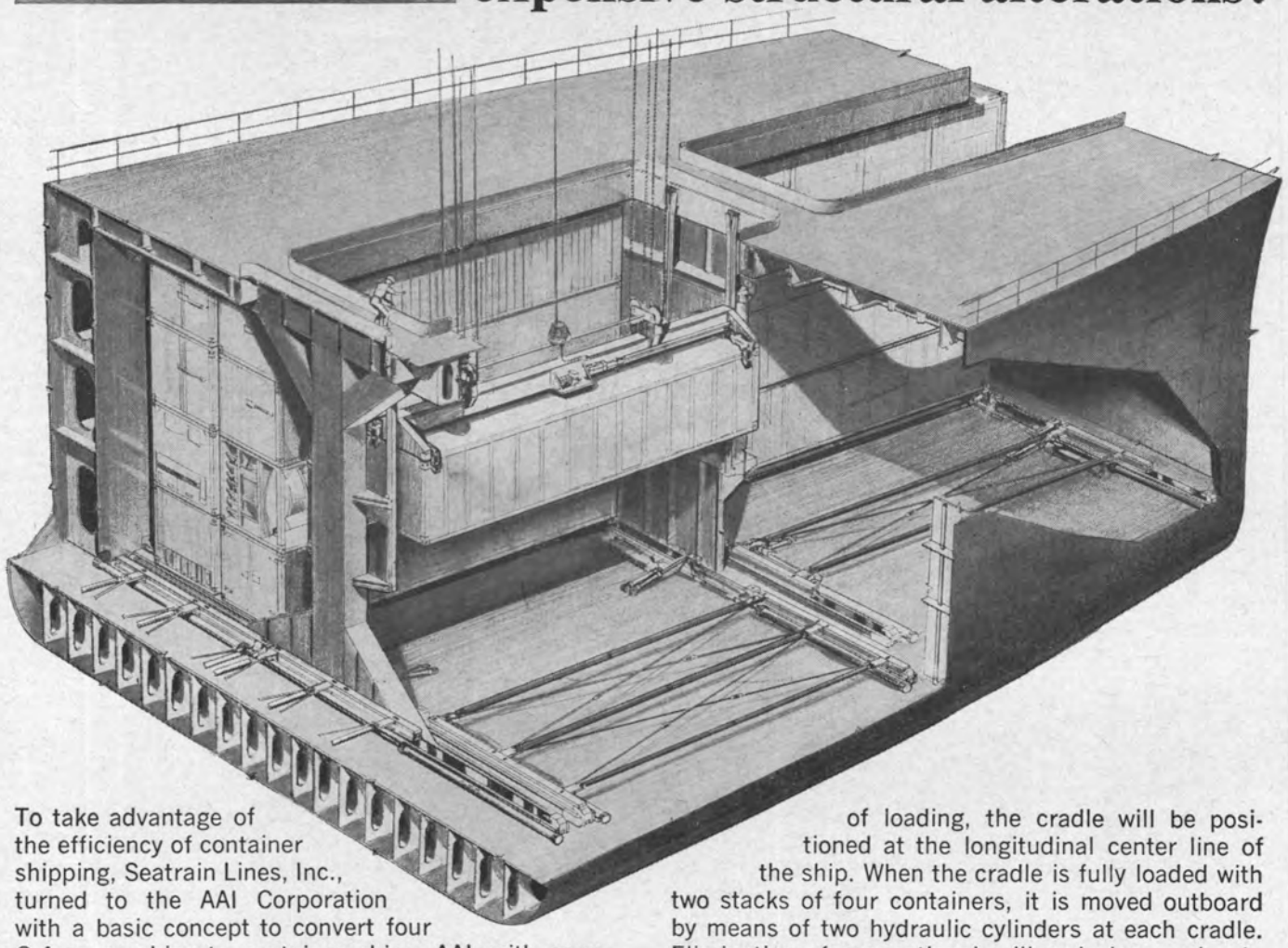


Stripping off the sheer strake and preparing the hull to receive the prefabricated box girder before gutting the ship. No strapping of the hull is necessary.



Installing a new box girder section which forms part of the shell and longitudinal bulkhead and the deck on one side. The deck level is raised two feet.

Container Handling System converts ordinary cargo ships into container ships—without expensive structural alterations!



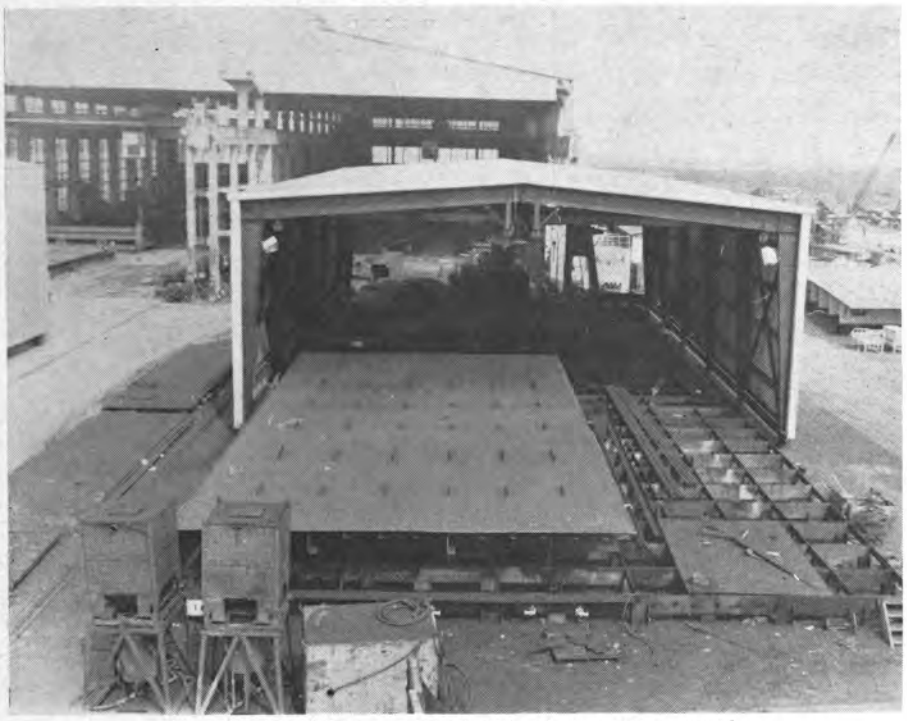
To take advantage of the efficiency of container shipping, Seatrain Lines, Inc., turned to the AAI Corporation with a basic concept to convert four C-4 cargo ships to container ships. AAI, with capabilities in electronic, mechanical and hydraulic materials handling systems, engineered and furnished much of the hardware for a hydraulic system which allows 24 containers to be loaded in each bay through a conventional hatch. This eliminated expensive structural alterations to the ships.

The system, adapted to a specially designed spreader bar, will take over the container after it comes over the side of the ship, guide it into the ship's hold and position it on a skidway or cradle. At the time of loading, the cradle will be positioned at the longitudinal center line of the ship. When the cradle is fully loaded with two stacks of four containers, it is moved outboard by means of two hydraulic cylinders at each cradle. Elimination of conventional rolling devices and substitution of a modern low friction materials application — proven through exhaustive testing — substantially lowered the conversion costs and will assure a lifetime maintenance-free operation. When a cradle of containers has been positioned to each side, in each bay, a special center foundation is positioned hydraulically to accommodate two more stacks of four containers each. This is accomplished without requiring personnel below decks. Restrainers are provided to prevent motion of the containers while the ship is in a seaway.

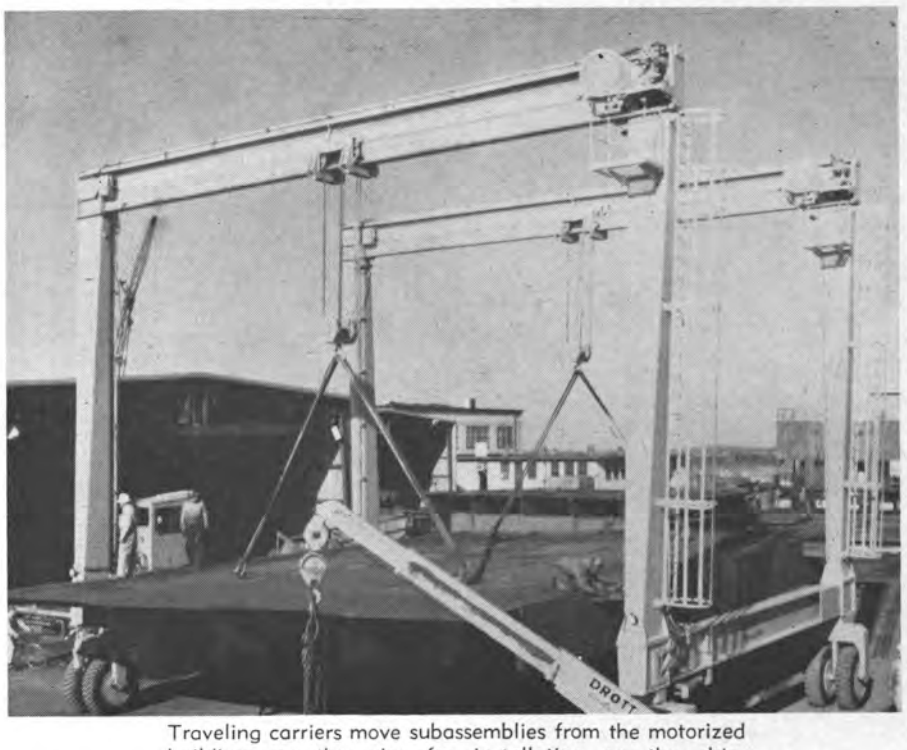
INDUSTRIAL DIVISION

AAI CORPORATION
Phone: (301) 666-1400
Write: P.O. Box 6853
Baltimore, Maryland 21204

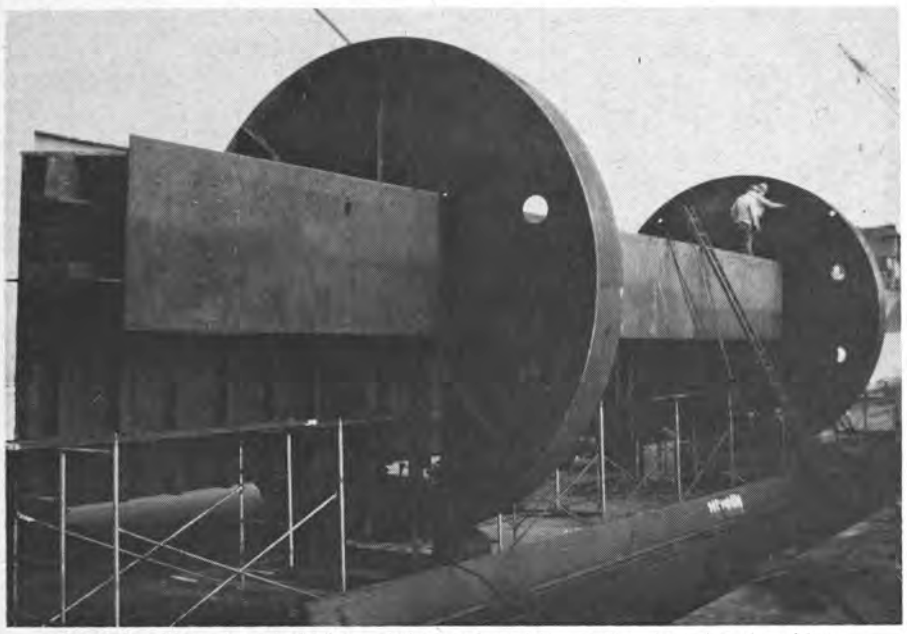
Developers and builders of complete cargo handling systems for shipboard and dockside.



Motorized buildings equipped with plant services enable workmen to subassemble sections under ideal conditions.



Traveling carriers move subassemblies from the motorized buildings to the pier for installation on the ship.



Special rolling rings hold box girder and position it for down-hand welding.

Galveston Delivered—

(Continued from page 7)

wings, air-conditioned quarters, and special girders running almost the full length of the port and starboard sides. The normal conversion time is six months and Todd-Galveston has bettered the contract time by 30 to 40 days in some cases.

When a vessel is so stripped, the question arises as to how the shell can be strengthened to prevent the hull from buckling. Not all engineers agree on the best way to do this. Some, for example, feel that doublers should be installed above and below the main deck and on the sheer strake.

Todd-Galveston has come up with what it believes is a better way to do the job. Its principal objection to installing doublers is that the work has to be done aboard ship and out in the open. The method looks like a long-drawn-out way of solving the problem.

The Todd solution consists in building box girders in sections up to 80 feet long ashore and then fitting them into the hull in one piece. The process is a simple one: after ballasting the vessel, sections of the sheer strake are stripped and prepared for receiving the box girder. When the assembly is completed it is positioned on the ship by a crane and welded in place. These girders provide the structural integrity needed while removing the hull's interior structure.

Constructing a box girder is also a simple and fast operation. First, structural steel is landed on a platen, and a motorized building rolled over the spot. Equipped with lights, gases, compressed air, and overhead cranes, the building enables workers to perform every operation from assembly to finishing under ideal plant conditions and without interruptions from the weather.

The girder is put together in big motor-driven rolling rings that turn and position it for welding. This setup, besides saving time, enables a welder to work at all times in a down-hand position.

The box girders raise the height of the deck two feet and in so doing facilitate the handling of containers when the ship is put in service. With the deck height increased two feet, the hatch coamings are only four feet high rather than six feet high.

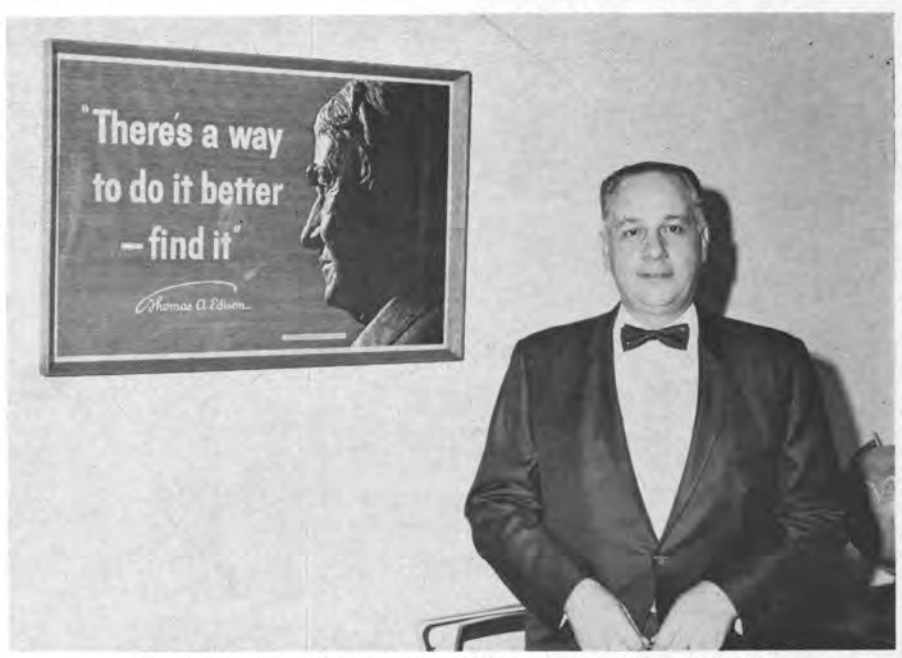
"We subassemble everything we can. It is the key to economy and time savings," says **Ralph Anselmi,** general manager of the Galveston Division. Besides the girders, the yard subassembles bulkheads, coamings, hatch covers, the stack, wheelhouse, buttress posts, transverse girders, and water tanks.

Even accessories are added ashore to save time. On the bulkhead, for example, the guide angle supports, safety rails, electrical fixtures,—even the clips for the fire hose boxes, are put on ashore.

"There's a way to do it better—find it" is a quotation from Thomas Edison that hangs prominently in Mr. **Anselmi's** office. His staff says he works near it and lives by it. Finding a better way often means the faster way. By assembling the wheelhouse in the motorized building, for example, 14 to 15 crane lifts are eliminated. Or, by standing a bulkhead section against a craneway and turning it as necessary, welders can perform more efficiently.

At times, engineers at the plant who find they save time by performing assemblies ashore, have been able to find better and faster ways of doing a job aboard ship when work has to be carried out there. The heavy cables supplying power for refrigerated containers and hatch lighting, for example, instead of being hung overhead are tied together and laid on simple platforms in out-of-the-way places.

With three other jobs in the works now, the Galveston yard expects to have another busy conversion year. News of the company's know-how in this new shipbuilding specialty has traveled considerable distances—recently as far as Wall Street. Standard & Poor's wrote in February that Todd is "well situated to benefit directly from the oncoming surge of work in converting vessels to containerships."



Quotation from Thomas Edison hangs in the office of **Ralph Anselmi,** general manager of the Galveston shipyard of Todd.

"Vista Pacific"—Los Angeles Section Announces Program For SNAME Spring Meeting

Officers of the steering committee for SNAME Spring meeting are: (top row) **D. A. Ball**—liaison, **H. D. Ramsden**—budget, **P. Bukunt**—hotel arrangements, **L. M. Dingler**—social activities; (bottom row) **R. G. Rados**—publicity chairman, **H. P. Rumble**—technical sessions, **N. Friedland**—chairman.

A varied program, both technically and socially, has been planned by the Los Angeles Metropolitan Section of The Society of Naval Architects and Marine Engineers for the 1969 Spring meeting of the Society. Using as a title for the meeting "Vista Pacific," the steering committee has arranged for interesting luncheon speakers, harbor tours, fashion shows and movie studio tours for the ladies, and an excursion to Disneyland besides the usual president's reception and dinner-dance. The Spring Meeting will be held in Beverly Hills, Calif. on May 21-24.

The technical sessions will consist of the following papers:

"The Society of Naval Architects and Marine Engineers and the Conquest of Inner Space" by **E. M. MacCutcheon,** ESSA;

"A View of the Present and Future Hydrofoil Industry" by **William H. G. FitzGerald,** Supramar;

"Weight Considerations for Deep Submersibles" by **E. H. Nickell,** Lockheed Missiles and Space Co.;

"The Design and Certification of Submersibles" by **Charles G. Kosonen,** North American Rockwell;

"Design of a Dynamically Positioned Support Platform for a Tethered Unmanned Submersible Vehicle" by **Donald Hall,** Ocean Design Engineering Corp., and **D. A. Kunz,** Naval Undersea Warfare Center;

"Anomalous Behavior of Merchant Ship Steering Systems" by **Robert Taggart,** Robert Taggart, Inc.;

"Vertical Ship Motions and Deckwetness" by **M. F. van Sluijs,** Netherlands Ship Model Basin;

"A New Hull Form for High-Speed Volume-Limited Displacement-Type Ships" by **Reuven Leopold,** Litton;

"Marine Reheat Cycles and Systems Evaluation" by **Chester W. Stott Jr.,** General Electric Co., and

"Design and Construction of the Dynamically Positioned Glomar Challenger" by **John R. Graham, Klemme M. Jones, G. Dayton Knorr,** and **Thomas F. Dixon,** Global Marine, Inc.

DPA To Acquire Burton Shipyards

According to a joint announcement by **John B. Tuthill,** president of DPA, and **J.C. Garner,** president of Burton, Inc., DPA, Inc. of Dallas has agreed in principle to purchase for cash all of the common stock of Burton Inc. of Port Arthur, Texas.

Burton operates Burton Shipyards, Inc., which constructs ocean-going tugs, support boats and structures for the offshore drilling industry and other vessels. DPA leases data-processing equipment, sells motor fuel conditioners and oils and greases, and also sells advertising space on protective textbook covers.

Combustion Engineering Appoints Fortier To Managerial Position

Combustion Engineering, Inc., Windsor, Conn., has announced the appointment of **Robert J. Fortier** as manager of product advertising and sales promotion. He is responsible for the promotional communications programs of C-E's Windsor-based Utility Division, Industrial Group and International Operations.

In his new assignment, Mr. **Fortier** will report to **James L. Richardson,** director, public relations and advertising. He was recently associated with Veeder-Root Company, Hartford, Conn.

Luckenbach Steamship Announces Three Executive Promotions

Robert F. Weiss

Announcement of the promotion of three executives of the Luckenbach Steamship Company, Inc., was made recently by **Edgar F. Luckenbach Jr.,** president of the firm.

Robert F. Weiss who has been controller of the company will become vice-president-administration, a newly created post. Mr. **Luckenbach** said establishment of this area of responsibility was necessitated by the recently broadened scope and size of the 119-year-old company, as well as further plans for diversification and expansion.

Also, Capt. **K. F. Jensen** and **T. P. Hanssen** were named assistant vice-presidents. Captain **Jensen,** who has managed Luckenbach's Tampa, Fla., terminal and related operations for the past three years, will be associated with terminal and stevedoring operations at the company's New York headquarters. Mr. **Hanssen,** a veteran of 25 years experience in the maritime industry, will coordinate traffic and trade development activities .

Half-Height, Open-Top Containers Being Built By York Trailer Co.

A half-height (4-foot high) open-top container, designed to carry high-density cargoes like machinery, engines, steel stock, etc., has been introduced by York Trailer Company Ltd., Corby, Northants, England. The new unit, available in 20- 30- and 40-foot lengths, is an all-steel ISO container with a nylon-plastic tarpaulin. It is built to T.I.R. specifications.

Production of the new units is under way at York's big new container plant in Northallerton, Yorkshire. They will, like all steel containers built by York, be given the elaborate Alchem corrosion-inhibiting pre-treatment which, with after-assembly painting, gives an exceptional degree of corrosion resistance.

The standard range of ISO containers now marketed by York includes dry-freight boxes, refrigerated boxes, open-tops, flats, tanks and half-heights. The standard boxes are available as all-steel or all-aluminum units or, as recently announced by the company, as a combined aluminum-steel unit that is tougher and cheaper than an aluminum unit and lighter than an all-steel one.

Newport News Names Taylor Chief Designer Of Hull Fittings

Thomas T. Taylor

Thomas T. Taylor has been appointed chief designer of the hull fittings design department at Newport News Shipbuilding and Dry Dock Co., Newport News, Va., a major component of Tenneco Inc. The announcement was made by **J. R. Kane,** director of engineering.

Assistant chief designer since 1965, Mr. **Taylor** replaces **A. W. Womble,** who recently retired as head of the department.

After joining the shipyard as a designer in 1940, Mr. **Taylor** was promoted to junior design supervisor in 1954 and senior design supervisor in 1962.

He studied civil engineering at Virginia Polytechnic Institute. Currently, he is a member of The Society of Naval Architects and Marine Engineers and the Propeller Club.

A native of Stem, N.C., Mr. **Taylor** was raised in Richmond, Va.

Fiat Diesels Ordered For Bulk/Car Ships Building In Germany

The powerplants for three 33,000-dwt bulk/car carriers being built at Lubecker Flender-Werke Shipyards A.G. have been ordered from Borsig A.G., Berlin. These engines will be of the Fiat B-759S type which develop 13,500 bhp at 135 rpm.

Lubecker is building two of the ships for August Bolten Wm. Miller's Nachfolger of Hamburg and one for Schulte & Bruns of Emden. The ships are designed to carry grain or automobiles.

Recently delivered ships with Fiat engines have been a 102,000-dwt ore-bulk-oil carrier of 23,000-bhp, the Vittorio Valletta, built by Italcantieri shipyards; a 15,000-dwt liberty-type vessel built by Flensburger Schiffabau with a 7,200-bhp engine, and a 3,150-dwt tanker, 2,700 bhp, constructed by Cantiere Navale Apuania.

NSSC Awards Contract To Sewart Seacraft

Naval Ship Systems Command, Washington, D.C., awarded contract RFP N00024-69-R-0588 to Sewart Seacraft Division, Teledyne, Inc., Berwick, La. The contract is for the construction of six 40-foot twin-screw aluminum-hull diesel launches.

Although Moran is synonymous with tugs in New York harbor, we're actually at home all over the world. Although pre-eminent in the field of docking and undocking ships, we do much more than that.

To illustrate: Barge Transportation of Liquids and Bulk Commodities... Disposal at Sea... Rescue... Long Distance Ocean and Coastwise Towing.

Because Moran has more tugs, and a more modern, powerful and versatile fleet than anyone in the business, coupled with more than 100 years of experience, we can do the job more efficiently and economically.

Bulk Barge Operation

Docking/Undocking


Rescue Work

Dredging Operation

Offshore Towing

Canal Barge Operation

You expect more when you call...

The Man from Moran

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

Puget Sound Tug And Barge Converts To

Pilot Controlled Tugs

Robert M. Keenholts*

The principle of reduced manning for vessels properly equipped to operate with an unattended engine room was agreed on between the Northwest Towboat Association and labor representatives during the 1968 contract negotiations.

As a result of this agreement, several vessels have been equipped with the necessary and required equipment and are presently being operated with unattended engine rooms. Many of these vessels are capable of being operated on international ocean voyages; however, their principal trade routes have been the Pacific Coast and Alaskan waters.

This paper is based on the actual development, design, installation and operation of the alarm systems and automatic equipment installed in several seagoing tugs by the Puget Sound Tug and Barge Company in 1968.

Several systems for vessel automation being marketed were reported to be capable of doing the job. Each of these systems had to be engineered for each vessel. Of these package systems, none were available without considerable lead time, which meant they could not be installed for the summer season of 1968.

In view of the above, the Puget Sound Tug and Barge Company chose to work out a system designed for their particular vessels.

The Harris Electric Company, Seattle, Wash., was retained to design and manufacture pilothouse and engine-room panels, electrical circuitry for installation of the panels and the required alarm systems. They were also required to furnish the electricians to install the equipment.

There were basically three different types of vessels to be pilot controlled, the difference being the powerplants.

Type 1—Heavy-duty four-cycle, direct reversible Enterprise diesel engines, Model D.M.R.38, 2,000 hp with a-c auxiliary generating plant.

Type 2—High-speed opposed-piston, two-cycle, direct reversible with a reduction gear Fairbanks-Morse diesel engines, 1,500 hp with a d-c auxiliary generating plant equipped with batteries.

Type 3—High-speed two-cycle, with reverse reduction gear Electro-Motive diesel engines up to 3,500 hp. Single and twin-screw installations with a-c auxiliary generating power.

Type 1 Modifications—The main engine on these vessels comes equipped with cylinder lubricators that must be refilled every few hours. A tank large enough to hold enough lube oil to last at least 24 hours was installed adjacent to the lubricator and piped directly to it. The tank was fitted with a low-level sensor. No other modifications to the engine were required.

High-level alarms were also installed on the lube-oil service tank and the fuel-oil day tank to prevent overflowing when refilling.

For the remote start of the auxiliary generator engines, a solenoid pilot air valve actuating a piston-operated 'Airmatic' valve was installed in the existing air-start piping. A pressure switch installed in the fuel or lube line automatically opens the cranking circuit when the engine starts. The generator disconnect and load transfer was accomplished with installation of an Allen Bradley magnetic contactor, timing relays and 'Square D' voltage sensitive relays.

A major problem with these particular plants was the inability of one generator to carry the full vessel load under all circumstances.

Rather than install a costly complicated system for remotely paralleling the generators, a circuit was designed to split the ship's lighting and power bus load between the two generators. This was accomplished by using an additional contactor similar to the transfer system, and was controlled with a pushbutton 'tie' switch installed in conjunction with the generator transfer system.

These start and transfer buttons were incorporated in the engine room and pilothouse alarm panels. The pilothouse alarm panel was also fitted with voltmeter and ammeters for each generator. In the event of a generator engine or electrical failure, the standby generator can be started from the pilothouse by pushing the start button. As soon as the unit comes up to full voltage it will automatically assume the ship's power load. In the event the generator operating becomes overloaded, which can be noted by ammeters in the pilothouse, the other generator can be started up. When this generator comes up to full voltage it is cut in by pushing the bus-tie button. The tie button activates the automatic transfer contactors which divides the ship's load between the two generators.

The tow winch on these vessels is powered with hydraulic motors. The hydraulic pump for this system is driven by a diesel engine located in the engine room. A starting system identical to those used on the generator engines was installed together with the remote start and stop control in the pilothouse.

The existing air compressors were driven by a power take-off from the generator engines and manually operated. Rather than automate their operation, a complete new automatic compressor set, electrically driven, was installed.

All the engine room alarm sensor alarm lights were installed in the door of a steel weather-tight electrical panel box on the after bulkhead of the pilothouse, together with the other alarms, generator meters, load-transfer switch buttons, generators and tow-winch-engine start buttons, the bus-tie transfer circuit button, alarm horn, engineer's call bell button, and circuit on indicator lights.

The engine room alarm panel box is the heart of the system. The relays, timers and test circuit buttons are located in this box. This unit was mounted on the forward bulkhead on the upper engine room level.

Operation of this panel is relatively the same as in the pilothouse with the exception of the test-circuit button.

Type 2 Modifications—There was no main engine modification necessary. These engines are completely self-sustaining other than starting and maneuvering air. They are, of course, controlled from the pilothouse. The major problem in this case was developing a cam mechanism to shut the engine alarms off on stopping the engine.

Inasmuch as the auxiliary engines were backed up with a 110-volt battery bank, remote start and transfer was not necessary.

All the engine room alarm sensor lights were installed in the door of a steel weathertight panel box in the pilothouse. Because of the batteries, no remote and transfer controls were required. However, a voltmeter and ammeter were installed to monitor the ship's power.

The engine room panel is approximately the same size as the one installed in the heavy-duty type. The alarm test circuitry was the same with the exception of the d-c current equipment which had to be used.

The tow winch is powered with a d-c electric motor which is operable off the regular ship's power. Therefore, no special equipment was required for this.

Type 3 Modifications—No major modifications to the engine were necessary inasmuch as they were completely self-sustaining, other than control and starting air. The alarm requirements, however, were much more extensive than the engine manufacturer's original equipment. Therefore, a great deal of modification was necessary to fit the required sensors and alarm equipment to the engines.

The generators on this class vessel handle the full ship's load. Therefore, it was only necessary to install the auxiliary generator start and transfer system. This is identical to the installation in Type 1. The tow winch is powered with hydraulic motors on the winch with the hydraulic pumps driven through an electric clutch from the front end of the generator engines. This in turn is remotely controlled in the pilothouse.

The pilothouse on this class vessel was previously equipped with a console containing gauges, switches, meters and some alarm lights. Two methods were used to make the necessary installation. First was a supplemental alarm panel similar to the other vessel installation, but much smaller, and containing only the generator start and transfer system, together with the additional alarms not previously installed on the console. This panel was integrated with the console, utilizing the previously installed alarm lights. The second method was to install the new system on the existing aft panel of the console. Both systems worked equally as well.

The engine-room panel was relatively the same as the Type 1 installation. However, because of the reverse reduction gears, it was more extensive. The panel was mounted on the forward bulkhead directly in front of the engine.

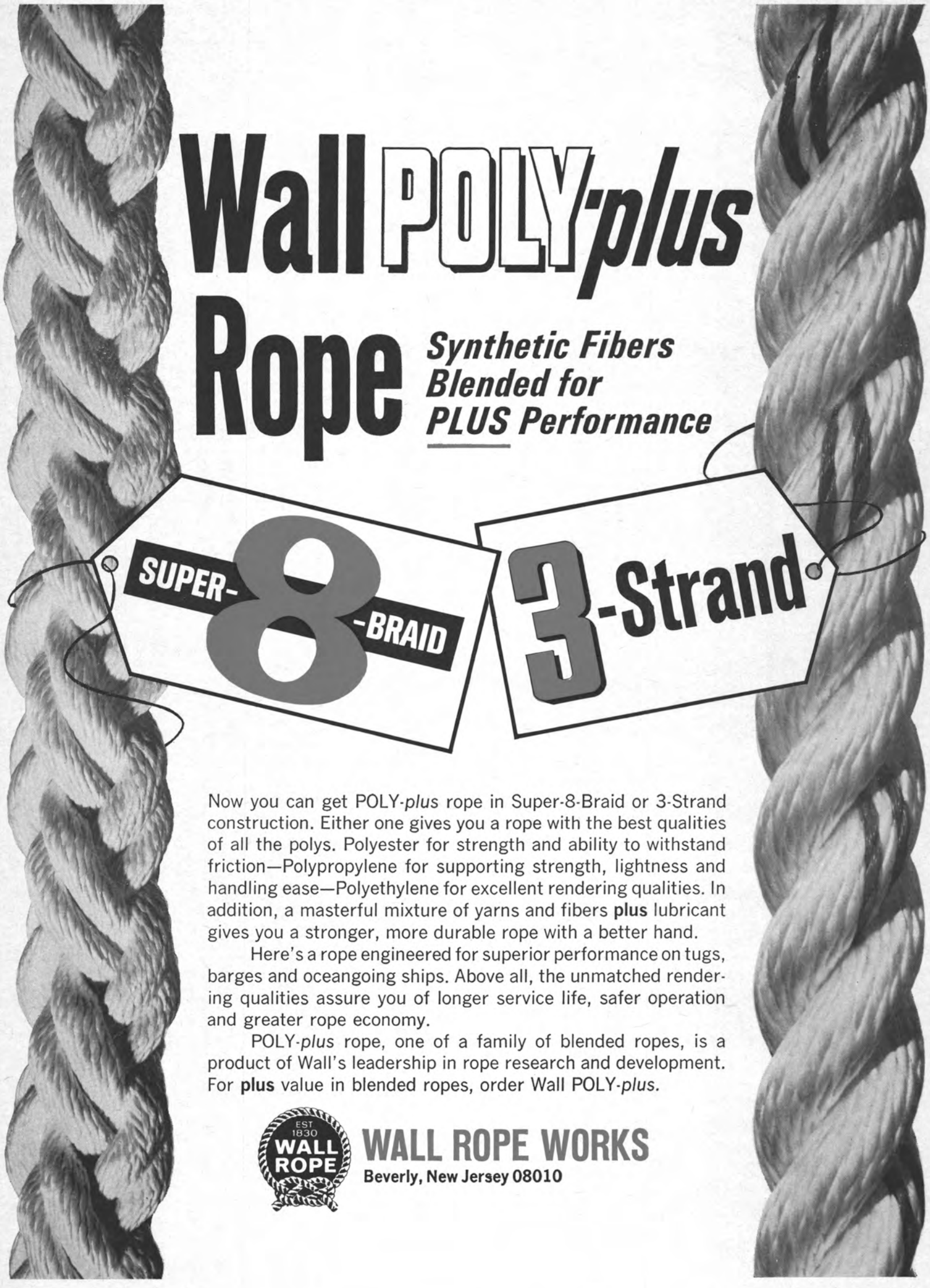
This installation is equipped with an airflex clutch which is controlled from the pilothouse. The engine could be started and shutdown in the engine room only. Because of this, the Technical Committee ruled that an emergency shutdown be incorporated in the pilothouse equipment. This was accomplished by installing a pull cable attached to the main engine overspeed trip.

It was also required that an emergency start or 'hot start' button be installed in the pilothouse in the event the engine was 'killed' or 'died' while the vessel was maneuvering. This was a simple matter of paralleling another start button in the pilothouse with the existing engine start button.

For installation of the above alarms and supporting equipment, the best industrial and marine type equipment was used. Top quality industrial relays, oiltight transformer-type pilot lights (vibration resistant), and oiltight pushbuttons were used on all panels.

These high quality installations have proven to be extremely reliable and trouble-free and have gained the confidence of the crews operating these vessels.

*Mr. **Keenholts** of Puget Sound Tug and Barge Company, Seattle, Wash., presented the paper condensed here before a recent meeting of the British Columbia Area of The Pacific Northwest Section, The Society of Naval Architects and Marine Engineers.



Wall POLY-*plus* Rope

Synthetic Fibers Blended for PLUS Performance

SUPER-8-BRAID

3-Strand

Now you can get POLY-*plus* rope in Super-8-Braid or 3-Strand construction. Either one gives you a rope with the best qualities of all the polys. Polyester for strength and ability to withstand friction—Polypropylene for supporting strength, lightness and handling ease—Polyethylene for excellent rendering qualities. In addition, a masterful mixture of yarns and fibers **plus** lubricant gives you a stronger, more durable rope with a better hand.

Here's a rope engineered for superior performance on tugs, barges and oceangoing ships. Above all, the unmatched rendering qualities assure you of longer service life, safer operation and greater rope economy.

POLY-*plus* rope, one of a family of blended ropes, is a product of Wall's leadership in rope research and development. For **plus** value in blended ropes, order Wall POLY-*plus.*

EST 1830 WALL ROPE

WALL ROPE WORKS

Beverly, New Jersey 08010

Eighty Papers To Be Presented At IMAS 69 In London

Some 80 papers by authors from more than 14 nations, including West Germany, France, Portugal, the USA, Holland, Sweden, Yugoslavia, Japan, Italy, Poland, Australia, the USSR and Britain, will be presented and discussed during the eight-day International Marine and Shipping Conference (IMAS 69) in London this summer.

Organized by the Institute of Marine Engineers and under the patronage of H.R.H. **The Prince Philip,** Duke of Edinburgh, the conference is designed to bring together all those who operate, design, construct and repair ships and their machinery and equipment. Among collaborating organizations are the Royal Institution of Naval Architects, the Chamber of Shipping of the United Kingdom and the British Shipping Federation Ltd.

The official opening ceremony will be in London's historic Guildhall on Tuesday, June 10, and the conference ends on Friday, June 20. In addition to the meetings and discussions, there will be visits to industrial organizations and companies, while social functions for delegates and their wives will be arranged. Among the social activities will be tours to places of historic and scenic interest in London and the provinces.

Among the highlights will be a reception by the British Government at Lancaster House on the evening of Wednesday, June 11, when the host will be **William Rodgers,** M.P., minister of state, Board of Trade.

Basic registration fee for IMAS 69 will be $24. Advance copies of papers will be available to those who register. Details of the conference, charges and registration forms may be obtained from the IMAS 69 Conference Office, Institute of Marine Engineers, 76 Mark Lane, London EC3, England.

Charleston, S.C. Division Of Jacksonville Shipyards Sold To Detyens Shipyards

W. R. Lovett announced the sale on March 31 of the Charleston, S.C., shipyard facility which has been operated since July 1965 as Jacksonville Shipyards, Inc., Charleston Division.

The new operator will be Detyens Shipyards Inc., headed by **William J. Detyens** of Charleston, president. The firm has another ship-repair facility in the South Carolina port.

Mr. **Lovett,** who is president of Jacksonville Shipyards, Inc., in Jacksonville, said "We disposed of our Charleston yard for the purpose of concentrating our efforts in Jacksonville and continuing to build here in Jacksonville what we consider to be the finest ship-repair facility in the United States."

The ground on which the 19-acre Charleston shipyard is located is owned now, as in the past, by **Myron M. Segal, W. E. Davis, William McG. Morrison Jr.,** and **Edward K. Pritchard.**

The land had been leased from the owners by Commodores Point Terminal Corporation of Jacksonville, of which Mr. **Lovett** is the president.

Commodores Point Terminal, in turn, had sub-leased the property to a South Carolina corporation known as Jacksonville Shipyards, Inc., Charleston Division.

One section of a sectional dry dock, and portions of the inventory maintained at Charleston, were owned by the Jacksonville companies.

In announcing the March 31 sale, Mr. **Lovett** stated that "all of our interests," including the underlying ground lease, the dry dock section and the inventory items were sold to Detyens. The value of the transaction was not disclosed.

Clearwater Bay To Build Twin-Hull Fishing Boat

Clearwater Bay Marine Ways, Inc., of Clearwater, Fla., has received an order from William Gilmore, Clearwater, Fla., for the construction of a twin-hull offshore fishing boat. To be equipped with two 1,020-hp 12-71 Detroit GM diesels, the vessel will have the following dimensions: 65 feet by 26 feet by 4 feet 4 inches.

We have our own valve repair man. We don't want you to have to wait a minute longer than necessary.

We'll call on outside specialists at times — if that's what it takes to get your job done right. Any good shipyard will. But the way we work at Todd very often permits us to do a little better. We keep a lot of different kinds of specialists right at our yards, full time. This also permits a lot of time and money to be saved. For you.

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

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

Pacific Northwest Section Discusses Total Procurement And Ferro Cement For Ships

Taking part in the Pacific Northwest Section's recent meeting were, left to right: **S. F. Doyka** and **R. P. Mitchell,** authors, Prof. **Harry Benford,** luncheon speaker, and **T. Clark Jr.,** author.

Joining in on the discussion of the student paper were, (l to r): **Michael Markey,** Section chairman; **Charles Canby,** author; **R. H. Richards,** Section papers chairman, and **D. A. Slater, W. Rassbach,** and **C. F. Norris,** discussers.

The annual student meeting of the Pacific Northwest Section of The Society of Naval Architects and Marine Engineers was held recently at the Windjammer Restaurant on Shilshole Bay, Seattle, Wash. Over 40 students from colleges located in Oregon, Washington and British Columbia, were present as guests of the Section.

Two technical papers were presented during the morning session. The first paper, "The Shipbuilder's Viewpoint of Total Package Procurement," was given by **J. E. Rimbach, S. F. Doyka, R. A. Williams, R. P. Mitchell, T. Clark Jr.,** and **R. L. Stevenson,** all with Lockheed Shipbuilding and Construction Company. The paper was broken down into five sections dealing with technical management, material procurement, proposal preparation, contractural obligations and the effect on design efforts.

The second paper, "Ferro Cement—With Particular Reference to Marine Applications," was presented by **Charles D. Canby,** a student in the Department of Naval Architecture and Marine Engineering, University of Michigan. Mr. **Canby** stated that, based on extensive factual design data, ferro cement can be used for many types of structures but that one of its best applications is in boats between 35 and 100 feet in length. He pointed out that this material is advantageous when used for the hulls of commercial fishing boats. In addition to reducing a fishing boat's empty weight, it provides good insulation.

A lively discussion followed the presentation of this second paper with **W. Rassbach** of Todd Shipyards presenting a very detailed discussion and **C. F. Norris,** of Allied Builders Ltd., finding the paper most worthwhile.

Prof. **Harry Benford,** chairman of the Department of Naval Architecture and Marine Engineering, University of Michigan, spoke at the luncheon. His subject was "Ocean Commerce: Trend and Predictions."

During the afternoon, tours were conducted of the facilities of Lockheed Shipbuilding and Construction Company and Todd Shipyards' Seattle yard.

How to court a Lady.

A sea-going lady is practical. Small needs ignored can create larger problems in her performance. **Essomarine**® courts customer vessels with careful attention to all shipboard machinery. A lube survey of all equipment is developed into a memory system for our world-wide network of marketing and technical people. Wherever your ship arrives, Essomarine eliminates guesswork. Her smallest needs command our full attention.

ESSO

FUELS AND LUBRICANTS

Advanced Computer Project Will Influence Structural Design Of Large Ships

An important research development which is expected to have "a profound influence" on the review of structural designs of large vessels was revealed at the Annual Meeting of the American Bureau of Shipping, held recently in New York.

Making the announcement, **Andrew Neilson,** the Bureau's chairman and president, said that the essence of the "Arizona Project", as this venture is called, is that the computer analysis of the entire hull structure of a giant vessel under expected service conditions can be undertaken.

Although naval architects have used computers before to analyze ship plans, they have been able to investigate only individual sections of the hull. However, this project will now make it possible to analyze in fine detail the shearing and bending stresses in the more highly stressed areas throughout the hull.

The Arizona Project was started in the spring of 1968 by Chevron Shipping Company. Subsequently the Bureau was asked to join and the project is now sponsored by the company and the Bureau. It is under the direction of Dr. **H. A. Kamel,** professor of aerospace and mechanical engineering at the University of Arizona and consultant to the Boeing Company.

Computer analysis used for aircraft (which, like ships, consist of plated surfaces that have internal stiffening) had to be modified and extended to take into account that the structure of a ship, as well as its responses, are somewhat different from those of aircraft. The program developed, called DAISY, which stands for Displacement Automated Integrated System, will be capable of treating the main hull structure. It is the most sophisticated computer program specifically created for the analysis of the ship structure.

How does this finite element method of investigation actually work? The most important step in the procedure is the replacement of the actual continuous ship structure with a mathematical model. By passing longitudinal and transverse vertical planes and horizontal planes through this model, it is divided into a large number of elements of finite size having known elastic and geometric properties. Stresses are then calculated for the points at which these three families of planes or surfaces intersect. These points are located to coincide with the actual vessel's major structural frames and are called "nodal points".

The process is perhaps best visualized by imagining a large net being wrapped around the hull of a ship. Each corner of the squares in the net represent a nodal point. Thus, the hull is systematically broken up into smaller pieces which are then mathematically tested for certain assumed operating conditions. The reactions evidenced by these individual segments of the hull can then be used to assemble the resultant properties of the complete structure.

The smaller the elements being investigated, the more accurate the final analysis becomes. For example, in order to sharpen the computer's focus on a point of special interest, such as a bulkhead, it is necessary to take the output obtained for this particular area from the initial three-dimensional run and then put it through the computer again, this time with a finer, two-dimensional mesh. To receive an accurate picture of the stress distribution in a component part of the bulkhead, a third run, utilizing an even finer mesh, might be required.

One Chevron ship—Hull 520, a 210,000-dwt tanker under construction to ABS class at Kockums Mekaniska Verkstad AB in Sweden —has already been intensively analyzed by DAISY. This vessel is also being extensively instrumented as part of a supporting program sponsored by the shipyard and the Bureau to measure the actual stresses occurring at sea in the vessel's hull. DAISY is also being put to work on five other Chevron ships of similar size which are building to Bureau class. Three of these vessels are following Hull 520 on the ways at Kockums, while the remaining two are being constructed by Mitsubishi Heavy Industries Ltd. in Japan.

As a result of the Arizona Project, the American Bureau of Shipping can look forward to the availability of proven three- and two-dimensional programs of high quality for day-to-day use with designs for the larger vessels.

Tubbs Cordage Realigns Operations

In order to provide increased customer services, Tubbs Cordage Company will consolidate sales, accounting, and credit operations at the site of the manufacturing facilities, P.O. Box 709, 501 West Palm Avenue, Orange, Calif. 92669 (telephone—714 538-1161).

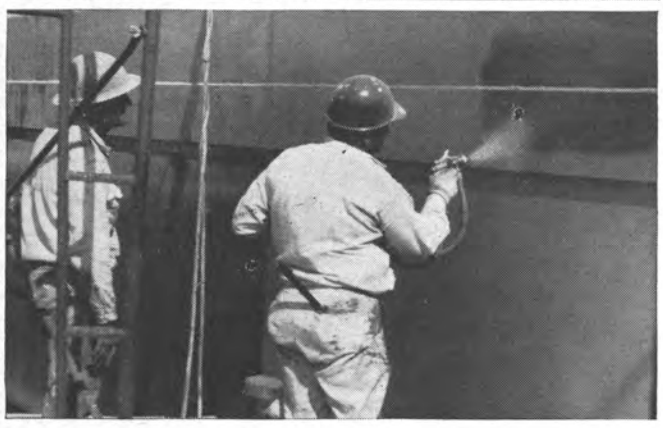
Simultaneous with this relocation, which became effective in April, regional sales for northern and central California, eastern Nevada, and the Oregon coast, will be handled at the regional warehouse, 1441 16th Street, San Francisco, Calif. 94103 (telephone—415 431-1919).

Executive and export offices will continue to operate from 200 Bush Street in San Francisco (telephone—415 421-0927).

New heavy duty, zinc rich coatings let you cut corrosion right in the fabrication shop or on the job site:

DU PONT GANICIN.™

ZINC RICH COATINGS



GANICIN. New to the Du Pont CUT SYSTEM— the system that gives you the complete how, what and when of cost-cutting in industrial maintenance and corrosion control.

DU PONT
REG. U.S. PAT. OFF.

INDUSTRIAL MAINTENANCE FINISHES

Cut corrosion by applying 1 mil of GANICIN™ 347-936 in the fabrication shop. Get corrosion-free, open-air storage for steel and trouble-free welding when the job begins.

New Du Pont GANICIN 347-936 is a fast-drying, corrosion-resistant inorganic zinc normally used over shot or grit blasted steel plates or beams as a shop coat. 1 mil DFT @ 77°F. and 50% RH dries tack free in 4-10 minutes, resists rain in 30 minutes, dries hard in 4 hours. No curing solution is needed. Thick enough to protect plates and beams stored in the open for up to a year. Thin enough to permit trouble-free welding once the job begins.

Cut corrosion on the job with GANICIN™ 347-931. Get easy on-the-spot mixing and spraying, high coverage and long-term protection in rugged environments.

New Du Pont GANICIN 347-931 is a high solids, self-curing ethyl-silicate inorganic zinc coating especially effective for heavy-duty industrial and marine applications. Use it to protect structural steel, ship plates, storage tanks, pipelines, drilling rigs, equipment, bridges—practically any steel surface. Since the zinc powders stay in suspension longer, GANICIN is the high solids zinc that's easier to use. Dries fast, too, so if required, you can topcoat the same day. And the built-in color guide (green drying to gray) improves spraying efficiency.

Get full details from your Du Pont Industrial Maintenance Finishes representative. Or, just send in the coupon.

DU PONT CUT SYSTEM

Du Pont Company, N7664, MR-569
Wilmington, Delaware 19898

☐ Please send me information on GANICIN™ Zinc Rich Coatings.

☐ Please have a Du Pont technical representative contact me.

Name_____

Title_____ Phone_____

Company_____

Address_____

City_____

State_____ Zip_____

Dart Container Line Formed By Consortium For North Atlantic Run

The Belgian Line, Inc. and Bristol City Line, Inc., have announced that the consortium put together by Compagnie Maritime Belge (Antwerp), Bristol City Line (Bristol) and Clarke Traffic Services (Montreal), for the purpose of operating a joint container service between Canada and the United States on one hand, and the United Kingdom and the Continent on the other hand, has been named Dart Container Line Company Limited. A new corporation is now being formed.

Pending the introduction, in 1970, of super containerships now being built, Dart Container Line will provide a weekly service from New York and Norfolk to Antwerp and Southampton, starting in June with four Belgian Line Painter-class vessels chartered from Compagnie Maritime Belge.

The Dart Container Line service from Canada will also be inaugurated in June. Sailings will be on a ten-day basis but frequency will rapidly become weekly. Ports in Europe will be Antwerp and Southampton, and in Canada, Halifax. From Halifax, containers will be reforwarded by rail up to Montreal and Toronto under ocean bills of lading.

Dart Container Line intends to apply for membership into the various conferences servicing the trades.

Gulf Oil Promotes Stark To Supervisor Int'l Marine Sales

William E. Stark

William E. Stark has been promoted to supervisor, international marine sales, Atlantic Coast, for Gulf Oil Trading Company, a subsidiary of Gulf Oil Corporation. In his new position, Mr. **Stark** will be responsible for marine sales along the Atlantic Coast of the U.S.

A native of Riverhead, Long Island, he attended public schools there and graduated from the United States Merchant Marine Academy in Kings Point in 1950 as a marine engineer.

Mr. **Stark** joined Gulf in 1963 as a sales engineer for GOTCO in Houston, Texas. In 1965 he was transferred to New York in the same capacity and in 1968 was promoted to senior sales engineer, international marine sales for GOTCO.

Prior to joining Gulf, Mr. **Stark** sailed for five years in the U.S. merchant marine and served an additional two years in the U.S. Navy as an engineering officer. He is a member of The Society of Naval Architects and Marine Engineers, Society of Marine Port Engineers, New York, and holds a chief engineer's unlimited horse-power-steam license.

Todd Houston To Build Petro-Chemical Barge —8th For Same Owners

Arthur W. Stout Jr., general manager of Todd Shipyards Corporation (Houston Division) has announced the signing of a contract to build one 203-foot by 35-foot by 10-foot 6-inch petro-chemical barge for the B2 Towing Company of Houston. This is the 8th in a series of similar barges that the Todd Houston plant has constructed for the B2 and allied interests during a five-year period. The barge which will be known as the "B-29" will be built for trade on inland waterways of the Gulf Coast. The B2 Towing Company, a well-known Houston-based concern, which is associated with the Rio Towing Company, is headed by **C. C. Brooks.**

NASSCO MOVES AHEAD

You would expect it. The "can-do" yard is at it again . . . on the move.
You might say we've gone *mod(ular).*

Without interruption to our present production orders, NASSCO designed, installed, and is operating a thoroughly modern automated centrally controlled material handling system and computer-oriented production control complex.

Frosting on the cake is blended from two new building ways, two new outfitting piers, and a multitude of new machines and equipment resulting in tripled production capacity.

Sure it helps to draw on the vast Kaiser experience in record-breaking shipbuilding performance. That's why we're where the action is.

Stay on the move — come to NASSCO.

NATIONAL STEEL AND SHIPBUILDING COMPANY

NASSCO

OWNED BY KAISER INDUSTRIES CORPORATION AND MORRISON-KNUDSEN COMPANY, INC.

San Diego, California — Phone (714) 232-4011

United States Lines Elects Nine Vice-Presidents In Management Reorganization

A sweeping reorganization of the top management structure of the United States Lines, designed to consolidate and streamline all essential functions and give maximum effect to marketing, sales and operations, has been announced by **John J. McMullen,** president of the steamship company.

At its March monthly meeting, the board of directors of the company elected five senior vice-presidents, each charged with the direction of a vital department of the line's shipping operation, and responsible only to the executive vice-president, **Edward J. Heine,** and the company president.

They are **Donald T. Cameron,** in charge of operations; **Kenneth F. Gautier,** in charge of passenger operations; **Nicholas Bachko,** in charge of corporate planning; **James J. Connolly,** in charge of finance, and **Donald F. Wierda,** in charge of marketing.

In addition, the board elected **James P. Rafter** as vice-president, sales, under Mr. **Wierda**; and **Robert B. Murphy,** as vice-president container operations, and **Raymond J. Weigele** as vice-president, marine operations, both under Mr. **Cameron. A. J. Montgomery** was elected vice-president and assigned as the Washington representative.

Earlier this year, **John H. Griffith** was elected vice-president, Far East, with headquarters in Tokyo, and **William J. Klauberg** was elected vice-president, Europe, with headquarters in London.

The major realignment and elevation of the United States Lines' high echelon executives has been made with a view to assuring an organization capable of marketing and operating a modern container-oriented transportation system as well as a general cargo, break-bulk operation and also be able to expand to the 100 percent container operation envisaged for the near future.

The company is looking toward full containerization of its entire fleet, Atlantic and Pacific. Currently, United States Lines operates containerships exclusively on the North Atlantic. Recently, the company opened bids for the conversion of eight Mariner-class ships, now in Far-East service, to full containerliners. Application has also been made to the Maritime Administration for aid in the construction of six additional full containerliners.

Mr. **Cameron,** former assistant to the president, came to the United States Lines in July, from the Forwarders Intermodal Container Corporation, of which he was president. Prior to that, and after four years in the U.S. Army in World War II, he spent 23 years in the international freight forwarding field—the last 12 as president of his own forwarding firm, Arncam Shipping Company. He is a graduate of St. Francis College, Brooklyn, and attended the Academy of Advanced Traffic.

Mr. **Gautier** is a veteran of 48 years with the United States Lines, all of them in the passenger department of the company. During that time, he has held every important post through manager of the first, cabin and tourist departments, and also as assistant vice-president and member of the board of directors. During World War II, he served in the Navy as a commander and was in charge of the Overseas Transportation Section of the Third Naval District.

Mr. **Bachko,** who was graduated from the United States Merchant Marine Academy and took graduate work at Columbia University, joined United States Lines in January, 1942 as an engineering officer on the troopship John Ericsson. He spent much of his subsequent career with the company in engineering and ship planning and construction. He is the holder of a patent relative to containership construction. From 1948 to 1952, he supervised construction of the superliner United States. His recent promotions included that of chairman of the planning group in 1967 and election to vice-president, corporate planning and development in December, 1968.

Mr. **Connolly** comes to the United States Lines from the accounting firm of Price Waterhouse & Co., where he serviced the steamship company's accounts, among others, for the last ten years. He is a graduate of the University of Miami, where he received a degree in accounting, cum laude, in 1959. He became a certified public accountant in 1963 and is currently a member of the American Institute of Certified Public Accountants and the New York State Society of Certified Public Accountants. Mr. **Connolly** has a practical knowledge of shipping and the sea, having served for five years in the merchant marine and two years in the Navy.

Mr. **Wierda** joined United States Lines in Europe in 1946. He held increasingly important posts overseas for eight years, before coming to New York as assistant freight traffic manager. He was named freight traffic manager in 1957, vice-president freight traffic in 1960, and a director in January, 1962. He is a graduate of the University of California and of the United States Merchant Marine Academy.

Mr. **Rafter,** former general sales manager, freight, came to United States Lines in July, 1967 from Grace Line where he held a similar post and was assistant vice-president as well. He began his shipping career with Grace in 1945 but resigned after eight years to become freight traffic manager of the Panama Line. When this company dissolved in 1961, he returned to Grace. Mr. **Rafter** attended Georgetown University School of Foreign Service and New York University Graduate School.

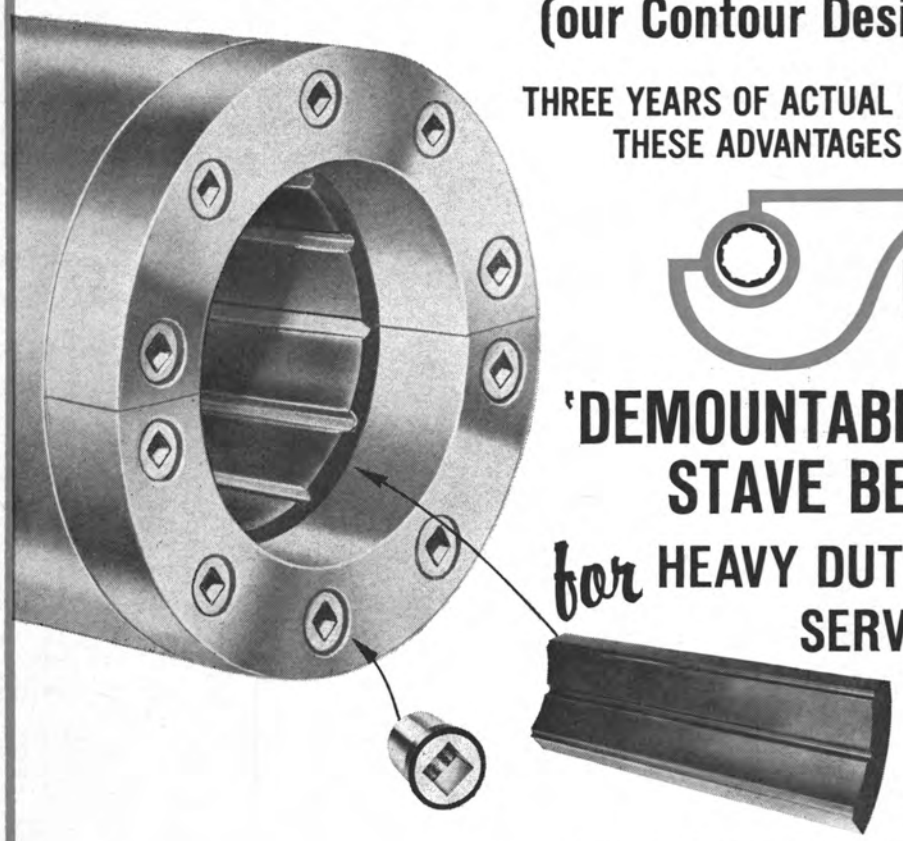
Mr. **Murphy** joined the United States Lines in 1946 and over the next 12 years served in various managerial freight and ship operating posts in Manila, Hong Kong and Tokyo. He was recalled to New York in 1959 as assistant treasurer and subsequently was named manager of vessel replacement and director of the company's newly formed container division. He was appointed assistant general manager —Europe in February, 1968, but returned here the same year.

Mr. **Weigele,** a graduate of Fordham University, joined United States Lines in 1947 and except for two years in the freight department at One Broadway, has had supervisory posts on the North River piers. In January, 1962, he was named assistant general operating manager and in July, 1964 he was appointed general operating manager. He is a veteran of World War II, having seen action as a lieutenant on a minesweeper in the Pacific.

Brig. Gen. **Austin J. Montgomery,** who retired in July, 1967 as commander of the Eastern Area, Military Traffic Management and Terminal Command, joined the United States Lines as executive assistant to the president for special projects in August, 1967. In April 1968 he was named general manager of the container department in charge of container terminals, container control, equipment maintenance, interchange and trucking agreements and special commodities. General **Montgomery** will succeed **William D'Olier,** vice-president, Washington, who is retiring after 45 years with United States Lines.

2nd major advancement in Rubber Bearings...

(our Contour Design was 1st)

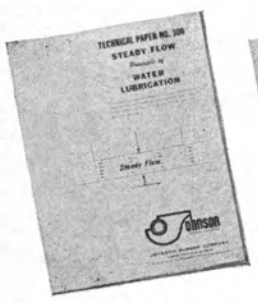


THREE YEARS OF ACTUAL SERVICE HAS PROVEN—
THESE ADVANTAGES ARE YOURS ONLY WITH

Johnson RUBBER BEARINGS

'DEMOUNTABLE L SERIES' STAVE BEARINGS

for HEAVY DUTY COMMERCIAL SERVICE



Write for literature on
- Demountable Stave Bearings
- Principle of "Steady Flow" lubrication
- Complete line of Stuffing Boxes

1. Multi-durometer 'Precision Fitted' solid rubber stave bearings.
2. Improved shaft alignment found only in a precision fitted bearing.
3. Improved 'Steady Flow' lubrication.
4. 'Reduced' mechanical vibration.
5. 'Suppression' of resonance vibration.
6. Bearing staves are self-locking within the housing under tons of compressive force.
7. Ease of shaft installation and withdrawal with bearing in place.
8. Housing bore is always 'straight', **never** stepped.
9. 'All' journals the **same** size throughout the shafting system.
10. ⅓ the cost of conventional bearings through elimination of nonessential brass shell.
11. Replacement of bearing in ¼ the normal time without removal of shaft or propeller.

Only Johnson offers these and many more advantages.

Johnson RUBBER BEARINGS

"WORLD LEADER IN MARINE BEARING RESEARCH"

JOHNSON RUBBER COMPANY

MARINE DIVISION

MIDDLEFIELD, OHIO 44062 • AREA CODE 216-632-2111

Barge Construction

Dravo Corp., Pittsburgh, Pa., has received an order from Edward F. Smith, Inc., Pittsburgh, for the construction of two independent pressure-type tank barges. To be of 1,500 dwt, each barge will have the following dimensions: 200 feet by 35 feet by 12 feet 6 inches.

Gretna Machine & Iron Works, Inc., of Harvey, La., has been awarded a contract by Chemical Towing Co., for the construction of two oil barges. Designated Hull Nos. 187 and 188, each barge will have measurements of 272 feet 6 inches in length, 50 feet in beam and 11 feet 3 inches in depth, and will be of 2,700 dwt.

Gulfport Shipbuilding Corp., of Port Arthur, Texas, has been contracted by Humble Oil & Refining Co., Houston, Texas, to build a 30,000-dwt oil barge. Designed Hull No. 725, the barge will have the following dimensions: a length of 528 feet, a beam of 95 feet and a depth of 39 feet 6 inches. When completed, this barge will be one of the largest oil barges ever built in the United States.

Gunderson Bros. Engineering Corp., Portland, Ore., is to build two deck cargo barges for Pacific Alaska Columbia, Inc., of Vancouver, Wash. Designated Hull Nos. 16,590—1 and 2, each barge will have the following dimensions: 312 feet in length, 68 feet in beam, 19 feet in depth, and will be of 7,000 dwt.

Halter Marine Services, Inc., New Orleans, La., has received an order from Jackson Marine Corp., Aransas Pass, Texas, for the construction of a deck cargo barge. Designated Hull No. 221, the barge will have the following dimensions: 110 feet by 38 feet by 16 feet, and will be of 500 dwt.

Ingalls Iron Works Co., Birmingham, Ala., is to construct a 3,600-dwt oil barge for Humble Oil & Refining Co., of Houston, Texas. Designated Hull No. 1695, the barge will have the following dimensions: 297 feet 6 inches by 54 feet by 12 feet 6 inches.

Levingston Shipbuilding Co., of Orange, Texas, has been contracted by Drilling Services, Inc., c/o Santa Fe International Corp., of San Francisco, to build an offshore oil-well drilling barge. To be of 2,900 gt, the barge will have measurements of 260 feet by 54 feet by 16 feet 3 inches.

Nashville Bridge Co., of Tennessee, is to construct four oil barges for undisclosed interests. Designed Hull Nos. 1984 through 1987, each barge will have the following dimensions: 264 feet in length, 54 feet in beam and 12 feet in depth, and will be of 3,000 dwt.

Nashville is to build two additional oil barges for undisclosed interests, having the following dimensions: a length of 264 feet, a beam of 54 feet, a depth of 12 feet, and to be of 3,000 dwt. The barges have been designated Hull Nos. 1990 and 1991.

SBA Shipyards, Inc., of Jennings, La., has received an order from Steuart Transportation Co., Piney Point, Md., for the construction of a 1,600-dwt oil barge. Designated Hull No. 195, it will have the following dimensions: 200 feet by 35 feet by 14 feet.

Todd Shipyards Corp., Houston, Texas, has received an order from Fluor Ocean Services Inc., a subsidiary of Fluor Corp., for the construction of an 80- by 275-foot pipe-laying barge. Terms of contract have not been disclosed. However, Fluor estimates the fully-outfitted vessel to cost $4.8-million. The completion date for this barge has been set for late 1969.

Zidell Explorations, Inc., of Portland, Ore., has been awarded a contract by Ocean-Ventures, Inc., Portland, Ore., for the construction of a cargo barge at an approximate cost of $300,000. This cargo barge will measure 257 feet by 56 feet by 15 feet.

Coast Engineering Designing New Facilities To Modernize North Carolina Shipyard

Coast Engineering Company of Norfolk, Va., has been awarded a contract to prepare complete layouts, working drawings and specifications for modernizing and enlarging a shipbuilding and repair yard at Morehead City, N.C. The former Morehead City Shipbuilding Corporation plant will be enlarged by acquisition of adjacent property and the addition of a new 1,500-ton marine railway, a 150-ton double cradle small vessel railway, a 100-ton fixed-position dockside crane, piers, utilities and support buildings.

The present owners are envisioning a complete up-to-date facility capable of handling all types of marine construction and repair. Work on the actual construction is well underway and is proceeding as rapidly as plans are developed. The new facility has been renamed Coastal Boat Works and Marine, Inc. **Ralph Register** is general manager and plant superintendent.

Sea-Land Elects Katims V-P Engineering

Ronald M. Katims has been elected vice-president, engineering, Sea-Land Service, Inc., according to an announcement by **M. R. McEvoy**, president. He will serve in the same capacity for all affiliated companies, including Gulf-Puerto Rico Lines, Inc.

Sea-Land Service, Inc., the major subsidiary of McLean Industries, Inc., is a containerized freight service utilizing the concept of intermodal transport of highway containers for both land and sea. Sea-Land has 41 vessels which presently serve 31 ports throughout the world, with fully-containerized service on trade routes linking Japan, the United States, the Caribbean and Europe.

Mr. **Katims** joined Sea-Land Service in 1961 as a construction engineer, and became director, engineering, in 1963.

He is a member of the American Management Association.

Lockheed Expanding Ship Repair Activity

In an effort to expand its activity in the ship repair area, Lockheed Shipbuilding and Construction Company has appointed **George Simpson** to head up its waterfront sales program.

As sales manager, Mr. **Simpson** will report to **J. A. Byington,** LSCC's vice-president sales and estimating. Prior to his appointment in this new position, Mr. **Simpson** was the company's manager of ship repair. **Robert E. Delaney** will continue his sales activity for the company and will report to Mr. **Simpson.**

Mr. **Simpson** will be succeeded in the ship repair post by **R. C. Forbell.** Mr. **Forbell** has more than 35 years experience in shipbuilding, ranging from apprentice to top management. A marine engineer, Mr. **Forbell's** most recent positions have been as a consultant in naval architecture and in management of ship repair in Jacksonville, Fla.

L. Smit Orders Fourth Supertug

L. Smit's International Tug Service of Rotterdam has placed an order for its fourth supertug. The new unit will be a sistership to the oceangoing tug Rode Zee (9,000 ihp). Other tugs in the company's 9,000-ihp class are the Zwarte Zee and Witte Zee. These tugs are specially suitable for towing and/or assisting the increasing number of very large ships like supertankers and bulk-carriers, which together with oil-drilling platforms of ever increasing size are making their appearance all over the world.

The new tug, to be named Noordzee, will be built by Shipbuilding and Engineering Works "De Merwede" at Hardinxveld-Giessendam (Holland), the same yard where the Rode Zee was built.

Like the Rode Zee—commissioned in August 1968—the tug Noordzee will be equipped with Werkspoor diesel engines and a nozzle combined with a controllable-pitch propeller.

The new tug will be put into commission on April 1, 1970.

ACL Reorganizes U.S. Staff And Names Three Vice-Presidents

The appointments of three vice-presidents and the reorganization of the Atlantic Container Line, Ltd., in the United States into three operational groups each supervised by a vice-president, were announced by **O. I. M. Porton,** president, ACL, U.S.A.

The three men appointed to the newly created positions are **A. L. Aberson,** who has been named vice-president, commercial; **C. G. F. Williams,** vice-president, finance, and **Jacques A. Grevin,** vice-president, traffic and operations.

Mr. **Aberson** previously had been ACL's general traffic manager. Mr. **Williams** had been controller. Mr. **Grevin** comes to ACL from the French Line where he was general freight traffic manager in New York. They will report directly to Mr. **Porton.**

In making the announcement, Mr. **Porton** said the changes were a logical development in the growth of the company and part of a planned program of expansion designed to meet ACL's administrative and operational needs when the company more than doubles its cargo-handling capability in the next 12 months by the addition of six new roll-on/roll-off containerships.

Atlantic Container Line currently has four Ro/Ro containerships providing weekly trans-Atlantic cargo service between seven U.S. and European ports. Six larger and faster ships, now under construction, will enter service late in 1969 and early 1970.

Under the new organizational structure, Mr. **Aberson,** as vice-president, commercial, will be responsible for all marketing, pricing, sales and claims activities.

Mr. **Williams,** vice-president, finance, will be responsible for all accounting, data processing, personnel, office administration and the evaluation of major projects and long-term contractual commitments.

Mr. **Grevin,** vice-president, traffic and operations, will be in charge of all traffic and operational functions including equipment control and supervision of terminal and stevedoring activities.

Engelhard Appoints Benedict West Coast Manager Marine Sales

Risque L. Benedict

Risque L. Benedict has been appointed West Coast manager, marine sales of the Instruments & Systems Department, Engelhard Minerals & Chemicals Corporation. Mr. **Benedict,** a corrosion engineer with 20 years experience in the field, was formerly sales manager of the Marine Services Division, Lockheed Aircraft Service Company, Calif.

In his new position, Mr. **Benedict** will expand Engelhard's CAPAC cathodic protection services for shipbuilders and companies operating tankers and freighters on the West Coast and in the Gulf of Mexico. He will also introduce a sophisticated line of platinum-surfaced anode corrosion control systems to builders and managers of offshore drilling platforms, steel piers, bridges, sewage and underwater piping systems.

Mr. **Benedict** will operate from Engelhard's West Coast Marine Sales Department in City of Commerce, Calif. He has a B.S. degree in chemistry from M.I.T.

Norton Lilly Elects Corporate Officers

Norton Lilly & Co., Inc. has announced that **Richard H. Corbett** has been elected vice-chairman of the board of directors and **H. Edward Bilkey** president and a director of the company. Continuing with the company is **J. F. Lilly** as director and special representative, and **Skeffington S. Norton** as chairman of the board of directors and chief executive officer of the corporation.

John J. Reichert Elected President Of Reichert Towing

John J. Reichert

John J. Reichert has been elected president of the Reichert Towing Line, Inc., one of the oldest towing firms in New York Harbor. Founded in 1899 by Capt. **Jacob C. Reichert,** the company's fleet of tugboats perform general towage service.

In assuming his new post, Mr. **Reichert** succeeds his uncle, Capt. **Joseph C. Reichert,** who has been president since 1936 and who will maintain a limited relationship with the firm by continuing to occupy the post of treasurer and will also act as a general consultant.

Mr. **Reichert,** who was educated at Pelham Memorial High School and the University of Miami, joined the family firm in 1954 and has "come up through the ranks", starting by working on deck and in the enginerooms of the company's tugs and then coming ashore to gain experience in the maintenance and operating departments.

Aside from his business duties, Mr. **Reichert** has participated actively in the affairs of The New York Tow Boat Exchange, the industry trade association of which his late grandfather was a charter-member when the Exchange was founded over a half century ago. He is a member of the board of directors of the Exchange and has served on many of its major committees.

Bethlehem Beaumont Delivers Vinyl-Chloride Pressure-Tank Barge

Bethlehem Steel Corporation's Beaumont, Texas, shipyard has delivered to the Chotin Transportation, Inc., of New Orleans, the Chotin 2090X, a steel pressure-tank barge designed to carry vinyl chloride.

The hopper-type barge, with an overall length of 185 feet, a beam of 54 feet and a depth of 14 feet, was designed by Breit Engineering, Inc., of New Orleans. It is fitted with two full-length cylindrical cargo tanks, each with an inside diameter of 18 feet 3 inches. When loaded with 2,000 tons of vinyl chloride, the barge will have a freshwater draft of approximately 8 feet 9 inches.

The Chotin 2090X is fitted with rainshields in the openings between the tanks, and between the tanks and tank-hold compartments.

The barge, including tanks and piping, was built in accordance with applicable regulations and inspection provisions of the U.S. Coast Guard. It was also constructed in accordance with American Bureau of Shipping regulations for longitudinally framed barges for inland waterways and for classification as an A1 Pressure Tank Barge. The barge also was compartmented for U.S. Coast Guard Type II classification.

Canadian Pacific Ships Starts Canada-England Containership Service

Canadian Pacific Ships, which plans to have three new containerships in service between Canada and Britain next year, started an interim operation for container customers in April.

The interim service began with sailings by a chartered vessel, the Eemstrom, between Quebec City and Tilbury, London. The Eemstrom and another ship, the Beaveroak, will provide a service from Tilbury every two weeks until July, when the operation will become weekly with the addition of a third vessel.

The regular container undertaking by Canadian Pacific is planned to start in August, 1970, with three 14,000-ton vessels now on order from the British shipbuilding firm of Cammell Laird Ltd. Total cost of the three will be $22,100,000.

Rapid Growth In Containers And Alaskan Oil Provide Seatrain With Bright Future

Increases in container business anticipated for Seatrain Lines, Inc. during the next two years could add, "some $60-million in revenues," **Howard M. Pack,** president, told the New York Society of Security Analysts.

Mr. **Pack** projected revenues in excess of $100-million for the current year ending June 30, 1969, and a volume of about $150-million for fiscal 1970. "We should be generating about $170-180-million in revenues for fiscal 1971," he said.

Mr. **Pack** and **Joseph Kahn,** Seatrain chairman, noted that in addition to the company's current container-expansion program, Seatrain Lines was also involved in the potential growth of U.S. merchant marine activity to Alaska.

"Seatrain has a front row seat on what may be the most exciting natural resource development in recent memory, the discovery of Alaskan oil on the North Slope, which offers potentially the largest single opportunity for growth the U.S. merchant marine has ever seen," Mr. **Kahn** said. The company's supertanker, Manhattan, is currently being refitted as an icebreaker in a test program by Humble Oil to seek a Northwest Passage route from the East Coast of the U.S. to the North Slope of Alaska.

Mr. **Pack** noted that developments in Alaska reflected additional potential for Seatrain's current program to reopen the Brooklyn Navy Yard for shipbuilding. "The two large drydocks at Brooklyn are the only ones now available in the U.S. that can build 200,000-ton tankers," Mr. **Pack** said. "We anticipate that when oil from the North Slope of Alaska seeks a market, there will be a demand for at least 20 of these U.S.-flag supertankers, at a price of above $40-million each."

AEIL Realigns Container Management Responsibilities

Dennis A. Meenan

William J. Keely

American Export Isbrandtsen Lines has shifted two of its top executives to new management positions to meet the increased requirements of its expanding containerization program, it was announced by **Manuel Diaz,** president of the steamship line.

Dennis A. Meenan, former vice-president for freight traffic, will become vice-president, container freight services, and **William J. Keely,** former vice-president, container freight services, will become vice-president, container marketing and sales.

The move represents a lateral transfer of responsibilities to divide traffic and marketing duties for AEIL's growing container service.

Mr. **Meenan** joined AEIL in February of 1968 after serving as vice-president of West Coast Line. Earlier he was associated with Grace Line as port and territorial manager in Colombia and Ecuador. He graduated from Williams College and pursued graduate studies at New York University.

Mr. Keely has been in the forefront of AEIL's containerization program for the past four years. He has served as general manager of the company's Container Marine Lines division which initiated service to North Europe in 1966. He was also midwest regional manager in AEIL's Chicago office and area director for North Europe in the Bremen office. He is a 1953 graduate of Georgetown University and a graduate of the United States Merchant Marine Academy at Kings Point.

Rose Barge Purchases Kenner Shipyard

Kenner Shipyard Inc., at Kenner, La., an affiliate of Universal Marine, Inc., of New Orleans, has been purchased by Rose Barge Line, Inc., of St. Louis, according to an announcement by **Earl C. Rose Jr.,** chairman of the barge line, and **R. N. Cioll,** president of Universal.

Kenner, which provides maintenance and painting services for barges in the New Orleans area, will be operated as a wholly owned subsidiary of Rose Barge Line.

Rose Barge Line operates six towboats and approximately 150 barges for hauling grain, ores, salt, sugar, coal and other bulk commodities. The company plans to initiate a modernization program at Kenner "in the immediate future" to expand its barge maintenance and painting facilities, Mr. **Rose** said.

New officers of the Kenner organization, which employs about 40 persons, are **Earl C. Rose Jr.,** board chairman; **W. R. Murphy,** president; **Joseph W. Rose,** executive vice-president; **Hugh L. Hammond,** vice-president and general manager; **Larry G. Howdeshell,** secretary-treasurer; **Leonard E. McCuiston,** general superintendent, and **James O. Pace,** controller.

LASH BARGE RIGGING

NOW BEING USED BY MAJOR MANUFACTURERS OF LASH BARGES

Standardize your permanent lash barge rigging using Blackburn's proven winches, cable fasteners and cleats.

The Blackburn lash barge rigging system, including winches, cable fasteners and cleats are now being installed by leading companies on their first fleet of lash barges. This system has been proven to be safe, fast, efficient and economical.

After many years of barge line experience, we have designed our winch and fastener button for fast, efficient makeup of cargo barges. With the Blackburn system, 50% or more of normal makeup time using conventional equipment can be saved and rigging cost can be cut in half.

Blackburn equipment uses a minimum amount of cable without the need of eyes in either end. The winch is easy to release or take up, and surplus cable slack can be taken up or let out through this fastener button fast and easy. The winch and fastener button are designed for 1" or 7/8" cable. The cable is easy to fasten or remove from winch or fastener button. The winch is equipped with a padeye and "U" bolt that needs no doubler. The winch has a fabricated steel base that can be welded in a fixed position if desired. The winch is coated for corrosion protection against salt water and has a remarkable braking system that allows automatic slacking without removing cables when loading or unloading rigged barges.

For more detailed information and specifications about this Blackburn rigging equipment write or call today.

Specialists in boat and barge rigging

BLACKBURN MARINE EQUIPMENT COMPANY

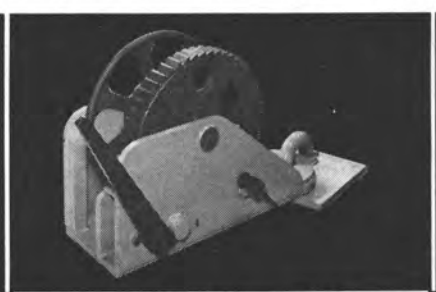
6105 ENGLAND • AC 713 RI 7-8140 • HOUSTON, TEXAS 77021

ROLLER BUTTONS

Finest high-load carrying, free-rolling roller button that has ever been designed • Precision machined parts • Needs little lubrication • Can be welded anywhere on deck.

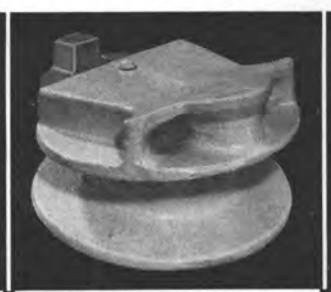
BUTTON

High-load carrying button designed to keep cable from coming off from loaded to light barges.



BLACKBURN WINCH

21" high, 12" wide and 42" long including padeye • Line pull of 20,000 lb. • Designed for 1" or 7/8" cable • Made of fabricated 3/4" steel plate.



CABLE FASTENER

Designed for three leads 1" or 7/8" cable • Cable can lead in any direction • Removable wedge eliminates the need for eyes.

CLEATS

High-load carrying cleats • Both our 24" and 36" cleats are designed for two wraps of 1" cable while using line at the same time.

McAllister Tug Crews Commended By USCG In N.Y. Harbor Fire

Crews of three tugs operated by McAllister Brothers Inc. have been commended by the Coast Guard for "courage, initiative, and professional skill" in averting a "major harbor conflagration" on March 15, when they rushed to the aid of the tanker Michael B, which had exploded while taking on gasoline at an oil company pier in the Arthur Kill, Woodbridge, N.J.

Although Coast Guard units were dispatched at once, fire spread so rapidly on ship and pier that the need for more immediate help was soon apparent and a McAllister tug that had been noticed closer to the scene was contacted through the McAllister offices. Three McAllister tugs were soon at pierside.

What followed is described by Rear Adm. **Mark A. Whelan,** commander, Third Coast Guard District, in a letter to **James P. McAllister,** president of the towing/transportation company:

"Completely disregarding danger, with the very imminent threat of additional explosions, the Bruce McAllister took the burning Michael B in tow and skillfully beached her in the marshes of Arthur Kill. While this was going on, the Dalzell Eagle and Catherine McAllister were busy pulling other barges away from the burning pier, transporting fire fighters, and pumping water on the fire which was soon brought under control."

In expressing appreciation to McAllister personnel, the admiral further stated, "There is no question that without (their) assistance, fire-fighting efforts would have been seriously hampered, and a relatively minor harbor casualty could have developed into a major disaster."

Directing operations of the Bruce McAllister, which beached the burning tanker, were Capt. **Edward Prendergast** of Kingston, N.Y., and Capt. **George Fuhr** of Queens. Commended with them are **Paul Mortensen** and **John Dahlstrom,** deckhands; **Frank Fuglestad** and **George Brown,** engineers, and **John Lomba,** steward.

Others cited for their participation are: Capt. **Robert Munoz** and Capt. **Walter Jacobsen** of the Dalzell Eagle whose homes, respectively, are West Brattleboro, Vt. and Jersey City, and Captains **Oddvar Novik** and **Andrew Thompson** of the Catherine McAllister, both from Staten Island.

R. Murphy Named V-P Gen. Mgr. Western Div. Murphy-Pacific Marine

Roger Murphy

Roger Murphy, has been named vice-president and general manager of the western division of Murphy-Pacific Marine Salvage.

The Emeryville, Calif.-based firm is one of the largest marine salvage companies in the United States.

The firm's phenomenal growth dates from 1964, when it first used its patented "foam in salvage process" to raise the sunken 500-ton barge, Lumberjack, from the depths of Humble Bay.

Later, using the same technique —which involves the filling of the sunken hull with urethane plastic foam under pressure—the U.S. destroyer, Frank Knox, was refloated from its grounded position on a coral reef in the South China Sea and has returned to active duty. The vessel, Jamaica Bay, also was raised by the company from waters off the coast of Vietnam.

Murphy-Pacific Salvage is engaged in salvage in many parts of the world and maintains powerful salvage tugs in the Bay Area; San Pedro; New York City; Key West, Fla., and Kingston, Jamaica.

Mr. **Murphy** was formerly manager of the marine division of Murphy-Pacific Corp. which founded the salvage company.

Newport News Names Deal To Key Position

J. D. Deal Jr.

J. R. Kane, director of engineering at Newport News Shipbuilding and Dry Dock Co., has announced the appointment of **J. D. Deal Jr.** as manager of the company's newly established Advanced Systems Design Group.

The department will engage in systems engineering studies for proposed advanced military and commercial systems.

Mr. **Deal** was formerly a deputy project director. He joined the shipyard in 1947 and became an assistant engineer in 1959. Since then, he has served as associate engineer in the engineering technical department, assistant engineer in machinery design and assistant engineer in systems engineering. Mr. **Deal** became deputy project director in 1967.

His experience includes service in the U.S. Navy and working as a turbine engineer for DeLaval Steam Turbine Co.

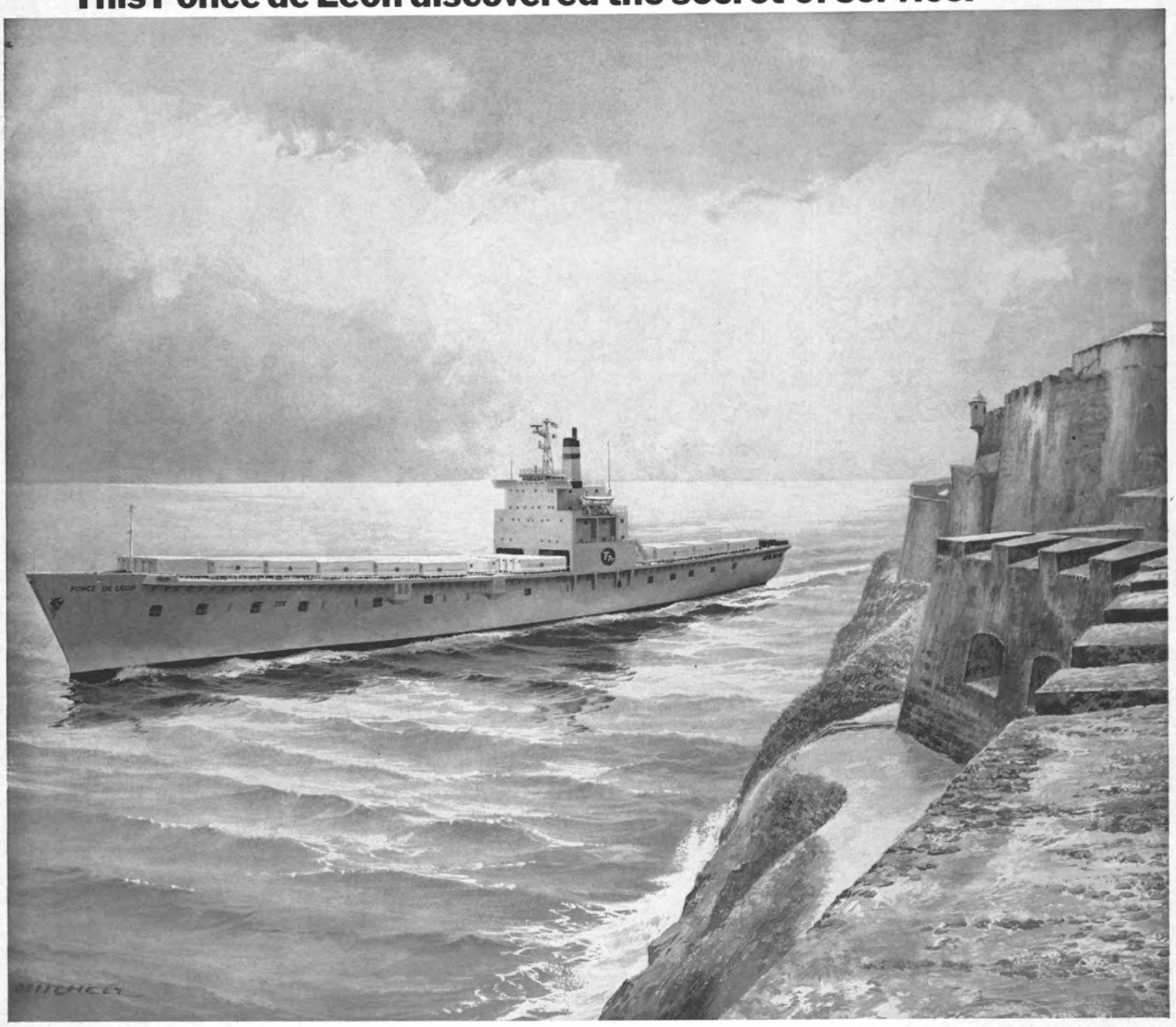
Mr. **Deal** received both his B.S. and M.S. degrees in naval architecture and marine engineering from the Massachusetts Institute of Technology.

Gulfport To Build Twin-Screw Tugboat

Gulfport Shipbuilding Corp., Port Arthur, Texas, has been contracted by Ultramar Chemical Co., to build a twin-screw tugboat. Designated Hull No. 724, it will have the following dimensions: 121 feet 6 inches by 34 feet by 17 feet 6 inches, and will be equipped with 4,000-total-bhp-diesel engines.

THE FIRST OF SIX—Artist's conception of the 210,000-dwt tanker John A. McCone, latest addition to the Standard Oil Company of California fleet, which was christened recently at Kochum Shipyard in Malmo, Sweden, where it is approaching completion. The new vessel is named for the nationally known industrialist and former government official who is chairman of the board of the Joshua Hendy Corporation and a director of Standard of California. Mr. and **Mrs. McCone,** of San Marino, Calif., were present for the ceremony, with **Mrs. McCone** serving as sponsor and breaking the traditional bottle of champagne over the vessel's bow. The McCone, to be owned and operated by Chevron Transport Corporation, a Standard subsidiary, is scheduled to enter service this month. She has a cargo capacity of 1,600,000 barrels of crude oil and a maximum speed of 17 knots. Overall length of the vessel is 1,037 feet, with a 160-foot beam and a hull depth of 80 feet. When fully loaded, the McCone will have a 62-foot draft.

This Ponce de Leon discovered the secret of service.



She makes the San Juan-to-New York trip in a record-setting 57 hours.

Her roll-on, roll-off efficiency assures fast freight service once a week.

As such, the Ponce de Leon demands fast bunkering.

And gets it.

From us.

Because we at Texaco are built for speed, too.

Dependably, at 0800 every Friday in New York, there's a barge with Texaco bunkers alongside to assure prompt fueling.

We built our International Marine Sales Department with one thought in mind: service.

You'll find Texaco bunker service in approximately 200 ports of the world.

This means you're guaranteed fast bunkering, quality marine products, and the finest Marine Engineering experience throughout the world.

Texaco International Marine Sales Department, 135 East 42nd Street, New York, N.Y. 10017.

Our customers are experts.

TEXACO

WORLD WIDE

MARINE FUELS AND LUBRICANTS

Bethlehem Beaumont Appoints Blackinton General Superintendent

Richard E. Blackinton

J. O. Crooke, general manager of Bethlehem Steel Corporation's Beaumont yard, has announced the appointment of **Richard E. Blackinton** as general superintendent of the yard.

Mr. **Blackinton,** who joined the Bethlehem organization in mid-1951, has been assistant general superintendent of Bethlehem's San Francisco yard since 1966.

A graduate of the University of Rhode Island, class of '51, with a B.S. degree in civil engineering, Mr. **Blackinton** came to Bethlehem as a member of that year's Loop Course, management training program for college graduates.

Mr. **Blackinton** worked in various technical and supervisory capacities in the corporation's Hoboken and then Brooklyn 56th Street yards before being named an assistant to construction engineer. He served in that post from April, 1957 to October, 1965, when he was named a technical assistant to the vice-president of shipbuilding. In April, 1966, he returned to the Hoboken yard as a ship superintendent specialist. Later that year he was transferred to San Francisco as assistant general superintendent. In his new post he succeeds **Harold P. Thrower,** who has resigned.

Bethlehem Steel's Beaumont yard is a combination facility, and both builds and repairs ships. It has been a pioneer in the development and construction of specialized craft, particularly oil drilling rigs, for the petrochemical industry. It also is one of the most modern and complete ship-repairing facilities on the Gulf Coast.

Jeffboat Launches Ferry For Alaskan Service

The ferry, E. L. Bartlett, will go into service in the southern Alaska area.

Jeffboat, Incorporated, Jeffersonville, Ind., recently launched the $2.5-million Alaskan ferry, E. L. Bartlett. The ferry, which will go into service in the southern Alaska area, is the largest ever built by Jeffboat. Measuring 193 feet in length, she has a 53-foot beam and a draft of 12¾ feet. Powered by two 1,600-hp diesel engines, the Bartlett will carry her normal payload of 38 automobiles and 165 passengers at a service speed of 15 knots.

The ferry is now in dock at the Jeffboat yard while workmen finish the interior which includes a lounge, restaurant, observation and gallery areas, and a top deck solarium in addition to the normal crew and officer quarters. Once she is completed and has passed her river trials, her trip to Alaska will begin.

She will be towed down the Ohio and Mississippi Rivers to New Orleans. Once in New Orleans, her captain and crew will take over and move her across the Gulf of Mexico, through the Panama Canal and north along the Pacific Coast to Alaska and her home port in the Prince William Sound. There her ports of call will be the towns of Cordova, Valdez and Whittier, southeast of Anchorage.

Once in service, she will in effect become an extension of the state's highway system. The great number of areas in Alaska which are totally inaccessible by normal land routes force travelers to take to the water. Alaska's solution to this problem lies in its fleet of ships which, with the addition of the Bartlett, will number seven.

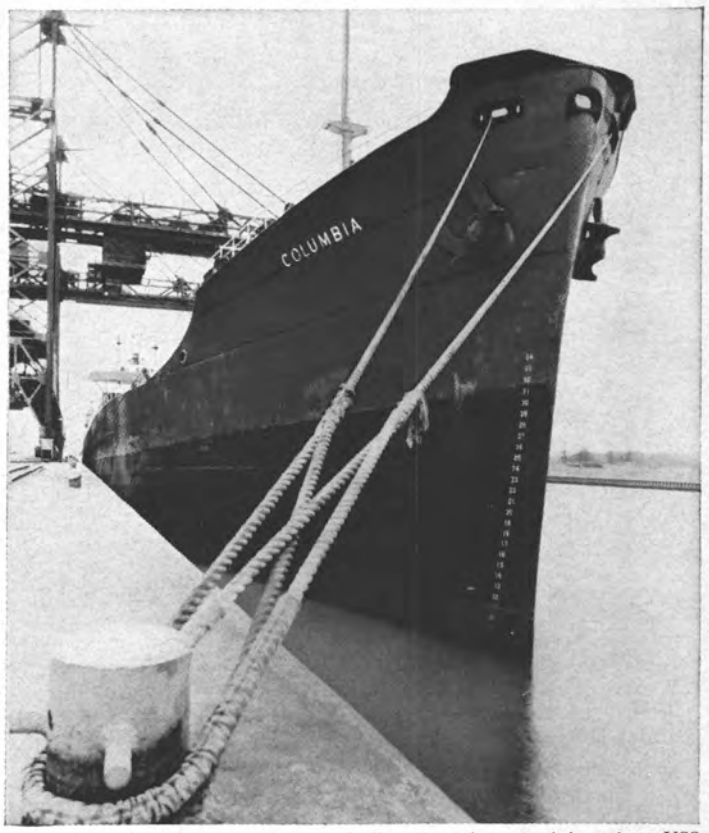
Plans are to christen the boat, named for the late Sen. **E. L. Bartlett** from Alaska, in Jeffersonville on May 4. **Mrs. E. L. Bartlett,** widow of the late senator, will sponsor the boat with Gov. **Keith Miller** and other officials from the State of Alaska in attendance.

The Columbia goes a half knot faster now... on less fuel

The COLUMBIA runs a route that exposes it to every major type of marine foulant: from Atlantic ports through the Panama Canal, to Pacific ports, then back through the Canal. For protection below the waterline, it carries a two-coat system of USS Epoxy System Primer and USS TARSET 305 AF anti-foulant. Three months after application of the coating (see photo), the lower hull shows no pitting, no corrosion, and no fouling whatever. Without the weight and drag of a fouled bottom, the COLUMBIA had picked up ½ knot in speed—a gain of about 4%—and cut fuel consumption by an average of 5%.

TARSET 305 AF will not allow penetration of marine organisms to bare metal, so it prevents pitting. Having no solid metal toxicants, it resists galvanic corrosion. It saves tons of weight compared to other anti-foulant systems (1000 to 1400 lbs. per 10,000 sq. ft.), and it costs less to apply: only two coats provide a 12-mil minimum film thickness. It maintains full protection longer than any other system in use.

How much could you save in a year with this remarkable anti-foulant system? Send the coupon for our new Marine Coatings booklet, or to have a USS coatings specialist call. USS and TARSET are registered trademarks of United States Steel.



After 3 months' service, there is no fouling, corrosion, or pitting where USS TARSET 305 was applied, below the waterline. Above the line, corrosion, scaling, and pitting of the hull begin to show, despite conventional protective paint.

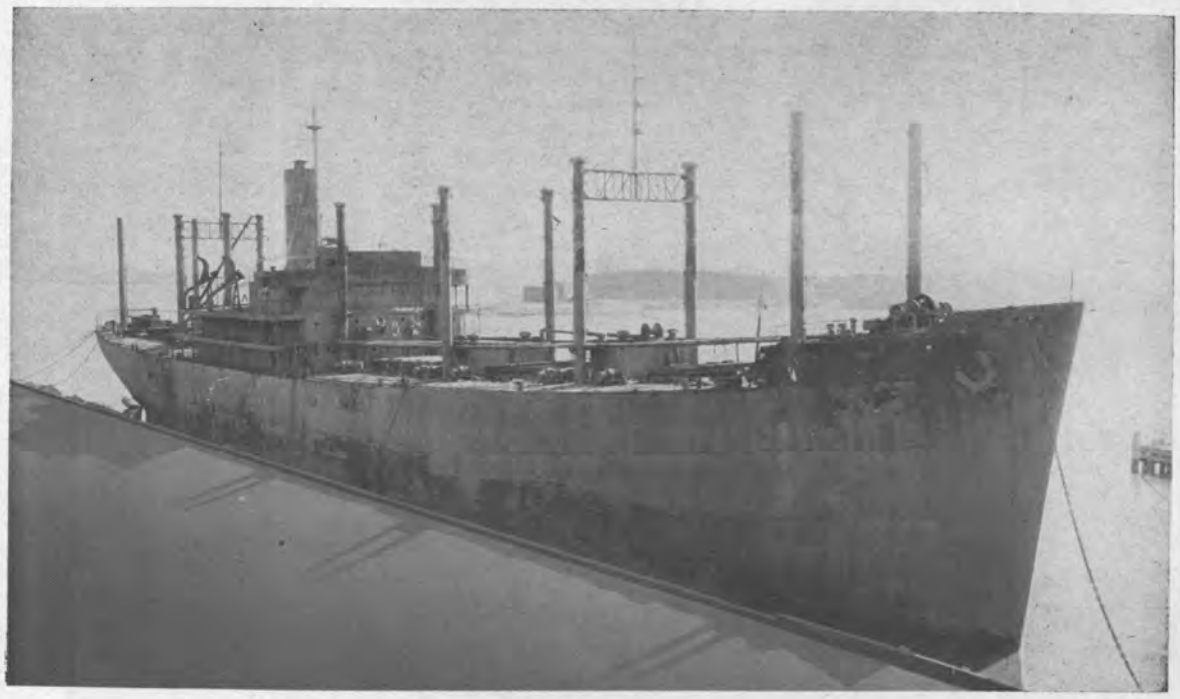
USS Chemicals, Division of United States Steel
Box 86 (USS 6068)
Pittsburgh, Pa. 15230

☐ Send your new booklet on USS Marine Coatings.
☐ Have a USS coatings specialist call.

Name_____
Title_____
Company_____
Address_____
City_____ State_____ Zip Code_____

USS Marine Coatings

AP2/AP3 VICTORY C2/C3 NEW, US RECOND



EQUIPMENT FROM MOORE DRYDOCK C-3 EX-MORMACSEA — HULL 197

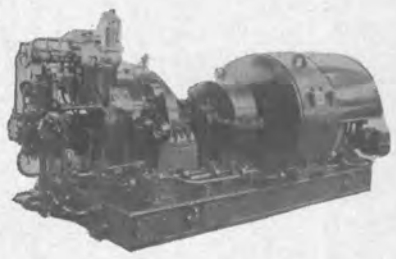
350 KW TURBO GENERATORS: **Turbine**—De Laval 503 HP—10,000 RPM—6-stage—440#—282° superheat—28½" exhaust. **Gear**—De Laval—10,000/1200 RPM. **Generator**—Crocker-Wheeler 350 KW—120/240 DC—1458 amps—1200 RPM—compound wound—#230194 & 230195. Also fits Federal Hull 198. BOILERS: Foster-Wheeler type D—2-pass design —525# pressure. FORCED DRAFT FAN MOTORS: Westinghouse SK—46.5/13.81—2400/1660/960 RPM—230 VDC. PROPELLERS: 21'8" diameter—21.669 pitch. REDUCTION GEAR: De Laval 5015/3461/729/85—serial 228972. SHAFTING: 24'x19" diam. STEADY BEARINGS: 19¼" o.d. EVAPORATOR: Paracoil 36-17/48-23/28-11. MAIN FEED TRIPLEX: Worthington—4½"x8"—160 GPM @ 510#—72 HP—230 VDC—975/1750. MAIN CIRCULATOR: Worthington 20" LAS—12,000 GPM—19' head—100 HP Westinghouse motor—frame 184.5—230 VDC—485/645—365 RPM.
ALSO TAILSHAFT & RUDDER, KINGPOSTS, 16" PORTLIGHTS, BOOMS, DOORS, WINCHES, WINDLASSES, STEERING GEAR.

THIS IS JUST A PARTIAL LIST OF AVAILABLE MATERIAL!
INQUIRE ABOUT OTHER ITEMS YOU NEED

MATERIAL FROM MOORE-BUILT C-2 MORMACWREN — HULL 271

Specification class C2-S-B1—Maritime Commission Hull #1184. **Main Turbine Rotors:** HP & LP—HP serial 75382—LP serial 75363. ALSO, ALL MOTORS FOR FEED PUMPS, BILGE, CIRCULATORS, ETC.

TURBO-GENERATORS



300 KW — From AP2 Ex-Medina Victory

TURBINE: Worthington-Moore—serial 7547 & 7548—440 lbs.—740°TT—28½" vacuum—type S4—5-stage—6097 RPM. GEAR: Type 14x7—6097/1200 RPM. GENERATOR: Crocker-Wheeler 102-HD—120/240 VDC—125 amps—40° rise—serial No. 973643 & 999795—compound wound. Armature flange 8¼" —B.C. 7"—12 holes. NEW ARMATURE AVAILABLE FOR THIS GENERATOR. SEE 3RD PAGE FOLLOWING.

300 KW — From AP3 Ex-Ridgefield Victory

TURBINE: Worthington-Moore type S4—5-stage—6097 RPM—740°TT—440#—serial No. 7108 & 7106. GEAR: 6097/1200—type 14x7—serial No. 7108—5.081:1 ratio. GENERATOR: Crocker-Wheeler 102-HD—300 KW—120/240 DC—6-pole—3-wire—stab. shunt—1200 RPM—type CCD—serial 973583. Suitable for units 7541 & 7543 and 7089 & 7188. WILL SELL ARMATURE SEPARATELY: 12-Hole flange—⅝" bolt holes—8.247" diam.—7" B.C. —flange & shaft 5".

300 KW Murray

TURBINE: G.E.—DORV—325M—440#—740°TT—5645 RPM. GEAR: S-192—5645/1200. GENERATOR: Ideal—120/240 VDC—1250 amps—stab. shunt.

300 KW GENERAL ELECTRIC

TURBINE: G.E.—DORV—325M—440#—740°TT—reduction gear S-192. GENERATOR: G.E. 120/240 VDC—1250 amps—stab. shunt.

TURN TO 3RD PAGE FOLLOWING FOR 300 KW SPARE ARMATURES

BOILER SOOT BLOWER ELEMENTS

12 Units—Diamond Power Specialty Corp.—type FM-1220—for blower units S-3, S-4—84¼" overall—2" tubes—22 jets —calorized metal.

11 Units—Diamond Power Specialty Corp.—used with type FM-1220 coupling—2" tubes—Dialoy element—S1&S2—26 jets—12'6" OA—2x2 steel coupling.

3 Units—2" ID tubes—15 jet—8'10½" OA—with 2" steel coupling—with FM-1220 unit blower.

ENTIRE LOT $450.00

SHIPS SERVICE AIR COMPRESSOR

VEE-type—Sullivan—7x4½x4½—60 CFM—15 HP—230 volts—1850 RPM—light compound—with starter. **INGERSOLL-RAND ALSO IN STOCK**—model 15—type 40—5x4x4.

AP2 Victory Main Condenser Water Boxes

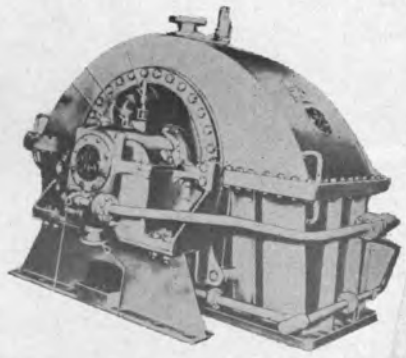
Mfg. by Graham—unused ABS and reconditioned ABS. Main condenser water boxes—AP3—Allis-Chalmers.

Aux. Condenser Water Box & Return Cover

Reconditioned ABS—Graham design—mfg. by Ross.

NEW AP2 VICTORY ENG

6600 HP Main Propuls



G.
&
ALL
CHALI
wit
throt
valv
assem

COMPLETE TURB

GENERAL ELECTRIC
Low Pressure Turbine $18,500
High Pressure Turbine $19,500

NEW THROTTLE VA
Schutte and

NEW H. P. AND L. P.
For General Electric and Allis-Chalmer

ABS RECONDITIONED 66(

L. P. & H. P. MAIN PRO

FROM EX-MEDINA VICTORY—MARA
H.P. Turbine—complete—Serial 4A-1618—

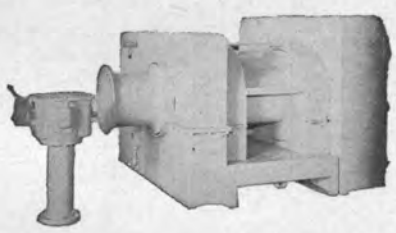
FROM EX-SHEEPSHEAD BAY VI
H.P. Turbine—complete—Serial 4A-2264—

AP2 VI
WESTIN
MA
REDUC
GE

Immediat

6000 SHP—R
ion 5410—L.I
—AB No. PA
Ex-Medina Vic
1620.

VICTORY SHIP UNIT WINCHES



50 HP—230 V
house, G.E. or Cr
U-1, U-3 single
lbs. @ 223 F
double speed—1
96 FPM. We ho
and left hand uni

KNOWN 'ROUND THE WORLD

THE BOSTO

313 E. BALTIMO

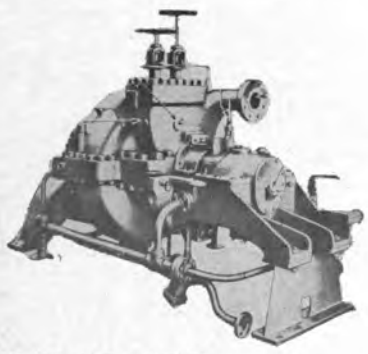
Main Office: LExington

New York Office: 11 Broad

ED AND TIONED MACHINERY & EQUIPMENT

NE ROOM EQUIPMENT

on HP & LP Turbines



S
ERS
le
e
llies

NE ASSEMBLIES

ALLIS-CHALMERS
Low Pressure Turbine $17,500
High Pressure Turbine $18,500

VES – $6750.00
Koerting

URBINE BEARINGS
—labyrinth packing—diaphragms.

) H.P. WESTINGHOUSE
PULSION TURBINES
HULL 586—BUILDERS HULL 586
P. Turbine—complete—serial 4A-1619.
CTORY—OFFICIAL NO. 81752
P. Turbine—complete—serial 4A-2265.

TORY
HOUSE
N·
TION
R

NEW H. P. & L. P. FLEXIBLE COUPLING

NEW SPARE BLADING FOR WESTINGHOUSE L. P. TURBINE

Delivery
M: H.P. pin-
pinion 3907
157 — from
ry serial 4A-

C—Westing-
ker-Wheeler.
speed—7450
; U-2, U-5
000 lbs. @
e both right

FOR AP2
FORCED DRAFT BLOWERS–22-TD-18

Westinghouse—230 PSI—430° TT—back pressure 15 lbs.—normal capacity 8900 CFM—4.8" of water pressure. RPM 2875—9.6 HP—total steam 697—overload capacity—13,-700 CFM at 10.7.

WILL SELL FAN OR TURBINE SEPARATELY

n METALS CO.

E ST. • BALTIMORE 2, MD.

-1900 • Marine Dept.: ELgin 5-5050
way, New York, N.Y. 10004—(212) 943-2640

MISCELLANEOUS PUMPS & PUMP MOTORS

DE LAVAL VERTICAL ROTARY MAIN LUBE OIL PUMP

10/15 HP—230 VDC—250 GPM @ 43 lbs.—980/1750 RPM. MOTORS: G.E. or Reliance.

MAIN CIRCULATOR & MOTOR FOR AP2 VICTORY

Ingersoll-Rand 18VCM bronze pump—20" suction—18" discharge—vertical. Flanges opposite each other. Distance flange-to-flange 4'5". Suction bolt circle 25"—discharge bolt circle 22¾". Suction (20) ¼" holes—discharge (16) ¼" holes. PUMP WEIGHT: 5100 lbs. MOTOR: 5700 lbs.—Allis-Chalmers 75 HP—230 VDC—500/670 RPM—frame E-Bu-162—drawing No. 31099.

SPARE ARMATURE AVAILABLE FOR ALLIS-CHALMER MOTOR — WILL SELL PUMP MOTOR SEPARATELY.

INGERSOLL-RAND 2VHM MAIN CONDENSATE PUMP

120 GPM—85 PSI—Pump only

Motors for Above

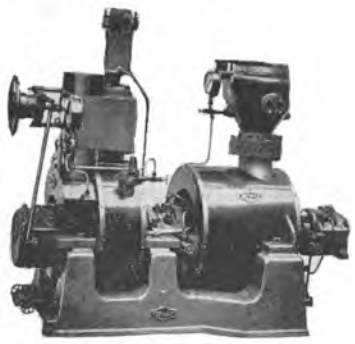
15 HP Motors and Terry or Coppus turbine drive.

INQUIRE ABOUT ANY UNLISTED ITEMS THAT YOU NEED

3000 G.P.M. AP2 – AP3 BRONZE AUXILIARY CIRCULATOR

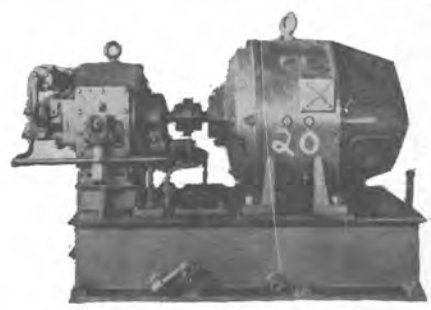
Manufactured by Allis-Chalmers. 10.9 lb. head—36" flange to flange—12" suction and discharge—17" bolt circle—19½" O.D. flange. This pump was substituted for a Worthington LAS on a Victory Ship and was easily fitted into the existing piping. The flange to flange dimensions were only slightly larger. MOTOR: 25 H.P.—230 volts DC—stabalized shunt—92 amperes—type EBU-100 — 18812MK — 1150 RPM.

COMPLETE WITH MOTOR STARTER



WEIR TURBINE-DRIVEN FEED PUMPS TMFP7

PUMP: 7000 GPH—585 PSI—1380 ft. head—5600 RPM. TURBINE: 480 PSIG—750°TT—exhaust 5 PSIG.



AP3 Steering Gear Pumps

Northern Hydraulic (variable stroke) and Hele-Shaw Hydraulic. **$1750**

Motors For Above Pumps

Reliance: 40 HP—230 VDC—147 amps—type T—900 RPM. **$1750**

BUY COMPLETE UNITS OR PUMPS & MOTORS SEPARATELY

AUX. COND. PUMPS

Ingersoll-Rand 1-VHM—with 5 HP 230 VDC motor.

Will Sell Pump separately.

LUBE OIL STANDBY

Vertical Duplex—Worthington—7½x9x12.

FEED PUMPS

Worthington—vertical simplex—11x7x24.

HORIZONTAL DUPLEX PUMPS

Size 6x6x6 pumps.

AUX. CIRCULATOR MOTORS: 25 HP—230 VDC—96 amps—658/875 RPM—G.E. and Reliance

AP3 LARGE VICTORY MATERIAL

PROPELLER: DORAN—Seattle—4-blade—20'6" diam.—6' pitch—heal #4931—ABS (59) 645R.
ALSO TAILSHAFT—RUDDER—RUDDER CARRIER—UPPER STOCK

FORCED DRAFT FANS & TURBINES: Westinghouse type 25-TD-18—231.6 lbs. steam—exhaust 15.6 lbs.—superheat 31°F—max. capacity 19,000 CFM—static pressure 10.7—3950 RPM—45.8—serial nos. 5A2167-11 & 5A2167-12.

SPECIAL FROM RIDGEFIELD VICTORY

G.E. HP & LP TURBINES & REDUCTION GEAR—8500 HP—9350 HP Oregon Shipbuilding Hull #1224—Instruction Book 16263

TURBINES: G.E.: L.P.—8-stage—3509 RPM—#62043 H.P.—8-stage—6159 RPM—#62042 REDUCTION GEAR: #75143—type MD-48-A—8500 HP—9350 max.—6159/3509/763/85 RPM. Maneuvering valve, operating cylinder, etc.

PACIFIC FEED PUMPS – TYPE JB

Horizontally split—diffuser type centrifugal. CAPACITY: 150 GPM @ 542# or 1242' normal—185 GPM @ 600# or 1418' max. Steam inlet 440 @ 507°TT—RPM 3740—water rate 35 lbs/HP—pumping temp. 240°. Total weight 1 unit 3100 lbs. OAL turbine & pump on base 8' 9⅜"—OAW about 2'.

A 300 KW VICTORY SHIP & C-2 GENERATOR ARMATURES

CROCKER-WHEELER

New—as pictured above—with ABS certificate. From VC2-S-AP2 Ex-Medina Victory. For Crocker-Wheeler generator 102-HD-DP—type CCD—compound—serial 973-643; 999-795 and others in this group. Bearing shaft size commutator end—3½"; Flange size 8¼" OD; Bolt Circle 7", with 12 holes ½" diameter.

ALLIS-CHALMERS

120/240 volts DC—type MCW 21-11—1200 RPM—stab. shunt—148171 & 148173—from ex Stamford Victory—completely re-wound anuary 10, 1968—ABS—(1).

WESTINGHOUSE

120/240 volts DC—1250 amps—1200 RPM—stab. shunt—frame CB 208.4—Instruction Book 8301—51-S-20P-923 and 18-83H-313.

GENERAL ELECTRIC

120/240 volts DC—1250 amps—1200 RPM—stab. shunt—serial No. 2222725-2222807—In G.E. Instruction Book G.E.I. 16584.

C-2 ARMATURES

North Carolina C2-S-AJ-I—General Electric—120/240 volts DC—type MPC—stab. shunt.

T2-SEA-1 TANKER MAIN STEAM & AUXILIARY EQUIPMENT

B MAIN TURBINE ROTORS

Large Turbine Rotors—Lynn
Large Turbine Rotors—Schenectady
Elliott Turbine Rotors—Fit G.E. small Schenectady turbine

C G.E. MAIN PROPULSION GENERATOR REVOLVING FIELD

G.E. reconditioned—June 1967

D G.E. MAIN GENERATOR STATORS

E

REWOUND WESTINGHOUSE MAIN PROPULSION GENERATOR REVOLVING FIELD

Was rewound for Gulf when removed from "Gulf Moon". Since that time, it has been re-checked in the Westinghouse Service Shop and balanced. ABS and ready to go. —December 18, 1968—certificate number 68-BA4831 — A-67B-JW — 12/18/68 Baltimore.

WRITE FOR COMPLETE INFORMATION

F WESTINGHOUSE MAIN GENERATOR STATOR WITH OR WITHOUT COOLER

G

WESTINGHOUSE MAIN MOTOR FIELD COILS

COMPLETE SET

Westinghouse — universal type — newest design—80 pieces—one set.

H

T2 RUDDER

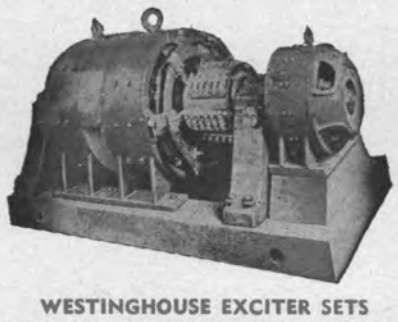
Reconditioned—ready to go.

T2 TAILSHAFTS

Reconditioned

PROPELLERS

T2 propellers



I WESTINGHOUSE EXCITER SETS

110 KW—28 KW—5 KW available
110 KW—32.5 KW—5 KW available

J

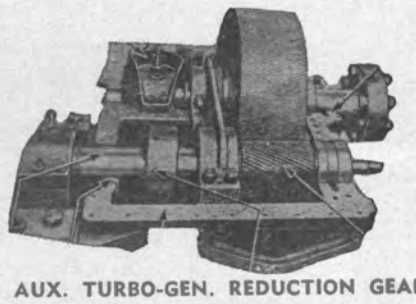
LORIMER

Emergency Generator Engine and Generator Parts

K

MAIN CIRCULATING PUMP MOTOR

125 HP—Westinghouse—Frame 876C—type CS—squirrel cage — 440/3/60 — 585 RPM. Reconditioned to ABS. Ready to go immediately.

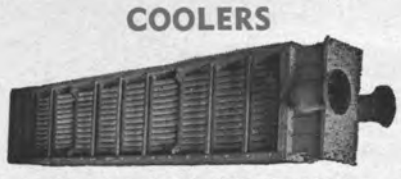


L G.E. AUX. TURBO-GEN. REDUCTION GEARS

Bull gear & pinion. With ABS.

M WESTINGHOUSE AUXILIARY GENERATOR REDUCTION GEARS AND BEARINGS

COOLERS



N MAIN MOTOR AIR COOLER

Westinghouse—ABS—ready to ship

O MAIN GENERATOR AIR COOLER

Westinghouse — reconditioned with ABS—ready to ship

P

G.E. MAIN GENERATOR COOLER
type G4—bronze heads—AL brass tubes

KNOWN 'ROUND THE WORLD

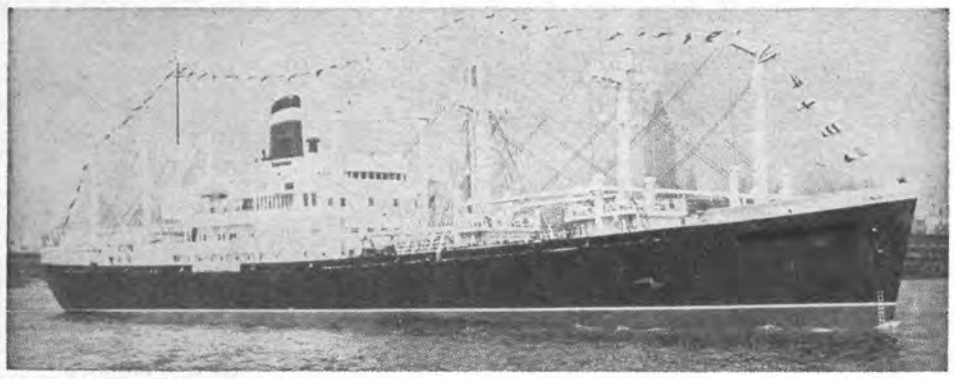
THE BOSTON METALS CO.

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

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

New York Office: 11 Broadway, New York, N.Y. 10004—(212) 943-2640

ALL MACHINERY FROM U.S.M.C. NORTH CAROLINA C2-S-AJ1



INCLUDING MASTS, BOOMS, KINGPOSTS, AND RIGGING

Send us your inquiries

CENTRIFUGAL PUMPS

— ALLIS-CHALMERS —

MAIN CIRC. PUMP

9500 GPM @ 27'—800/600 RPM—type S.B. 20x20 — horizontal. MOTOR: Allis-Chalmers 100 HP—230 volts—600 RPM—Frame EB-162.

TURBINE DRIVEN MAIN FEED PUMP

Allis-Chalmers type BK-4—150 GPM @ 1465' head—180 GPM @ 1342' head. TURBINE DRIVE: Type ZS-1—94 HP normal—440 PSI —740°TT—4400 RPM.

AUXILIARY CIRCULATOR

Allis-Chalmers 8x6 — SE — 1500 GPM — 27' head—1200/1600—15 HP motor—horizontal.

MAIN CONDENSATE

6x3 CF2V — Allis-Chalmers — vertical — 120 GPM—185' head—1310/1750 RPM—15 HP.

AUXILIARY CONDENSATE

3x1½ SSL — 20 GPM — 185' head—1310/1750 RPM—7½ HP—vertical.

FIRE PUMP

4x3 B-2 — Allis-Chalmers — 400 GPM—280' head—1425/1900 RPM—50 H.P.

CIRCULATING PUMPS

Hot water & auxiliary sea water circulating pumps—1½x1½ SSH—20 GPM—10' head —1750 RPM—½ HP—and 80 GPM—70' head—2620/3500 RPM—3 HP.

— WORTHINGTON —

MAIN FEED PUMP

2 UQS-2—150 GPM @ 1465 T.D.H.—4000 RPM—115 HP. Turbine. Form S2RM—Moore steam turbine—1½" steam inlet—440 lbs WP —750°F @ 10 lbs gauge. Water rate 26.8 lbs BHP/HR.

MAIN CIRCULATOR

20-LAL-18 — 20" suction — 20" discharge — horizontal—9500 GPM—27' TDH—800 RPM — 100 HP. MOTOR: 100 HP — 360 amps — 800/600 RPM—horizontal—Frame 183 SK—light compound.

6-L-1 AUXILIARY CIRCULATING

1500 GPM—27' head—1450 RPM—horizontal —8" suction—6" discharge—15 HP—230 DC —56 amps—1450/1090—frame 83SK.

2½UZS-1 MAIN CONDENSATE

Vertical—6" suction—3" discharge—120 GPM —185' T.D.H. — 1750 RPM — 15 HP — 230 VDC—56 amps—1750/1310—ambient 50°C —frame 83SK.

3-UB1—FIRE SERVICE

Horizontal — 4x3 — 400 GPM — 281' head—1750—50 HP Motor—230 VDC—178 amps —1310/1750 RPM—frame 133SK.

AUX. SALT & HOT WATER CIRCULATING

1½ D—20 GPM—10' TDH—1750 RPM—3 HP salt water circ.—1 HP hot water circ.

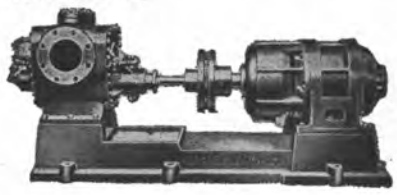
RECIPROCATING STEAM PUMPS

— WORTHINGTON —

- Port Feed — 8½x5¼x15 — 50 GPM—600 lbs.—VS
- Fire Service & Standby — 12x11x18 — 400 GPM—125 PSI—VS
- Dirty Ballast—Clean Bilge 10x11x18—400 GPM—50 PSI—VS
- Fuel Oil Standby—7x4x10—11 GPM—400 lbs—VS
- Lube Oil Standby—7½x9x12—250 GPM—47' head—VD
- Make-up Evaporator Feed—3x2 3/4x3—20 GPM—50 lbs.—HD
- Contaminated Evaporator Feed—20 GPM—75 lbs—HD
- Salt Water Evaporator Feed—3x2 3/4x3—20 GPM—35 lbs.—HD

— POWER RECIPROCATORS —

- Drinking water—2½x2—10 GPM—70 lbs—¾ HP—230 volts DC
- Sanitary—2½x2—30 GPM—80 lbs—2 HP —230 volts DC



KINNEY MOLASSES PUMP

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

STEERING GEAR

McKiernan-Terry — size 10½ RAM Electro-Hydraulic. MOTOR: 40 HP. Westinghouse—frame 143S—690 RPM—230 volts.

— REFRIGERATION EQUIPMENT —

• CARGO REFRIGERATION PLANT

Compressor 7G8-EF—size 240—897 cu. inches —minimum displacement 39.2 tons—Carrier. Has 365 sq. ft. 3-pass Freon 12 condenser. MOTOR: 35 HP — 230 VDC — 1310/1750 Westinghouse—type 113-SK.

• SHIP SERVICE REFRIGERATOR

York 4x4—type Y-38—model 44-Fe—50 sq. ft. condenser. MOTOR: 10 HP—230 VDC—type SK—frame 43—1750 RPM—37.3 amps.

• COLD DIFFUSER

York type 4—Fan-Fin unit 1155 CFM—82 sq. ft. York type 2—543 CFM—36.8 sq. ft.

• CARGO WINCHES

North Carolina built type 73-S — mfg. by AH&D—50 HP—230 volts DC.

• BAILEY BOARD COMPONENTS

G.E. 300 KW TURBO GENERATORS

GENERATOR: Type DORV-325M — 5645 R.P.M. — 440 Lbs.—740° TT—18" exhaust. GEAR: Type S-192—right hand—5645/1200 —G.E. GENERATOR: G.E. 300 KW—120/240 —1200 RPM—type MPC—stab. shunt. WILL SELL ROTORS — GEARS — ARMATURES SEPARATELY.

SPRAY DEAERATING HEATER

54000 lbs. water/hour. Elliott Co.

FEED WATER HEATERS

- FIRST STAGE—Shell & tube—45000 lbs/hr —100°—172°F—305 sq. ft.—Heat Transfer Products.
- THIRD STAGE—5400 lbs/hr—240° to 318° 200 sq. ft. effective surface. Heat Transfer Products Co.

EVAPORATORS

Contaminated water — 36-14 Paracoil-Davis Eng.—Distiller 2F72D Davis.

EMERGENCY DIESEL GENERATOR SET

Heavy duty—75KW—120/240 DC—720 RPM Ideal. ENGINE: Lorimer 115 HP—7½x9½—720 RPM—4-cycle—radiator cooled. With all switchgear. OAL 12'4"—OAW 49"—OAH 79" Weight 10,500 lbs.

M.G. SET

D.C. final AC—Bus—MG set—5.5 HP—230 Volt 1800 RPM input—Diehl's—3 KW 120/1/60 output.

AIR EJECTORS

Ingersoll-Rand main air ejector and auxiliary air ejector.

AIR COMPRESSOR

Ship service — type PB-2 — 7x4x4 — Chicago Pneumatic—15 HP—230 volts—1750 RPM.

COMBUSTION CONTROL

Worthington—4¼x2½x2¾—2-stage — 17.9 CFM at 100 lbs.—5 HP—230 volts DC.

FORCED DRAFT BLOWER

Type 6-SL — 12000 CFM — 8.1 S.P. — 1830 RPM— Buffalo Forge. MOTOR: Allis-Chalmers type EB-100—20 HP—1190/1830 RPM—230 volts—75 amps.

FUEL OIL BURNER

Todd HexPress—3 per boiler.

FUEL OIL HEATERS

ALCO—4400# fuel oil—from 100° to 230° —shell & tube type—unit in four sections.

FUEL OIL METER

2"—DVHP—30 GPM—Buffalo.

SEPARATOR

Oil and water—50-ton—McNab Victor.

DeLAVAL OIL PURIFIERS

Unimatic model designation 55-N-13—for turbine or light oils—200 GPH. Powered by 2 HP 230 volt DC Allis-Chalmers motor—frame 224.

KNOWN 'ROUND THE WORLD

THE BOSTON METALS CO.

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

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

New York Office: 11 Broadway, New York, N.Y. 10004—(212) 943-2640

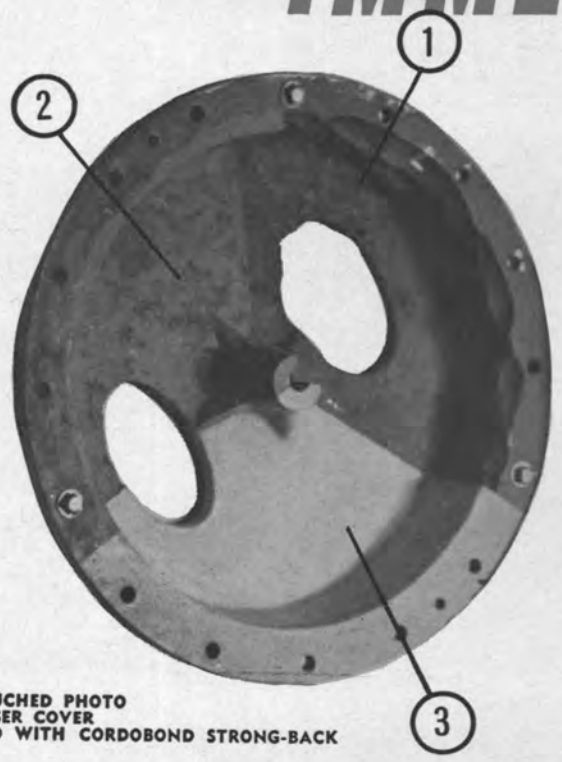
EMERGENCY REPAIRS

IMMEDIATELY

with

CORDOBOND®

STRONG-BACK METHOD



UNRETOUCHED PHOTO
CONDENSER COVER
REPAIRED WITH CORDOBOND STRONG-BACK

1. BEFORE **2. DETERIORATIONS FILLED WITH CORDOBOND STRONG-BACK PUTTY & LEVELING COMPOUND** **3. CORDOBOND STRONG-BACK RESIN REINFORCED WITH FIBREGLASS CLOTH**

® Reg. U. S. Pat. Off.

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

SEA VALVES	PIPES	CONDENSER WATER BOXES
TANKS, BULKHEADS	DECKS	PUMPS
MACHINERY CASINGS	VENTS	DUCTS, ETC.

The Cordobond Strong-Back method provides a means of repairing piping systems carrying water, low pressure steam, oils, gasoline, alcohols, and many other liquids at temperatures up to 250°F at pressures up to 250 psi. Under emergency conditions, patches have been successful with pressures over 500 psi.

Complete in itself and requiring no special tools or fire, the Cordobond Strong-Back method owes its success to a new self-curing resin combined with special fibreglass materials. These provide a repair that has high tensile strength and strong adhesion to most surfaces. The process has wide application, is fast, versatile and economical.

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

Cordobond Strong-Back repair kits for effecting emergency repairs by ship personnel, have been furnished to thousands of navy and merchant vessels of all types and sizes.

Cordobond Strong-Back, furnished by Hubeva, is also used extensively in refineries, power and chemical plants, breweries, factories, etc.

TRAINED APPLICATORS AVAILABLE FOR REPAIRS OR INSTRUCTION

FOR COMPLETE INFORMATION, CONTACT

CORDOBOND STRONG-BACK PRODUCTS

Standard Resin • Leveling Compound • Strong-Back Putty • Strong-Back Sealer • Steel Putty • Cordobond • Repair Kits

THE LEADER IN PLASTICS FOR THE MARINE INDUSTRY

Hubeva Marine Plastics, Inc.

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

Phone: TR 5-6178 or your local agent

SOLE DISTRIBUTORS OF CORDOBOND STRONG-BACK PRODUCTS

AGENTS THROUGHOUT THE WORLD

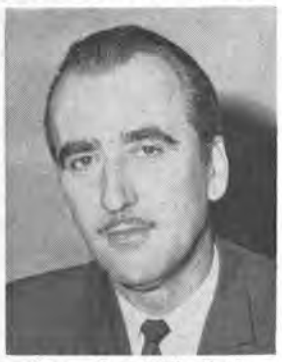
Trained applicators available for repairs or instruction

AGENTS*

ALABAMA Mobile
CALIFORNIA San Francisco, Wilmington
FLORIDA Jacksonville, Tampa
GEORGIA Savannah
LOUISIANA New Orleans
MAINE Portland
MARYLAND Baltimore
OREGON Portland
PENNSYLVANIA Philadelphia
TEXAS Galveston
WASHINGTON Seattle
CANADA Montreal, Toronto, Halifax, N. S.
BELGIUM Antwerp
GREECE Piraeus
HOLLAND Rotterdam
ITALY Genoa, Naples
JAPAN Yokohama
HONG KONG Hong Kong
NORWAY Oslo
SPAIN Bilbao
WEST GERMANY Hamburg
MAURITIUS Port Louis
TRINIDAD Port-of-Spain
MALAYA Singapore
SOUTH AFRICA Durban, Capetown

*ALL HUBEVA AGENTS HAVE TRAINED PERSONNEL TO APPLY, INSTRUCT OR ADVISE IN THE APPLICATION OF CORDOBOND STRONG-BACK MATERIALS

AEIL Names Mihajlovic Vice-President For Break-Bulk Freight



Capt. Dan Mihajlovic

Capt. **Dan Mihajlovic** has been named vice-president for break-bulk freight services by American Export Isbrandtsen Lines, **Manuel Diaz,** president of the steamship line recently announced.

Associated with States Marine-Isthmian Agencies, Inc. for the past 13 years, Captain **Mihajlovic** was most recently manager of that company's Mediterranean, Red Sea, Persian Gulf and South and East Africa services. Earlier he was assigned as operations manager. He has sailed on foreign and American merchant ships in various capacities including master. He holds a U.S. master's license.

Captain **Mihajlovic** was born at Kamenari on the Bay of Kotor in Yugoslavia, and graduated from the Nautical Academy at Kotor. He came to the United States in 1941 and sailed aboard War Shipping Administration ships during World War II for U.S. Lines, Polaris Lines, the New York Navigation Company and later with Moore-McCormack Lines. In 1956 he accepted a shore post with States Marine-Isthmian.

In his new post, Captain **Mihajlovic** replaces **Dennis A. Meenan** who previously was named vice-president for container freight services.

212,000-DWT Tanker First To Use GE MST-14 Reheat Marine Powerplant

S.T. Energy Transport, shown above, is powered by a 30,000-hp General Electric MST-14 steam turbine gear propulsion equipment.

The supertanker, Energy Transport, using General Electric Company's first MST-14 reheat marine propulsion plant with associated 'technical package', has successfully completed sea trials off the coast of Japan and is now in service.

General Electric supplied the 30,000-hp cross-compound reheat turbine at 80 propeller rpm with shaft-driven boiler-feed pump and shaft-driven generator.

One of the largest of the new supertankers, the Energy Transport, was built for the Oriental Petroleum Carriers, Inc., a member of the Island Navigation Corporation of the C. Y. Tung Group by Sasebo Heavy Industries Co., Ltd., Sasebo, Japan.

The tanker is nearly 1,100 feet long, has a molded breadth in excess of 158 feet and a 63-foot draft.

The associated 'technical package' provided by General Electric called for the company to furnish technical services and advance system design information to the shipyard. The company, for example, provided all heat balances, specified plant components, and assisted the shipyard in installation and testing of propulsion equipment.

Hughes W. Ogilvie, manager of marketing for General Electric's Marine Turbine and Gear Department, said the new propulsion plant provides shipowners with a high-performance reheat powerplant that is economically superior. General Electric guaranteed a fuel rate below 0.4 pounds per shaft horsepower hour for the vessel.

The Tung Group has orders with Sasebo Heavy Industries for six supertankers equipped with MST-14 reheat marine propulsion plants with associated technical package. The Energy Transport not only is the first of the six tankers, but also is the first tanker in the world which is equipped with this newly designed reheat powerplant.

The ship's General Electric Central Operations System allows remote control of the powerplant from either the bridge or engine room console. The bridge console permits control of the ship's speed from full-ahead to full-astern by movement of a single throttle lever.

A single unit operator's console in the engine room provides instrumentation for steam pressures, temperatures, flows and similar operative functions; extended monitor and alarm system for off-normal powerplant operation conditions; automatic throttle control, and General Electric Measurement and Control System (GE-MAC) boiler control.

The Central Operations System, made by the General Electric Industry Control Department, Salem, Va., also has generator, instrumentation and other operator controls.

Other General Electric components for the Energy Transport were produced by the Mechanical Drive Turbine Department, Small AC Motor and Generator Department and the Instrument Department. The order for the equipment was placed through the IGE Export Division in New York City.

The Energy Transport will be used to transport oil between the Persian Gulf and Northern Europe.

Di Mattina Supply Office And Warehouse Now On Staten Island

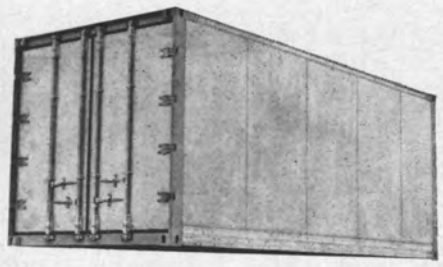
Di Mattina Supply Co., distributors of wire rope, anchors, chain and heavy marine fittings has announced the removal of it's office and warehouse operations to Andros Avenue at Davidson Street, Mariner's Harbor, Staten Island, New York 10303.

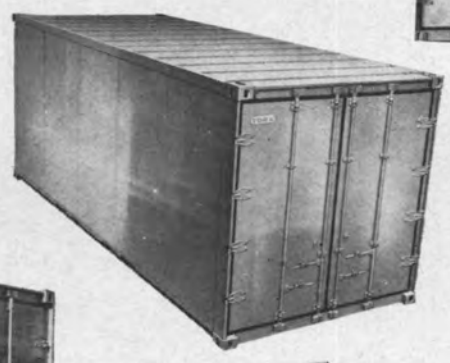
Warehouse facilities consist of a steel building, 400 feet by 80 feet, with two overhead bridge cranes rated 10 and 15 ton each, traveling the full length of the structure. Railroad siding at one end of the building permits all weather rail loading and unloading and effects large savings to customers who can accept rail delivery.

Starting April 1, the business operations of Di Mattina Supply are being conducted under the name of Disco International division of Di Mattina Supply Co., Inc.

All Steel
Tough, low-cost all steel box, ALCHEM-treated to beat rust. 10, 20, 27, 30 and 40 footers.

ALS2 aluminum/steel
Steel base and endframes, but with aluminum side panels, roof and extruded quarter panels to save weight. Any length.

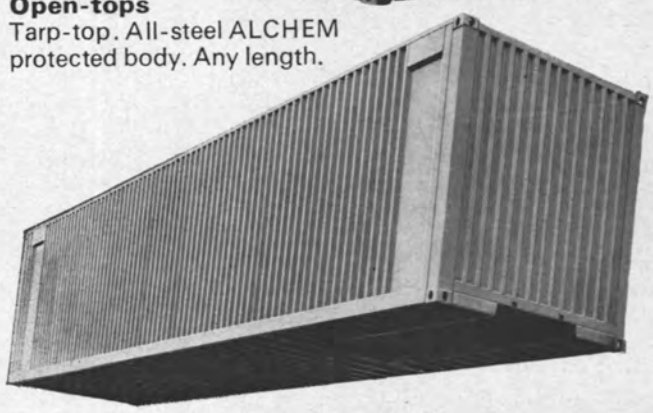




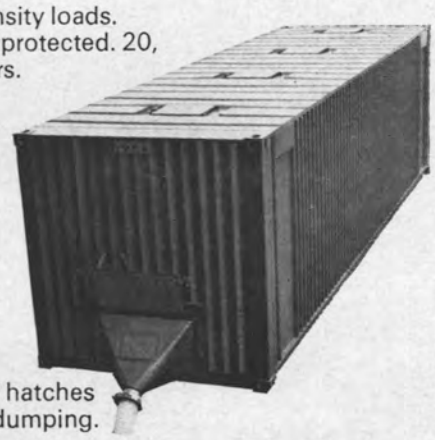
AL 'all aluminum'
The lightest box York make. 20 footer weighs only 3024lb (1372 kilos). Also 10, 30 and 40 footers.

Open-tops
Tarp-top. All-steel ALCHEM protected body. Any length.

Half-heights
4ft high for high density loads. All-steel ALCHEM-protected. 20, 27, 30 and 40 footers.



Tunnel-types
Steel with under floor well to fit gooseneck skeletal trailers. Open-tops too. 27, 30 and 40 footers.



Box Bulker
ISO container, with roof hatches and front end hatch for dumping.

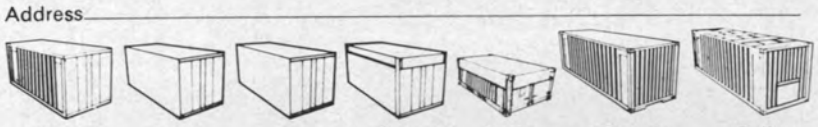
Take your pick from York

Please send me specifications and prices for the box container(s) ticked below:

Name_____

Company_____

Address_____



Steel	ALS2 aluminum steel	AL all aluminum	Open tops	Half-height	Tunnel-type	Bulker
☐	☐	☐	☐	☐	☐	☐

York's automated container plant is really churning them out now! Containers for every requirement at really competitive prices. Let York quote you now.

YORK

Canada: York Transport Equipment Limited, Kelfield St. Rexdale, Ontario, PO Box 67, Phone (417) 247-7231.
UK: York Trailer Company Limited, Corby, Northants, England Phone 05366-3561
Holland: York Trailer Europa NV, Noldijk 113 Barendrecht, Near Rotterdam, Phone 01857-444/5. Night Service 01896-5725.

GC13

Nashville Bridge Delivers MV Marine— Designed For High-Speed Integrated Tows

Operational trials of the MV Marine were conducted on the Cumberland River.

The MV Marine recently left the Nashville, Tenn., boatyard of the Nashville Bridge Company and proceeded downriver to Paducah, Ky., where she was turned over to her new owners, the M. V. Marine Company of St. Louis, Mo. The new towboat then resumed its maiden voyage to its home port of St. Louis, where christening ceremonies took place.

Meyer Kopolow, president, and Capt. **Don Steele,** port captain, of M. V. Marine Company, were on board for the MV Marine's maiden voyage.

The M.V. Marine Company is engaged in the petroleum hauling business on the Mississippi and Ohio river systems. While this is the first towboat NABRICO has built for M.V. Marine, they have already delivered five barges to the St. Louis company's growing fleet.

The MV Marine is 148 feet long by 30 feet wide with a molded depth of ten feet, six inches. She is powered by two G-M Electro-Motive 12-645-E5 marine diesel engines, cooled through a NABRICO closed keel-cooling system, coupled to Falk reverse-reduction gears with Air Flex clutches. Each engine delivers 1,950 hp at 800 rpm.

The hull is all-welded construction throughout with a design incorporating a spoon bow and tunnel stern with generously rounded bilges and smooth afterbody. All welds are ground flush for high efficiency performance. The hull is divided by two continuous longitudinal bulkheads and seven transverse bulkheads. The wing fuel tanks have a total capacity of 61,000 gallons.

Deck fittings include nine 48-inch cast steel kevels, two 42-inch cast steel kevels, two NABRICO wire rope roller chocks, six 10-inch single bitts, four single ratchet straps, one 10-inch double towing bitt aft and one 8-inch double bitt forward. Two NABRICO hydraulically operated 40-ton winches are fitted forward, port and starboard, along with a NABRICO 10-hp double-barrel power capstan with remote control.

The main deck house contains living quarters for 11 people in six staterooms, a galley with a Toastmaster range and Foster freezer chest and refrigerator, dining counter, dry stores locker, two deck stores lockers, and toilet and washing facilities. The Texas deck provides staterooms for the master, pilot, two guest rooms and crew's lounge.

Controls, except for engine starting, are operated from the pilothouse. The MV Marine has two steering and four flanking rudders controlled by conventional dual pilothouse levers with full follow-up control. Each system is independent of the other with dual Vickers hydraulic pumps, each capable of operating the system individually.

The Coolidge stainless-steel four-bladed propellers, 108 inches in diameter, were designed by NABRICO especially for this vessel which will serve in high-speed integrated towing. The propeller shafts are enclosed in NABRICO oil-lubricated stern tubes and supported by specially designed, streamlined, stainless-steel V-struts.

Navigational aids include dual Decca radar, radio, Microtecnica gyro-compass with Decca-Arkas automatic pilot and Lorain radio telephones. Lights for operation include Carlisle & Finch arc searchlights and Crouse-Hinds incandescent searchlight and floodlights.

The auxiliary systems aboard the MV Marine feature two 7½-hp Quincy air compressors for engine starting, the Kahlenberg horns and ship's service air; two 100-kw Delco generators providing 225-volt, 3-phase, 60-cycle a-c electric power fed through a Federal Pacific switchboard; 100-gpm at 100-psi main fire system with a Worthington fire pump; 4,000 gallon potable water system with a Deming pump, Wilson chemical feeder and a Bruner sediment filter; 2,800-gallon wash-water system Deming pump; Carrier individual room air conditioning, and central heating provided with a Weil-McLain boiler. Fuel and lubricating oil systems use Viking pumps for transfer purposes.

View down the centerline, looking forward, of the engine room showing the G-M diesels.

Largest Shipyard In Caribbean Expanding To Handle More And Bigger Ships

Aerial view of the busy Curacao Drydock facilities showing (outlined in white) planned expansion which will be capable of handling vessels up to 120,000 dwt.

The largest shipyard in the Caribbean area has big plans afloat. The Curacao Drydock Company, CDM for short, is situated in one of the most favorable deep sea harbors in the world. The busy port of Willemstad is host daily to large tankers, freighters and luxury cruise ships with their imposing cargo of American tourists.

Presently, CDM has a graving dock that can accommodate vessels up to about 28,000 dwt and a floating dock with a lifting capacity of about 3,500 tons. Vessels trading in the Caribbean, to and from U.S. ports, around the Cape or to Africa, frequently find they can call at CDM without any appreciable deviation or lost time. Being keenly aware of their geographically ideal location, CDM has now taken a step in a continuing program of new development and growth. In November, 1968, Netherlands Antilles' Prime Minister **Ciro Kroon** lifted the first shovelful of earth at a spot which will become the largest graving dock in the Caribbean and South Atlantic areas.

When the new dock is completed in three years' time, it will be able to handle ships of up to 120,000 dwt and will have cost more than $12,000,000. The new dock will be more than 900 feet in length and have a width of 157 feet. The company's labor force will be increased by about 350 people and the facilities will also be extended and modernized. Last year the company handled an impressive 868 ships with repairs; jobs ranging up to $150,000.

A big plus-point in CDM's operation is that, in handling ships of almost every nationality, there is never any language problem. They have technical people who speak Spanish, German, English and Dutch and supervisors for the labor force who speak Italian and Portuguese. Although it is a heavily Dutch-influenced company, it is entirely operated in Curacao.

Designer And Builder Describe MAR II Powerplant To Philadelphia Section

Taking part in the recent Philadelphia Section, SNAME meeting were, left to right: **Samuel S. Morse, E. Fortino, R. G. Donaghy, A. C. Brown, M. Horton, A. D. Haff, D. S. Fentiman,** and **George A. Johnson.**

The Philadelphia Section of The Society of Naval Architects and Marine Engineers held its March meeting at the Engineer's Club of Philadelphia.

Donald S. Fentiman, project manager, MAR II Floating Power Plant, General Electric Co., Schnectady, N.Y. and **A. Dudley Haff,** technical manager, Central Technical Division, Bethlehem Steel Corp., Sparrows Point, Md., co-authors, presented their paper "Gas Turbine Floating Power Plant." **George A. Johnson,** chief, Marine Design Division, U.S. Army Corps of Engineers, Philadelphia, Pa., was coordinator for the meeting.

The paper discussed: The MAR II floating powerplant, a unique combination gas-turbine and diesel-engine powerplant which was designed and constructed to furnish 20-mw of precise electrical power for the Nike-X anti-ballistic missile test program on Kwagalein Atoll. The paper describes the criteria established for this plant by the Corps of Engineers, the power generation equipment selected to meet the performance requirements and the special design and construction considerations in converting a World War II floating drydock section into a modern self-contained powerplant.

Formal discussions were presented by: **Ernie Fortino,** assistant chief, Marine Design Division, U.S. Army Corps of Engineers, Philadelphia, Pa.; **A. C. Brown,** manager, J. J. Henry Inc., Philadelphia office; **Mal Horton,** senior engineer, General Electric Co., Schenectady, N.Y.; **Richard Donaghy,** chief, Research Power Laboratory, U.S. Army Corps of Engineers, Washington, D.C., and **Samuel S. Morse,** naval architect, Atlantic Richfield Co.

Capt. Garrett Joins Harbridge House

Capt. Wallace H. Garrett

Capt. **Wallace H. Garrett,** USN (ret.), has joined the staff of Harbridge House, Inc., Boston, Mass., an international management consulting firm. Captain **Garrett** will have responsibility for integrated consulting services in the fields of shipbuilding and ship repair.

Prior to joining Harbridge House, Captain **Garrett** was project manager for two major Navy programs. Most recently, as DX/DXG project manager in the Naval Ship Systems Command, he planned, organized, and directed the 4-billion-dollar destroyer fleet replacement program from initial conceptualization through initial contract awards. In recognition of his accomplishments in successfully managing this program, Captain **Garrett** was awarded the Navy Legion of Merit.

Previously, as project manager for anti-submarine warfare ships, Captain **Garrett** had overall responsibility for the construction of 60 ships being built in 14 separate shipyards, both Navy and commercial, and supervised the maintenance and conversion of approximately 300 ships.

In the course of his notable career in the fields of shipbuilding and ship repair management, Captain **Garrett** has held the positions of assistant planning and estimating superintendent at the Philadelphia Naval Shipyard, senior assistant supervisor of shipbuilding at Bath, Maine, and shipbuilding and repair superintendent at Puget Sound Naval Shipyard. His innovation of sophisticated management methods resulted in significant dollar savings for the Navy and many of the techniques he pioneered have been adopted as standard procedures in shipbuilding and management.

Upon graduation from the United States Naval Academy in 1941, Captain **Garrett** was assigned to a destroyer operating in the South Pacific Theatre. Just prior to the end of World War II, he was sent to the Massachusetts Institute of Technology where he earned a MS in naval architecture and marine engineering.

Atlantic-Richfield Requests Bids From Several U.S. Shipyards

Atlantic-Richfield Co. has requested several U.S. shipyards to submit prices by June 14 for the construction of three or five tankers in the 100,000/120,000-dwt range. The three-ship procurement calls for delivery of one ship each in 1972, 1973, and 1974. The five-ship procurement calls for delivery of two ships in 1972, one in 1973 and two in 1974. When completed, the vessels will be used to haul Alaskan crude oil to West Coast refineries.

Sermon's To Build Five Twin-Screw Trawlers

Sermon's Boat Yard, Tarpon Springs, Fla., is to build five twin-screw trawlers for undisclosed interests. Two of the trawlers will be 78 feet long, one will be 72 feet long, one 88 feet long, and one 106 feet long.

Edo Western Navtrak— A New Doppler Sonar Navigation System

The Edo Western Corporation has developed a new pulsed doppler sonar navigation system which utilizes the doppler principle to provide real-time, true speed and true distance over-the-bottom information for accurate navigation, mapping, surveying, and exploration. This system is completely independent of land-based stations, weather conditions, visibility, or sky wave effects. The versatility and accuracy of the Model 435 'Navtrak' Pulsed Doppler Sonar Navigation System make it one of the most unique navigation, surveying and exploration systems available for present day use.

The Model 435 has an operating depth capability in excess of 600 feet and is accurate to better than 0.5 percent. This accuracy and depth capability will normally suffice for all types of exploratory surveys and operations along the Continental Shelf. Also, by operating off of volume scatterers, open ocean navigation with minimal correction for currents can be achieved. A nominal carrier frequency of 150 kHz is utilized and has been adapted to insure that satisfactory operation is obtained from all possible types of sea floors, to depths in excess of 600 feet. The directive beam widths are less than five degrees, and are directed downward 60 degrees from the horizontal.

The transducer array is formed with the use of one assembly to minimize installation errors normally present in separate array systems. By using pulsed doppler sonar, the Model 435 has common receiving and transmitting sections which allow inter-changeability between fore-aft and port-starboard channel modules, thus simplifying maintenance and reducing logistics problems. For further information contact Edo Western Corporation, 2645 South 2nd West, Salt Lake City, Utah 84115.

Each Of Four New Willis Cargo Barges Have A Cargo Volume Of 82,800 Cubic Feet

One of four extra-long covered hopper barges, built for C. G. Willis, Inc., of Paulsboro, N.J., splashes into the Ohio River from the marine ways of Dravo Corporation, Pittsburgh, Pa. The 221-by-35-by-12-foot barges will be moved to New Orleans and then taken up the East Coast by tugboat to the Philadelphia area. Each of the barges has a cargo volume of 82,800 cubic feet. The Willis firm moves a variety of dry-bulk cargoes on the Intracoastal waterway between Philadelphia and Jacksonville, Fla.

For Sea Power see Fiat

Safety and Progress at Sea

Any form of marine propulsion for modern ships can be met by Fiat engines. And exclusive in Fiat diesels is the **SAFTI-FRAM,** a truly noteworthy safety design which eliminates scavenging complications and attendant dangers. This "ounce of prevention" that can save lives, ships and cargoes is distinctive with Fiat. Every cylinder in a Fiat diesel is separated from the crankcase by a diaphragm that keeps everything open to the atmosphere. Thus the name **SAFTI-FRAM**—saving ventilation, providing peace of mind to owners and operators.

Where space-saving is paramount, Fiat offers continuing advances in the two-stroke crosshead type 600 S and the 4-stroke trunk-piston engine. Multi-engine installations replacing huge single units are being used more and more.

For sea power see Fiat. Another good reason is Fiat's non-profit after-sales maintenance service. It assures economical operation and gives Fiat sure knowledge of product performance.

FIAT

GRANDI MOTORI • VIA CUNEO 20
10100 TURIN, ITALY

U.S. Representative 375 Park Avenue,
New York, N.Y. Tel. (212) 886-4400

New CL Coupling Speeds Hose Hookup

To speed the discharge of oil and other liquids for barge loading, the Camlock Flange Sales Corporation has developed a coupling for use on lines from 2 to 16 inches outside diameter. Known as CL couplings, they have been designed for 150-pound ASA service and hydrostatically tested to 450 psi as leakproof. 300 psi service is also available.

The use of CL couplings substantially reduces hookup time since the couplings are equipped with rapid-action helical cams. Once the coupling is installed, the cams (from 2 to 6) are tightened over the mating flange with a short rod or activating wrench. This eliminates the usual hazards and inefficiency associated with the drift-pin, nut-and-bolt method of hose hookup.

For more information, write Camlock Flange Sales Inc., 449 Sheridan Boulevard, Inwood, New York 11696.

Great Lakes Cruise Line Bought By Arison Shipping

Arison Shipping Co., of Miami, Fla., announced that it has purchased the Georgian Bay Line in a move indicating reestablishment of cruise ship operations on the Great Lakes.

Arison said it acquired the name Georgian Bay Line and all outstanding stock. No price was revealed.

Formerly known as the Chicago, Duluth & Georgian Bay Transit Co., the firm operated the last of the Great Lakes cruise ships, the South American, until last fall.

Erwin J. Goebel, president of the old company, will remain chief executive officer of a new firm to be called Georgian Bay Line, Inc.

Internat'l Shipping-Container Exposition To Be Held In N.Y.

Irwin Chaitin of Irwin I. Chaitin Associates, Detroit, Mich., has announced that the 2nd International Shipping, Containerization & Marine Engineering Exposition and Congress will be held from September 15 to 18, 1969 at the New York Coliseum.

The Exposition is the successor to the highly successful 1st National Export Services & Containerization Exposition & Technical Congress which was held last June in the New York Coliseum.

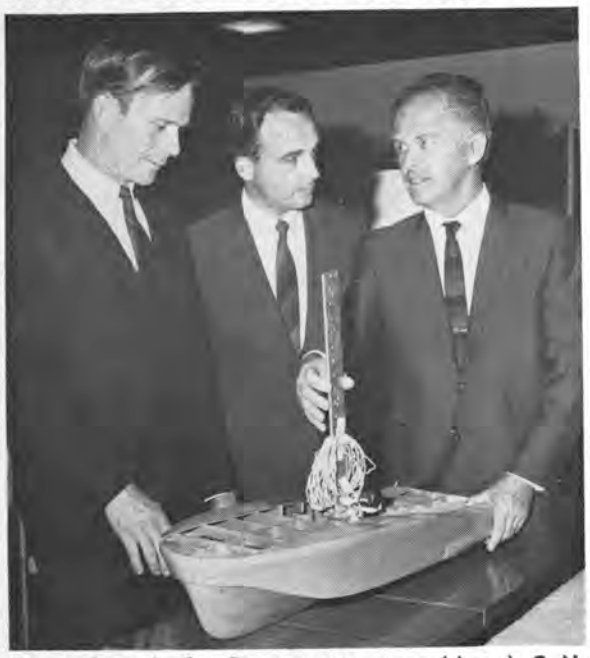
By popular demand, this show has been expanded to include shipping, containerization and marine engineering exhibits, thus including all facets of the shipping industry. As a result, companies exhibiting at the 2nd International Shipping, Containerization & Marine Engineering Exposition will include steamship lines, railroads, trucking companies and airlines. The containerization aspect of the Exposition will include companies active in the containerization field from container manufacturers to container systems, container-handling equipment and container supplies.

The marine engineering and design field will be represented by manufacturers of maritime equipment, port equipment and shipbuilders and shipyards.

Because of its greatly expanded scope, the Exposition has been moved down from the smaller third floor of the New York Coliseum to the first floor, which is the largest floor of the Coliseum. According to Mr. **Chaitin,** he expects the number of exhibitors for the coming Exposition to be double that of the exhibitors at the 1st Containerization Exposition with a similar increase of visitors expected to attend.

Additional information on the Exposition can be obtained from Irwin I. Chaitin Associates, 1601 West Lafayette Boulevard, Detroit, Mich. 48216.

San Diego Section Discusses Model Tank Wave Testing



Principals at the San Diego meeting were, (l to r): **G. N. Carpenter,** San Diego Section, chairman; **T. S. Hand,** Section papers chairman, and **R. M. Hopkins,** author.

"Implementation of Random Waves for Ship Towing Tests" was the technical paper presented to the members of The Society of Naval Architects and Marine Engineers, San Diego Section, at the March dinner meeting. Making the presentation was, **Richard M. Hopkins,** Marine Technology Center, General Dynamics/ Electric Boat.

The author pointed out the fact that the naval architect has always been confronted with the problem of ocean waves. From earliest times he has been concerned with the survivability of his ships in the worst of storms and ensuring that they can complete their scheduled voyages through lesser conditions with minimum delay, damage, and passenger discomfort.

"The sailing ships generally operated in following seas, whereas the trend since the advent of the steamship has been one of gradually increasing power and speed capability into head seas. So today, in many cases, the designer's objective is a design which can maintain speed without slamming, shipping water, or incurring excessive accelerations.

"More recently, the naval architect has also been charged with minimizing the motions of offshore drilling platforms as the movement to tap the reservoirs of the continental shelves gains momentum. These design tasks are very complex, and while conputers are beginning to contribute to their solution, for the most part the designer has relied upon the data and insights obtained from model tests in a towing tank.

"Initially, tank models are viewed simply as a means for the prediction of powering requirements in smooth water, but this was gradually augmented by an appreciation of their potential usefulness in a dynamic simulation of the motions of the prototype at sea. The development of this concept first took the form of tests of dynamically similar models in regular waves, i.e., swells. While this was admittedly somewhat artificial, it clearly demonstrated the fallacy of designing purely for low smooth-water drag.

"Then in 1953, **M. St. Denis** and **W. J. Pierson,** introduced a major improvement in the realism which could be achieved in towing tank in waves. Prior to this paper, naval architects had viewed the storm sea as a process of rather chaotic and incomprehensible disorder. Regular wave tests were obviously a rather artificial reproduction of a sea, but they had reproduced many important effects, and upon what basis could one attempt to do better? The paper brought out the order that lay behind the apparent disorder in the concept of the ocean wave spectrum, and showed that through its use a random sea could be reproduced in a towing tank. Thus the entire model-sea system could now be more dynamically similar to full-scale conditions than ever before. In the following years, refinements and applications of these notions—of the statistical treatment of ocean waves, and of the forces and motions arising from operations in them, have developed to the point that as **W. H. Michel** states, '. . . we are on the threshold of complete acceptability for valid engineering application to all types of seagoing vessels, in all ocean areas.' "

During the business portion of the meeting, the nominating committee recommended nominees to be included in the ballot to elect Section officers for the upcoming year beginning May 1. Nominated were **John Angles,** of National Steel and Shipbuilding Co., for chairman; **Charles Sinclair,** naval architect for vice-chairman; **Tom Hand,** naval engineer for secretary-treasurer, and **Bob Reisner** to fill the vacancy on the executive committee.

Union Barge Services To Include Tampa, Fla.

Union Barge Line Corporation, Pittsburgh, Pa., has been granted authority by the Interstate Commerce Commission to extend its common carrier service from the Ohio River and certain tributaries to Tampa, Fla.

By utilizing river-gulf covered hopper and deck barges, industry will be able to make shipments between the Ohio River area and Tampa without delays for transfer of cargo to deep-water barges.

Union, a subsidiary of Dravo Corporation, Pittsburgh, provides transportation services throughout the entire Ohio and Mississippi River Systems, the Gulf Intracoastal Waterway and connecting waterways.

One of the leading carriers on the nation's inland waterways, Union Barge Line maintains a fleet of towboats with a total thrust of nearly 39,000 hp. Its covered and open barges provide a combined single-load capacity of 378,000 net tons and its tank barge fleet—one of the largest in the nation—has a combined single-load capacity of 35,700,000 gallons.

In addition to maintaining headquarters in Pittsburgh, Union Barge Line has district offices in Houston, Memphis, New Orleans, New York and St. Louis. A subsidiary, Southern Transfer Company, operates a storage and transfer terminal in Memphis.

Sewart Seacraft Builds And Delivers Eight Crewboats In Two And One-Half Months

Sewart Seacraft of Berwick, La., recently announced that during the period of January 1 to March 15, 1969, the firm completed construction and delivered eight crewboats. These boats ranged in length from 65 feet to 95 feet. All but one of the crewboats were constructed of aluminum.

At the present time, Sewart Seacraft has a large number of boats under construction for various owners.

The crewboats delivered in the first two and one-half months of this year were: one 65-footer (steel) for Russell Templet; one each 65-footers for **Paul Haines, Norman McCall** and **Lobart Broussard,** a 95-footer for Maritime Services, two 85-footers for Tidex, Incorporated, and one 85-footer for Slater Boat Service.

Newfoundland Marine Delivers First Ship Built In New Yard

Stern trawler Atlantic Carol ready for christening on the Syncrolift at Newfoundland Marine Works Limited.

The first ship to be built in the new shipyard of Newfoundland Marine Works Limited, Marystown, Newfoundland, has been delivered to the owners, Atlantic Sugar Refineries Company Limited. The stern trawler was christened the Atlantic Carol in February by **Mrs. Violet Martin,** mother of **Charles Martin,** manager of Atlantic Fish Processors Co. Limited.

The Atlantic Carol was christened while in position on the Syncrolift, drydocking and transfer system, which was installed in the new yard for drydocking and launching vessels.

The vessel is 140 feet long between perpendiculars, has a beam of 30 feet 6 inches and a molded depth of 19 feet 3 inches. She is powered by an Industrie 1,300-hp engine and developed a speed of 13.6 knots on sea trials.

Auxiliary machinery equipment on board consists of a D330 Caterpillar diesel engine driving on ACEC emergency generator, a main ACEC a-c generator and d-c generator is driven off the main shaft by pulleys, V belts and a lay shaft.

Electronic equipment includes a Decca 202 radar, a Decca RM314B radar, Marconi CN 86 and CH 25. Navigation equipment consists of a Decca navigator, loran, Simrad echo sounders and an Apelco RDF set. An Arma Brown gyro and autopilot complete the navigation equipment.

The windlass, towing winch and steering gear were supplied by Bruxelles, and the c-p propeller and shafting by Lips.

All electrical cabling and installation was subcontracted to Bedard-Girard who have a branch operation in the shipyard.

The Atlantic Carol joins a fleet of eight sisterships and will be followed by the Atlantic Margaret which Newfoundland Marine Works Limited expects to complete this month.

A.C. Hoyle Co. Names Veselik V-P Marine Div.

A. C. Hoyle, president of A. C. Hoyle Company, Iron Mountain, Mich., has announced that **Charles F. Veselik** has been appointed vice-president of the Marine Division of the company.

Mr. **Veselik** graduated from Michigan Technological University in 1956 with a B.S.E.E. degree, after completing a tour of duty with the U.S.A.F. He was employed by Remington Rand Univac, St. Paul, Minn., and prior to joining A. C. Hoyle Company in 1964 was an electrical maintenance and design engineer at Kimberly Clark Corporation, Niagara, Wis.

A portion of his new duties will be exploring new products to supplement the existing line of equipment. The company was chosen recently to supply the electro-hydraulic mooring winches for eight tankers building at Bethlehem Steel Corp., Sparrows Point, Md., and is also involved in design work for an anti-submarine warfare system.

Bethlehem Appoints Steele Chief Engineer In New Products Div.

The appointment of **James E. Steele** as chief engineer in the new products and product design and development division of the engineering department has been announced by **Richard M. Hurd,** vice-president, Bethlehem Steel Corporation, in charge of engineering.

Mr. **Steele,** presently assistant to the chief engineer in the division, is succeeding **F. Edward Fahy,** whose retirement has been announced.

A native of Bellmore, N.Y., Mr. **Steele** was graduated from Webb Institute in 1941 with a bachelor of science degree in naval architecture and marine engineering. He has also taken post-graduate work in philosophy, psychology and the sciences.

He was first employed by Consolidated Steel Corporation in various engineering capacities from 1941 to 1946, and then joined Pennsylvania Shipyards in its Beaumont, Texas yard. Continuing with the Beaumont yard when it became part of Bethlehem Steel the following year, he was subsequently appointed chief of design.

In 1958 he was transferred to the central technical division at Bethlehem's former Quincy, Mass., shipyard, where he served consecutively as assistant project manager and chief engineer in the nuclear power division and assistant naval architect in the ship design division.

In 1964 he was transferred to the home office, first as special engineer in fabricated steel construction, then as design engineer in the product engineering section of the research department. In 1967 he was named consulting engineer in the newly formed engineering department. He was appointed last year to the position of assistant to the chief engineer in the new products and product design and development division of the engineering department.

Mr. **Steele** is a member of The Society of Naval Architects and Marine Engineers, American Society of Civil Engineers, American Iron and Steel Institute, American Welding Society and Marine Technology Society. He holds five U.S. patents in marine equipment. He is also the author of several technical papers on shipbuilding and offshore drilling platforms.

Matson's container ship, the S.S. Pacific Trader

Kings Point Fund Elects Yocum President

James H. Yocum

James H. Yocum, vice-chairman of the board of trustees of the Penn Square Mutual Fund of Reading, Pa., has been elected as president of the Kings Point Fund, Inc., it was announced by the United States Merchant Marine Academy Alumni Association of Kings Point, N.Y.

Mr. **Yocum,** who was a graduate of the academy in 1947, succeeds **Theodore L. Kingsley** of Continental Oil Co. Mr. **Yocum** is also vice-president, secretary, and a director of Yocum Brothers, Inc. of Reading, and a director of Kent Industries, Inc. of Kent, Ohio.

As president of the fund, Mr. **Yocum,** along with the board of trustees, will be responsible for raising and administering monies to assist the academy in areas not provided for by congressional maritime training appropriations.

Hull Inspection Firm Formed In Houma, La.

The firm of G. and W. Divers Inc., a company specializing in marine salvage and hull inspection work, has begun operations at 810½ Magnolia Street, Houma, La.

John L. Gray is serving as president and **Phillip Watson** is secretary-treasurer of the diving firm.

Raytheon's Ray 1275 A/B is an ultra-reliable, super-selective, single sideband radiotelephone with a whale of a reach.

You know how much concentrated power is packed into single sideband. You know about the quality and reliability of Raytheon products. Put 'em together and you have the mighty 200-watt PEP output Ray 1275 A/B—choice of commercial skippers for optimum communications day and night. For details write: Raytheon Marine Products Operation, 213 East Grand Avenue, South San Francisco, California 94080

How does that grab you?

RAYTHEON

National Steel Launches USS Frederick—Third Of 17 LST's Building At NASSCO

Principals at the launching of the USS Frederick were, left to right: Vice Adm. **J. V. Smith,** USN, commander, Amphibious Force, Pacific Fleet; Capt. **John M. Danielsen,** USN, force chaplain, Amphibious Forces, Pacific Fleet; the Hon. **Charles McC Mathias Jr.,** U.S. Senator, Md.; **Mrs. Kleber S. Masterson Jr.,** matron of honor; **Mrs. Kleber S. Masterson,** sponsor; the Hon. **J. Glenn Beall Jr.,** U.S. Congressman, 6th District, Md.; Rear Adm. **Norbert Frankenberger,** USN, commander, San Francisco Bay Naval Shipyards; Vice Adm. **Kleber S. Masterson,** USN, director, Weapons Systems Evaluation Group, Department of Defense; **John V. Banks,** NASSCO's executive vice-president, and **Charles Collins,** president, County Commissioners, Frederick, Md.

The USS Frederick (LST-1184) tank landing ship, was recently launched at Ways No. 1 at National Steel and Shipbuilding Company, San Diego, Calif. Immediately following the launching, the keel was laid for the USS San Jose (AFS-7). As the graceful new ship slid into the water to the tune of Anchors Aweigh, several hundred balloons floated up from the deck.

Mrs. Kleber S. Masterson, wife of Vice Adm. **Kleber S. Masterson,** USN, director, Weapons Systems Evaluation Group, Department of Defense, sponsored the new ship. She was assisted by her daughter-in-law, **Mrs. Kleber S. Masterson Jr.,** a resident of Coronado, who served as matron of honor.

Others on the launching program were the Hon. **J. Glenn Beall Jr.,** (U.S. Congressman, 6th District, Md.); the Hon. **Charles McC Mathias Jr.,** (U.S. Senator, Md.); the Hon. **John E. Derr,** Mayor of Frederick, Md.; Rear Adm. **N. Frankenberger,** USN, Commanding Officer, San Francisco Bay Naval Shipyards; Capt. **John M. Danielsen,** USN, Force Chaplain, Amphibious Force, Pacific Fleet; **John V. Banks,** NASSCO executive vice-president, and **John M. Murphy,** NASSCO vice-president-sales.

The Frederick is of a new class of tank landing ships designed to provide, under assault conditions, the fastest and most efficient means of landing tanks, artillery and combat vehicles. The Frederick will be 522 feet long, have a 69 foot beam, and a full load displacement of 8,000 tons.

The Frederick is the third of 17 new-design LST's under construction at NASSCO.

Within minutes after the Frederick was waterborne, Capt. **A. F. Betzel,** USN, Commander, Service Group One, laid the keel for the USS San Jose, (AFS-7) combat store ship. The San Jose is the seventh combat store ship to be built by NASSCO for the U.S. Navy. Approximately 3,000 people witnessed the colorful launching and keel-laying ceremony.

Dravo To Design And Build 5000-HP Towboat For Ohio Barge Line

Dravo Corporation, Pittsburgh, has been awarded a contract to design and build a 5,000-hp towboat for Ohio Barge Line, Inc., Pittsburgh.

The vessel, to be the most powerful in the company's fleet, will be the sixth towboat built by Dravo for Ohio Barge Line in the past four years. It is scheduled to be delivered in December.

The new vessel will be powered by two 2,500-hp marine turbocharged, aftercooled engines driving through reverse-reduction gears. Overall dimensions will be 168 by 40 by 11 feet.

M. Spalding Toon, president of Ohio Barge Line said the twin-screw, diesel boat will join a fleet of 250 barges, two harbor boats and five 4,000-hp-class towboats built by Dravo.

Ohio Barge Line is one of the largest haulers of iron and steel articles on the inland waterways, and also transports large quantities of dry bulk and liquid commodities.

The new boat's 9-foot-diameter, 5-blade propellers will be made of high-tensile stainless steel. Their speed will be 213 rpm, with top inboard rotation. Operating draft, with 100,000 gallons of fuel oil aboard, will be 8½ feet.

Navigation and communications equipment will include radar, swing indicator, Fathometer and radio telephones. There will be two steering gear systems, one for steering and one for flanking. Living and sleeping facilities will accommodate 14 persons.

AEIL Appoints Guido Assistant Vice-President

John W. Guido has been appointed assistant to **Dennis A. Meenan,** vice-president for freight traffic of American Export Isbrandtsen Lines, it was announced.

Mr. **Guido** joined American Export Lines in 1948 and served in various freight traffic and sales positions. Most recently he was assistant to the general freight traffic manager.

He was born in North Bergen, N.J., and attended school in Union City.

Mr. **Guido** is a member of the Foreign Commerce Club of New York and the National Defense Transportation Association and is active in the scouting program in North Bergen. He is a veteran of two years' service in the United States Marine Corps.

Land-Bridge Elects George W. Anderson Chairman Of Board

The election of Adm. **George W. Anderson,** USN (ret.) as chairman of the board was announced by The Land-Bridge Corporation, 11 Broadway, New York, N.Y. 10004.

Adm. **Anderson** served as chief of Naval Operations and as chairman of the Joint Chiefs of Staff, and was United States ambassador to Portugal.

The Land-Bridge Corporation was recently established in New York to develop the transportation of commercial cargoes in containers between the Far East and Europe using the United States as a 'land-bridge', as a shorter and superior route than the Suez or Panama Canals.

Zecharia Sitchin, president of Intercontinental Trailsea Corporation, is serving as president of The Land-Bridge Corporation and **James R. Anderson** (no relation), president of Anderson Commercial Corporation, is the vice-president.

The board of directors, in addition to the above-named officers, includes **Isaac Charchat,** president of United Cargo Corporation; **Kenton R. Cravens,** chairman of the executive committee, Mercantile Trust Company of St. Louis, and **Maxwell M. Rabb,** counsel to Stroock & Stroock & Lavan.

ITT And Decca Ltd. Reach Agreement On Two Decca Groups

International Telephone and Telegraph Corporation and Decca Ltd., have announced that agreement had been reached under which ITT would purchase Decca Systems, Inc., and a half interest in Decca Radar, Inc.

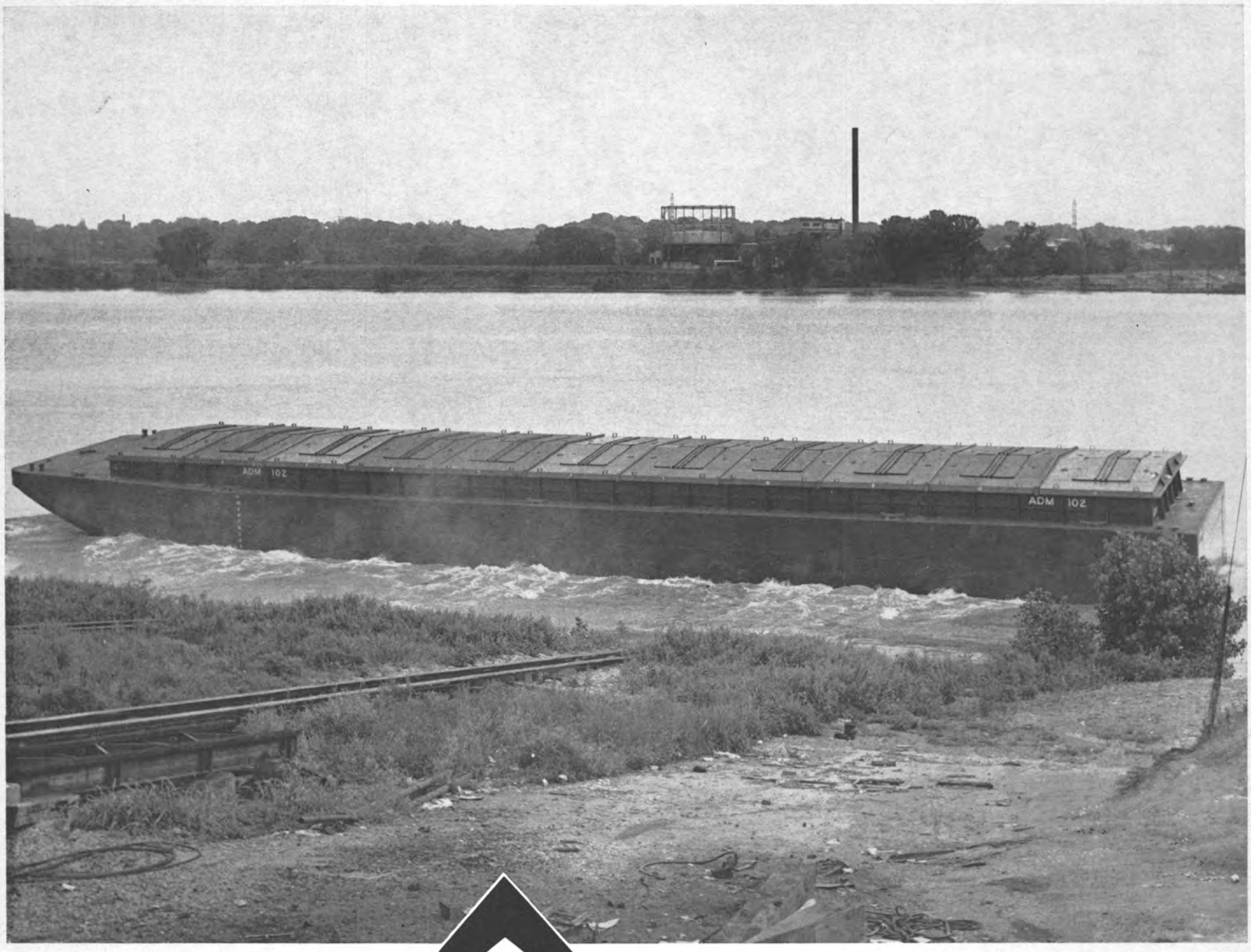
Decca Systems, Inc., is the U.S. distributor of the air navigation products of The Decca Navigator Company Ltd. of London. It also does some manufacturing under license from Decca.

ITT is buying voting shares in Decca Radar, Inc., equal to the number held by Decca. The main business of DRI is the distribution in the U.S. of marine navigation products of the Decca Navigator Company Ltd. and Decca Radar, Inc.

Under a long-term license agreement DSI, to be renamed ITT Navigator Systems Inc., will continue to market the air navigation products of the Decca Navigator Company Ltd., both by U.S. manufacture and by importation from Decca. ITT Navigator Systems Inc. will also have manufacturing rights for the United States for Decca Navigator marine products.

DRI will be renamed ITT Decca Marine Inc. and under long-term distribution agreements will continue its present activities and also intends to distribute in the U.S. certain marine products of ITT.

HARBORMASTER UNITS PROPEL OFFSHORE WORKOVER RIG—Ranger I, owned and operated by Walker-Huthnance and recently completed at Bethlehem Steel Corporation's Beaumont yard, is self-propelled by two 500-hp Murray & Tregurtha Model F7RP-379 Cat powered Harbormaster units. Complete remote control and alarm systems assure precise control of the vessel while underway and during the critical positioning around the jacket-type well structures to be serviced. The Harbormasters were sold through Murray & Tregurtha's Gulf Coast representative, W. R. Henderson & Co., of Houston.



ADM

needed high-capacity barges for its fleet

. . . they selected America's largest inland shipbuilder

Archer Daniels Midland Company selected Jeffboat to design and build thirty new jumbo covered hopper barges. These vessels feature covers adapted for grain handling and are Jeffboat-rugged for years of heavy-duty service. Jeffboat is fully equipped and experienced to handle your special marine requirements, too—design, construction or repair. Call us. (812) 283-3551. Jeffersonville, Indiana 47130.

JEFFBOAT

A division of Texas Gas Transmission Corporation

American Trading Plans Maritime Industry Expansion —Robert Ihrie Named VP

Robert Ihrie has recently joined American Trading and Production Corporation in Baltimore as a corporate vice-president. Among his responsibilities, he will be analyzing opportunities for expansion in the marine industry, particularly in U.S.-flag shipping.

American Trading and Production Corporation is a well-known operator of oceangoing tank vessels, its fleet having been engaged for many years in carrying crude petroleum, refined petroleum products, grain, molasses, and specialty products to domestic and foreign ports in all parts of the world.

Before joining American Trading and Production Corporation, Mr. **Ihrie** had been associated with Standard Oil Company (New Jersey) and its affiliates, in various executive capacities for 16 years, and served with the State Department in Washington, D.C., from 1962 to 1964 as acting deputy administrator of the Agency for International Development. Following his State Department service, Mr. **Ihrie** was vice-president of Lippincott & Margulies, Inc., industrial designers and marketing consultants.

In addition to marine operations, Mr. **Ihrie** will be concerned with various other activities at American Trading and Production Corporation, including corporate expansion and diversification. American Trading also engages in exploration and production of crude oil and gas, manufacture of communications equipment, manufacture of kitchenware and giftware, and development and operation of commercial real estate properties on a national scale. Additionally, the company has important holdings in major oil companies, as well as substantial interests in banking and insurance institutions.

B & R Tug Merged Into PAC Fleet

B & R Tug and Barge, Inc., with headquarters in Kotzebue, Alaska, has joined PAC's far-flung complex of companies, **Mrs. Edith R. Bullock,** president of B & R announced.

Pacific Inland Navigation Company, Inc. (PAC), specializes in shallow draft shipping and cargo handling in Alaska, along the Pacific Coast, on the Columbia River and in Southeast Asia.

The B & R Tug and Barge will become a wholly owned subsidiary of Pacific Inland on approval of the Interstate Commerce Commission, Federal Maritime Commission, and the Alaska Public Service Commission.

Mrs. Bullock said, "What this merger means to our company is the tremendous growth possibilities, both in terms of geography and facilities. PAC's many years' operations along the DEW Line and recently in support of oil exploration on the North Slope, augmented by our equipment and experience, put us in a position to offer Alaska industry a systems approach to any transportation problem.

"It will enable us to better serve our customers in Alaska by making available the Arctic knowledge of the B & R and Alaska Barge and Transport, backed up by PAC's combined resources, tug and barge fleet of specialized equipment."

Mrs. Bullock was elected to the board of directors of PAC and will also assist in the management of the companies in an advisory capacity. **Ray Heinrichs** will remain operations manager of the B & R in charge of its lighterage, river and coastwise tug and barge fleet based at Kotzebue.

Mrs. Bullock also announced the opening of an office at 6th and "I" Streets in Anchorage to coordinate PAC's expanded operations in Alaska.

Unique Car Carrier Delivered By Mitsui For Coastal Trade

Aoi Maru can carry 737 Toyopet cars. The 380-foot 4-inch vessel has a beam of 53 feet 2 inches, molded draft of 16 feet 5 inches. It is equipped for stern loading.

Mitsui Shipbuilding & Engineering Co., Ltd., recently delivered at its Fujinagata Works the 2,600-gt car carrier, Aoi Maru, to her owners, Y.S. Nearseas Line Co., Ltd., a subsidiary of Yamashita-Shinnihon Steamship Co., Ltd.

This well-designed roll-on/roll-off type car carrier, to be used mainly for coastal trade, will cut the present sailing time of two and one-half days from Nagoya to Tomakomai in Hokkaido to one and a half days.

To permit the loading of as many cars as possible, a total of four decks are built on the weather deck in addition to three decks within the hull. As a result, the ship can carry a total of 737 cars of the Toyopet Crown class. To ensure stability of the ship, a quantity of fixed ballast has been provided in addition to water ballast tanks.

Besides passenger cars, the ship can carry large and medium-sized buses and other different types of vehicles at one time. To facilitate the drive-in loading and unloading of cars, the ship has two ramps in the stern and two or more between each deck. A total of 14 sets of 7.5-hp motor driven blowers are provided to exhaust the automobile gases.

The two sets of Mitsui B & W diesel engines can be remotely controlled from either the bridge or the control station in the engine room. With a total of 11,800 bhp, the ship has a service speed of 19.5 knots.

Katy Industries To Acquire Main Iron

An agreement in principle to acquire the Main Iron Works of Houma, La., has been made by the Katy Industries, Inc., of New York, owners of the Missouri-Kansas-Texas Railroad. Main Iron Works is engaged in construction of tugboats and the repair of barges and other marine equipment.

Atlantic Richfield Announces Top-Level Appointments In Supply And Transportation

The Atlantic Richfield Company has announced top-level appointments in its supply and transportation department. The appointments, announced by **John W. Gendron,** vice-president in charge of supply and transportation, include combined operations of Atlantic Richfield and Sinclair Oil Corporation which were merged March 4.

The action followed by four days announcement of the appointment of **J. S. Morrison,** formerly vice-president of transportation, supply, and distribution of Sinclair, as vice-president of supply and transportation operations.

Included in the latest appointments were:

R. H. Lynch, from eastern area manager, to general manager, supply and transportation-eastern area, with headquarters in Philadelphia.

L. K. Cheney, from western area manager, to general manager, supply and transportation-western area, with headquarters in Los Angeles.

N. M. Smirlock, from manager of evaluation and coordination, to manager, planning and administration, with headquarters in New York.

Capt. **C. C. Shute,** from manager of marine-east, to manager of new marine construction, with headquarters in Philadelphia.

R. E. Howe, from general manager of transportation services of Sinclair, to coordinator-transportation, with headquarters in New York.

R. M. Burton, from manager of crude oil and product supply, to coordinator-crude supply, with headquarters in New York.

R. A. Sanborn, from general manager, products supply of Sinclair, to coordinator-product supply, with headquarters in New York.

Capt. **C. M. Lynch,** from manager of marine operations of Sinclair, to manager of marine operations-eastern area, with headquarters at Atlantic Richfield's marine terminal in Philadelphia.

AEIL Applies To Mar Ad For Sixth Containership

American Export Isbrandtsen Lines has asked the Maritime Administration for construction subsidy on a sixth 860-foot containership in addition to the five for which an application is already pending.

The company indicated it needed the extra 25-knot vessel, along with two of the initial five, to provide weekly service between New York and Northern Europe and the United Kingdom.

The other three proposed vessels, each of which will cost an estimated $21.2-million, would provide containership service to the Western Mediterranean.

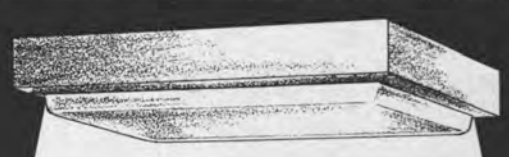
Maritime Research Board Establishes Safety Panel

The Maritime Transportation Research Board of the National Research Council has established an ad hoc panel on ship safety. The panel, under the chairmanship of **Hollinshead de Luce,** will analyze and evaluate the safety performance of the U.S. merchant marine and the adequacy and administrative efficiency of the safety regulatory system under which it operates.

The study will be conducted in two parts. The first, by a team under the direction of **Robert J. Tapscott,** will develop a comparison of U.S. safety regulations, performance, and cost with those of one or more representative foreign countries.

The second study team is headed by **Frank L. Pavlik.** It will concentrate on identifying redundancies in the administration of safety regulations among the various governmental agencies and classification societies.

The safety panel includes the following members: **Hollinshead de Luce** (chairman), manager, ship development and sales, Shipbuilding Division, Bethlehem Steel Corporation; **Maurice J. A. Belhumeur,** manager, ship services, Esso International, Inc.; **Calvin Bourke,** coast director, accident prevention, Pacific Maritime Association; **Theodore J. Chwirut,** chief, division of small ships, Office of Ship Construction, Maritime Administration; **Stanley J. Dwyer,** director of ship design, Marine Department, Gulf Oil Corporation; **Harrison Glennon Jr.,** president, Commercial Steamship Company, Inc., subsidiary of Moore and McCormack Company, Inc.; **Edward V. Lewis,** director of research and research professor, Webb Institute of Naval Architecture; Capt. **William P. O'Brien,** manager, safety engineering, Sea-Land Service, Inc.; **Frank L. Pavlik,** chief naval architect, Sun Shipbuilding and Dry Dock Company; Rear Adm. **H. C. Shepheard,** USCG (ret.); **Eugene P. Spector,** research director, National Maritime Union of America; **Robert J. Tapscott,** vice-president and chief naval architect, George G. Sharp, Inc.; **Thomas M. Torrey,** director, American Institute of Marine Underwriters; Comdr. **George E. Walton,** USCG, planning and special projects staff, Office of Merchant Marine Safety, U.S. Coast Guard Headquarters, and **Robert T. Young,** senior vice-president, American Bureau of Shipping. **John H. Leeper** of the MTRB staff is project manager for the study.



Dwyer And Dawson Appointed Vice Presidents By Amercoat

R. J. Dwyer

R. F. Dawson

C. G. Munger, president of Amercoat Corporation, Brea, Calif., has announced the appointment of **R. J. Dwyer** to the newly-created position of vice-president-operations. At the same time, Amercoat has named **R. F. Dawson** as vice-president-marketing.

In his new position Mr. **Dwyer**, who has been Amercoat's secretary and house counsel, has responsibility for all operations-oriented activities, including marketing, manufacturing, engineering, and research and development. Before joining Amercoat he served with distinction for 15 years as secretary and director of administration for Consumers Company Division of Vulcan Materials Company in Chicago. Earlier, he was vice-president and director of the First National Bank of Mundelein, Ill. He holds a BS degree in accounting and economics from Loyola University, Chicago, and an LLB from Chicago Kent College of Law.

As vice-president-marketing, Mr. **Dawson** is now in charge of all Amercoat marketing and sales activities throughout the United States. He had been general manager of Amercoat of Canada Limited, Amercoat's Canadian affiliate and, earlier, manager of sales manpower development. He also held a number of important positions before joining Amercoat. He was vice-president of marketing, Dyna Therm Corporation; general sales manager, Fortifiber Corporation; regional sales manager, Pabco Products; division manager, U.S. Gypsum Company, and director of marketing, Metal-Cal Division of Avery Products Corporation.

Amercoat is the manufacturer of corrosion-resistant products including: Amercoat protective coatings; Nukem cements, grouts and membranes; Bondstrand and du Verre fiberglass-reinforced plastic pipe, tanks and fittings; Amer-Plate PVC sheet lining materials, and Nob-Lock PVC waterproofing system.

Amercoat manufactures and distributes nationally and internationally. Manufacturing facilities within the United States are located in Brea, Calif.; Buffalo, N.Y., and Ardmore, Okla. Amercoat also operates facilities in Canada, Mexico, Holland and other key areas. Sales offices are located in major cities throughout the U.S.

Davie Shipbuilding Tugs On Boards At Marine Design

Joseph F. Hack, president of Marine Design Incorporated, New York naval architects and marine engineers, has announced that the firm is currently designing a 110-foot twin-screw tug for Davie Shipbuilding Limited of Lauzon, Quebec. The tug will be powered by a pair of 16-cylinder General Motors, Electro-Motive Division, diesel engines, each rated at 1,900 shp continuous duty, giving the tug a total shaft horsepower of 3,800.

The number of tugs to be built from this design has not been determined but several will be constructed. They will be used for docking purposes and coastwise towing.

Weser Builds Gears For 16,000-HP Tugs

The A.G. "Weser" shipyard in Bremen, West Germany, recently delivered four marine reduction gears and four Vulcan couplings to be mounted in the two most powerful tugboats ever built. Both tugs are under construction at the Schichau shipyard in Bremerhaven and will be delivered later this year to Hamburger Bugsier-Reederei und Bergungs-AG, Hamburg.

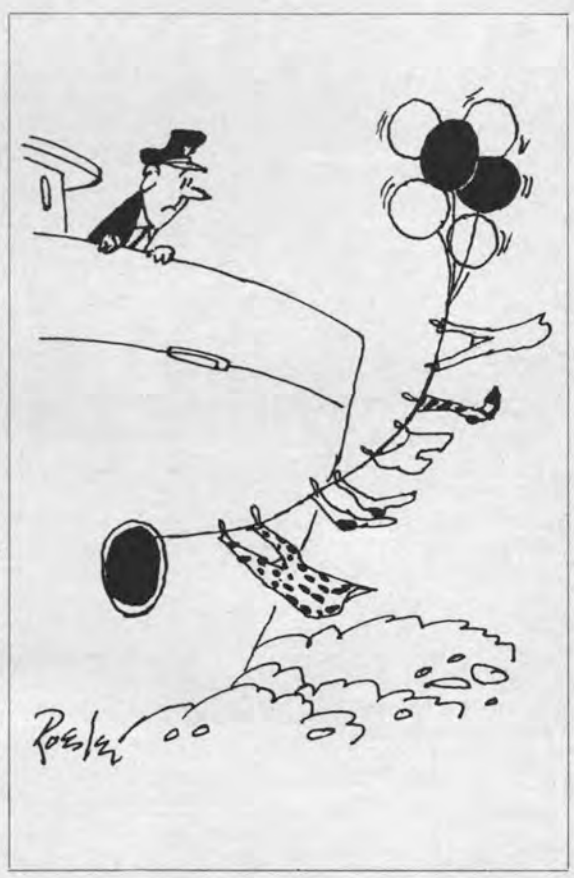
Each tug will be powered by two 8,000-hp diesel engines.

The gearing and the hydraulic coupling forms one complete unit. The main characteristic of the gears is that the main tooth wheel rim is welded to the main wheel. This combination of reduction gears and Vulcan couplings is especially adaptable to tugboats, icebreakers and military vessels and any other vessel with high-power diesel-engine plants.

Since 1924, A.G. "Weser" has manufactured marine reduction gears for single and multiple engine installations up to the highest power ratings for all types of vessels. More than 600 gear sets have been delivered so far. The firm's gears may be combined with every type of coupling: hydraulic coupling, high-elasticity coupling, electro-magnetic coupling or multi-plate clutch.

The Vulcan hydraulic coupling consists of a dished, driving primary wheel, a driven secondary wheel and a surrounding cover. The two wheels are positioned close together without mechanical connection. The hollow space formed between the two wheels, which have radial vanes, is filled with oil. When the primary wheel is set in motion, centrifugal force causes the liquid to flow, thus bringing about movement of the secondary wheel. Transmission of torque from the primary wheel to the secondary wheel is effected by means of a turbulence ring incorporated for the first time in this design.

This construction provides reliability, does not need special maintenance, has a long service life and ensures ease of operation. Its efficiency is 98 percent and slip control to reduce the propeller speed is possible. The Vulcan coupling has special advantages for navigation in ice or other extreme conditions—there is a slip of 100 percent available for a short period.



Propellers, Inc. Supplying C-P Propellers And Thrusters For Great Lakes Ore Carrier

Propellers, Inc., Hoboken, N.J., has been named prime contractor to supply two controllable pitch propellers and bow and stern thrusters for a 1,000-foot Great Lakes ore carrier under construction by Litton Industries.

The propellers, 18 feet in diameter, were designed by Escher Wyss of Ravensburg, West Germany, and will be manufactured by Avondale Shipyards of New Orleans, La. The four thrusters are the LMG "Tornado" design and are also being manufactured by Avondale.

Powered by four 3,500-hp diesel engines, the giant carrier was designed by Litton Industries' Marine Consultants and Designers of Cleveland, Ohio. Two Litton shipbuilding divisions—the Ingalls Shipbuilding division of Pascagoula, Miss. and Erie Marine division of Erie, Pa.—are teaming up to produce the carrier for Bethlehem Steel Corporation.

In Pascagoula, Ingalls is constructing the ship's 182-foot bow-stern section, scheduled for completion in the spring of 1970. When complete, the section will sail under its own power to Erie where it will be assembled to an 818-foot mid-body section under construction by Erie Marine.

The new ore carrier will be the largest ship ever built for operation on the Great Lakes. It will be capable of transporting 52,300 gross tons of iron ore pellets, and will be equipped with the most advanced systems for cargo handling.

Norwegian American Line Names Resident Director

Norwegian American Line has named a new resident director for North America with the appointment of **Fin Odd.** He has been named to succeed **Christian J. Mohn,** who has retired.

Mr. **Odd** has been affiliated with the line since 1943, serving as a vice-president and deputy director, while Mr. **Mohn** has been head of the company's organization in this area since 1947. Mr. **Mohn** will continue to serve the company as a consultant.

The shipping line also announced the appointment of **Patrick Kirkpatrick** as passenger traffic manager, succeeding **Joseph L. Granquist,** who resigned, and the appointment of **Walter R. Kyle** as treasurer. The last named takes over the job of **Julius E. Sigmond,** another retiree, who was with the line since 1924.

LOG/BULK CARRIER HALO, which was built at Hitachi Zosen's Innoshima shipyard, has been delivered to her owner, Liberian Halo Transports, Inc. The 564-foot 4-inch vessel is built to the shipyard's economical standard design with sufficient stability for deck loading of logs. The 23,547-dwt ship is propelled by a Hitachi B&W 762-VT2BF-140 diesel engine developing 8,400 bhp and giving the ship a service speed of 14.5 knots.

Atco To Represent Dasic Marine Sales

G. C. Grimbilas, president of Atco Marine Corporation, 603 Dean Street, Brooklyn, N.Y. 11238, has announced that they have been appointed representatives of Dasic Marine Sales Ltd. of Romsey, England for the U.S. East and Gulf Coasts.

Dasic Marine Sales Ltd. has pioneered the chemical cleaning of tankers prior to drydocking supervised by their own highly experienced personnel. The supervisory service available world-wide includes cleaning for the upgrading of tankers for oil cargoes and grain.

The complete range of Dasic products including fuel oil treatments, cleaners and degreasers as well as the Dasic Jetstream portable and fixed installation tank washing machines will be handled by Atco Marine Corporation.

Complete stocks of chemicals and machines have been established at strategic points in this area and the U.S. West Coast.

Capt. **W. S. Tennet,** marine manager for Dasic Marine Sales Ltd. in the U.S.A. now makes his offices with Atco Marine Corporation as a resident representative and consultant.

MARINE SALES ENGINEER

Opportunity to join firm representing leading European Marine equipment manufactures. Equipment handled includes main propulsion engines, automation systems, and controls, electrical generators, switchboards, and auxiliaries. Experience in marine field necessary with minimum of 2 years selling experience desirable.

All replies held in strict confidence. Please send resume and salary requirements to:

Box 504 Maritime Reporter/Engineering News
107 East 31st Street New York, N.Y. 10016

FOR SALE OR CHARTER

One deck barge, steel construction, 220′ x 45′ x 11′, 8″ wood protective decking, removable 4½′ bin sides, excellent condition.

NOLAN BROS., Incorporated
800 Builders Exchange Minneapolis, Minn. 55402

14,000 BARREL SELF PROPELLED TANKER

Presently operating East Coast.
Full USCG certificates.
For sale or charter.

Box 503 Maritime Reporter/Engineering News
107 E. 31st Street New York, N.Y. 10016

HOISTS

with 3/60/2200 V Slip Ring Motors

SINGLE DRUM

10′ x 7′	750 HP	300 RPM	(2)
10′ x 7′	1500 HP	600 RPM	(2)
18′ x 10′6″	2500 HP	360 RPM	
18′ x 17′6″	2500 HP	360 RPM	
18′ x 17′6″	3500 HP	360 RPM	

DOUBLE DRUM

10′ x 7′	750 HP	300 RPM	(2)
10′ x 7′	1500 HP	600 RPM	(2)

WRITE FOR DETAILS

H&P EQUIPMENT CO., INC.
Box 629, Weehawken, N.J. 07087
Phone 201-864-2288

FOR SALE

FERRY CATSKILL

Official Number 223,190. Built 1923 at Staten Island Shipbuilding Company, Port Richmond, N.Y. Steel hull—one deck. Machinery: 3 cyl.T.E.-IHP—1400
Registered Dimensions: approx. 186.9 length, 40.4 breadth, 11.4 depth.
Tonnages: approx. 1554 gross, 1105 net.
The Catskill is located at the Bridgeport and Port Jefferson Steamboat Company Ferry Dock, at Port Jefferson, L.I., New York. The vessel may be inspected by contacting:

Captain Arthur Tooker 102 West Broadway
Port Jefferson, L.I., N.Y. 11777 Phone: 516 HR 3-0286

SOLD Through your CHANDLER

M&H ROLLED ZINC

99.99+% pure

ZINC

For Cathodic Protection

Meets Military Spec. Mil-A-18001 (ships)

Anodes • Bars • Circles • Rings • Rods IN STOCK

SMITH and McCRORKEN, Inc.

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

Call WA 5-2171
FOR FAST DELIVERY

ASBESTOLITH®

EST. 1895

Interior DECKING Exterior

FIREPROOF COMPOSITION — **DEX-O-TEX NEO-TEX**

Sales & Installations

ASBESTOLITH MANUFACTURING CORP.

257 Kent Street Brooklyn, N.Y. 11222
Tel: EVergreen 9-5550

TURBINES

TURBO-GENERATORS

With A.B.S. Certificates

G.E. DORV 325	525 KW
G.E. DORV 325	300 KW
G.E. DS 60	300 KW
Worthington	300 KW
De Laval	300 KW
Hendy (Terry Design)	300 KW
Westinghouse	300 KW
Westinghouse	250 KW
Worthington	150 KW
Westinghouse CA 20	100 HP
Westinghouse CA 20	50 HP
Westinghouse HP & LP Turbine	4400 HP
Allis Chalmers HP & LP Turbine	4400 HP
G.E. Main Turbine Rotor T2	6000 HP
G.E. HP & LP Turbine C2	6000 HP

Complete Inventory List Free Upon Request

NICOLAI JOFFE CORPORATION

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

WHIRLEY CRANES

2—Washington Whirley Cranes 45-ton model 28-105, 30′ track gauge—55′ track to boom pin, 150 HP main motor 22′ portal clearance—In Portland (with or without Diesel Power).

2—American R20 Whirleys 45-ton capacity, 100 HP main motor, Slewing motor 40 HP, Travel 10 HP, 20′ track gauge. Now working in SF at Bethlehem Yard on Bart Project. 65′ from track to boom pin.

3—American R10 Whirleys 25-30 ton capacity, 67′ from track to boom pin. 20′ CC of rails. 75 HP main motor, 20 HP Slewing motor, now working in SF on Bart Project.

2—Washington 28-175-100—built 1962, 200 HP main motor. 50 tons at 60′. Latest model. Excellent condition.

1—Clyde 24-E-85, 50 ton capacity. 20′ CC of track. Now working at our shipyard in Oakland.

1—New 50 ton American Whirley Barge and Crane, 150x50x12, fully A.B.S.

2—American Model 3530, capacity 100 tons, mfg. 1959.

Write or Call for prices, etc.

SCHNITZER STEEL PRODUCTS CO.

3300 N.W. Yeon Ave., Portland, Oregon 97210

PHONE: 503-224-4321

CABLE: SCHNITZERBRO
TELEX: WU 36-0144

SPECIAL 12″ SIGNALING SEARCHLIGHTS

New—Unused, General Electric, or Westinghouse, 1000 watt, 115 volts, signaling shutter.

AL EPSTEIN, INC.

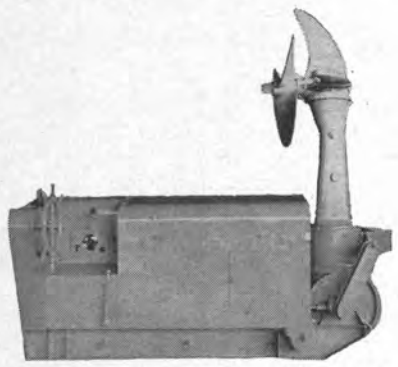
Most anything in Marine Supplies

(504) 525-5526 P.O. Box 51569
1226 St. Thomas St. New Orleans, La. 70150
Telex: 5-8293

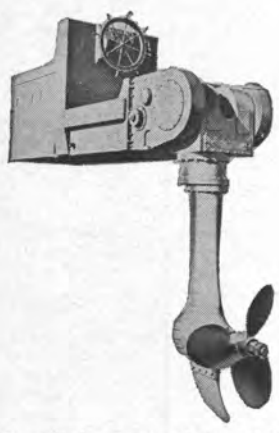
MURRAY & TREGURTHA

DIESEL PROPULSION UNITS

JUST ARRIVED — 7 UNITS



Model 02-D—powered by 6-cylinder G.M. 6-71 diesel—driven through Oliver gear—8708—forward ration 1:1.27—reverse 1:1—3 blade propeller—48" diameter—24" pitch—left hand—manual steering—electric starting. RECONDITIONED—READY TO GO!



1 Model 0-7 unit in stock. Powered by twin GM 6-71 diesels with hydraulic clutch & electric steering. Propeller diam. 64" pitch 48". Tailfin raised & lowered mechanically. 7' from bottom of unit to propeller hub center. Weight about 20,000 lbs. Propeller speed 308 RPM. Unit can develop up to 500 HP. Formerly used on Cargill Grain Co. barge "Carpolis". Actual photo on request. Can be demonstrated running in shop.

THE BOSTON METALS COMPANY

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

FACTORY NEW BERGER

Self - Aligning

MARINE FAIRLEADS

$1175

Model 623—for 1¾" wire. 23" Sheave—shank opening 9½"—4500 lbs.—BASE: 37" long—50" wide—throat 11".

THE BOSTON METALS COMPANY

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

BUSINESS OPPORTUNITY

Successful established multiple Marine Supply Corporation in N. Y. area. Unusual heavy cash position wants to sell, or merge with, or buy company in similar field.

Box 417 Maritime Reporter/Engineering News
107 E. 31st Street New York, N.Y. 10016

6000 TONS

ANCHORS (to 30,000 lbs.) CHAIN (to 6" Dia.) WIRE ROPE (to 3" Dia.)

FACTORY NEW/SURPLUS/USED ABS LLOYDS VERITAS
Steamship—Shipyard—Off Shore Drilling
Mines—Quarries—Marine—Heavy Construction

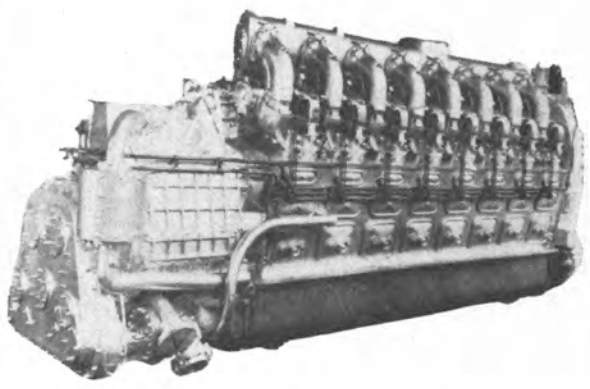
DiMattina Supply Company—MR Andros Ave. at Davidson St.
Mariners Harbor, Staten Island, N.Y. 10303 Tel: 442-3200

DIESEL WAREHOUSE

CLEARANCE

— We're Moving —

GENERAL MOTORS



16-278A DIESELS

1700 HP @ 750 RPM

Large Quantity to Move

COMPLETE INSPECTION INVITED

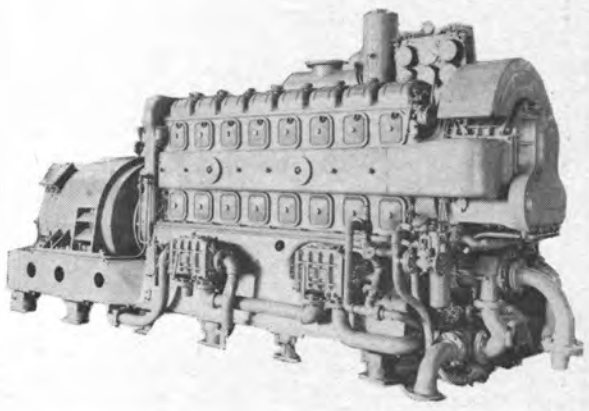
PRICE ~~$9750~~ ?

8-268A DIESELS

500 HP @ 1200 RPM

DRIVING
240 KW 3/60/440
GENERATORS

COMPLETE!
ALL ACCESSORIES



3-268A DIESELS — 150 H.P. @ 1200 RPM

DRIVING 100 KW 3/60/440 GENERATORS
COMPLETE — ALSO D.C. UNITS AVAILABLE

MANY OF THESE ENGINES HAVE BEEN MODERNIZED WITH THE LATEST TYPE PARTS

COME MAKE ANY INSPECTION YOU WISH
All Equipment is Priced to Move!

ALSO AVAILABLE:

FAIRBANKS-MORSE 10 CYL 38D8⅛ COPPER-BESSEMER NORDBERG GM 6-71 LORIMER

THE BOSTON METALS COMPANY

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

NEW YORK OFFICE: 11 Broadway — New York, N. Y. 10004 PHONE: 943-2640

BARGES on the SPOT

For Charter • Steel Deck Barges

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

Also Available:
Hopper—Offshore—Oil & Spud Barges

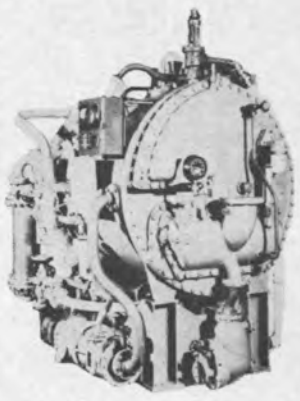
For Sale.
195′ x 35′ x 11′

McDONOUGH MARINE SERVICE

P. O. Box 26206—New Orleans, La.
Telephone: 949-7586 (A/C 504)
Lafayette, La. 234-1052 (A/C 318)

EVAPORATORS

Complete Solo Shell Units
12,000 Gal/Day - Low Pressure



TYPICAL UNIT

Griscom Russel—still aboard "African Enterprise" and "African Endeavor". Solo Shell—two effects in one unit. Complete with all pumps and 230 volt DC motors, salinometer, etc.

THE BOSTON METALS COMPANY

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

3 TON CLYDE

DOUBLE DRUM WINCH

Driven by 10 HP—115 volts DC motor & controls —complete—drums declutchable.

$2250.00

THE BOSTON METALS COMPANY

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

CAST BRONZE

BUILDERS NAME PLATES

Beautiful Dark Patina Background
With Classic Tablet Letters
Polished in Relief

H. LEE & COMPANY
P. O. Box 36252 Houston 36, Texas
Prompt Attention Given to Inquiries

14" & 16"

ALL-BRONZE PORTLIGHTS with deadlights

THE BOSTON METALS COMPANY

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

New Watertight Doors

FOR IMMEDIATE DELIVERY

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

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

THE BOSTON METALS COMPANY

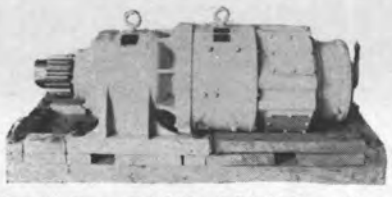
313 E. Baltimore St. Baltimore, Md. 21202
LExington 9-1900 ELgin 5-5050

NOTICE!

DREDGES — CONTRACTORS
OLD FAITHFUL IS BACK!!!
NEW 20 HP 230 VOLT D.C.

GEARHEAD MOTORS

30 R.P.M. OUTPUT



Star Electric Co.—20 HP—230 VDC—73 amps—1200 R.P.M.—compound wound—1 hr. duty—55° rise—with reduction gear 41.2:1—type 5R3165.

$1450.00 EACH

THE BOSTON METALS COMPANY

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

NEW – UNUSED 10 H. P. REVERSING CAPSTANS

Shipboard Use
Duty 10,000 lbs @ 60 FPM

MOTOR: 10 HP—totally enclosed—fan cooled—continuous duty — horizontal flange mounted — special shaft & oil seal fitted—440/3/60—1760 RPM. CONTROL: Marine type water-tight push-button—forward/reverse/stop—watertight starter box—rated for 40 starts per hour—triple pole contactor with silver contacts, thermal overload relay and trip adjustment. DIMENSIONS: Barrel 10" diameter — Flange 10" diameter — approx. 26" wide and 36" long.

6 IN STOCK FOR IMMEDIATE DELIVERY

$1675

THE BOSTON METALS COMPANY

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

LESLIE PUMP GOVERNOR VALVE

New—in original crates. For U.S. Naval Vessels—type CT-HNS-3. For merchant vessels—type CTHS. Size 2". Typical serial 241-423. For immediate delivery.

$495

THE BOSTON METALS COMPANY

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

TRANSFORMERS

15 KVA—3 per bank—450 V primary—117 volt secondary.

$190.00 PER BANK

Also inquire about other sizes: 10 KVA/20 KVA/25 KVA/37 KVA

THE BOSTON METALS COMPANY

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

DUPLEX STRAINERS

in good condition

4" **$349.00**
22" x 3" between mounting holes

2" **$249.00**
15" x 3" between mounting holes

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
LExington 9-1900 (301) ELgin 5-5050

RENT, LEASE OR SALE!

BARGE MOUNTED REVOLVING CRANE 50-Ton capacity, Barge dimensions: 57' wide x 190' long.
CRANES-WHIRLEYS: One American 1956 model R20 HHE heavy duty 50 Ton. One practically new American model 254 capacity 90 Tons at 50', 25 Tons at 140'. One Clyde model 24E 50 Tons at 45'.
CONTINUOUS LIBERTY SHIP DISMANTLING—Marine parts always available.
STEEL BARGES AVAILABLE IMMEDIATELY—180'x42'x12' and 150'x42'x12'—A.B.S. Newly Constructed. OTHER SIZES ALSO AVAILABLE.

SCHNITZER INDUSTRIES
American Ship Dismantlers, Inc.
3300 N.W. Yeon Avenue, Portland, Oregon 97210
Phone: (503) 224-4321 Cable: Schnitzerbro Telex: 503-224-1002
Ft. of Adeline St., Oakland, Calif. Phone: 415-444-3919

LOCOMOTIVE G.E. 80 ton diesel, ICC, good; $19,000.
Whirley gantry yard-dock cranes (10); 15 to 80 tons.
Dredges, hydr. 12" to 24"; 6yd. clamshell dredge.
Self unloading steamships, 5000, 3000 tons, Canada (2).
Locomotives, to 120 tons, diesel. Tug 72' diesel $15,500.
Bridge cranes (2)-300' span, bkt. handling, 10-15 ton.
Coal boat unloading crane, 10 ton clam, 1000 tphr.

For Sale, Contact **H.Y. SMITH CO.**
759 N. Milwaukee St. **Milwaukee, Wis. (276-3830)**

WIRE ROPE TOW CABLES

NEW Navy surplus, 6 x 19, HC, galvanized
1⅝" x 290' open socket each end, $150 ea.
1¼" x 200' closed socket each end, $45 ea.
1¼" x 100' $25; 1¼" x 50'—1¼' x 10' $5.00 ea.

Federal Salvage & Machinery Co.
253 Third Street Chelsea, Mass. 02150

AXIAL FLOW FANS

NEW UNUSED 230 V. D.C.

Navy size A10D2W6—LaDel Co., 10,000 CFM @ 3" S.P. MOTOR: Reliance Motor Co.—7.5/3.1 HP, 230 VDC—1310/1750 RPM. DIMENSIONS: 32⅛" OD—31¼" BC—29¼ ID—40¾" length.

$450.00

Navy size A8D2W5—Buffalo Forge Co.—8000 CFM @ 3" S.P. MOTOR: G.E. 6/1.8 HP—230 VDC—1310/1750 RPM. DIMENSIONS: 30 9/16" OD—29¼" BC—27¼ ID—37¾" length.

$329.50

AF80—Sirocco—8000 CFM @ 2" S.P MOTOR Welco 4/1.9 HP—230 VDC—1310/1750 RPM. DIMENSIONS: 30½" OD — 29¼ BC — 27¼ ID—37¾" length. U.S. Maritime type fan.

$329.50

AF100—Sirocco—10,000 CFM @ 2" S.P. MOTOR: Welco 5/2.2 HP—230 VDC—1310/1750 RPM. DIMENSIONS: 32½" OD—31⅛" BC—29¼ ID—40⅝" length. U.S. Maritime type fan.

$375.00

NEW — UNUSED — 115 V.D.C.

20000 C.F.M. — 115	10000 C.F.M. — 115
16000 C.F.M. — 115	5000 C.F.M. — 115 (explosion-proof)
12000 C.F.M. — 115	4000 C.F.M. — 115

RECONDITIONED — 440 V.A.C.

A1A4W5 to A16A4W5—with starter—440/3/60

1000 C.F.M.	6000 C.F.M.
2000 C.F.M.	8000 C.F.M.
3000 C.F.M.	10000 C.F.M.
4000 C.F.M.	16000 C.F.M.

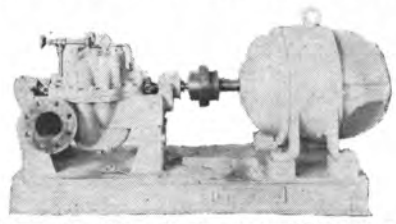
LARGE AXIAL FLOW FANS 30000 C.F.M.

A304W5—25 HP—440/3/60, 30000 C.F.M. @ 3" static; 40000 CFM @ 1" static. I.D. 44¼"

THE BOSTON METALS COMPANY

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

MARINE PUMPS - FIRE - BILGE - GENERAL SERVICE



GENERAL SERVICE BUTTERWORTH & FIRE

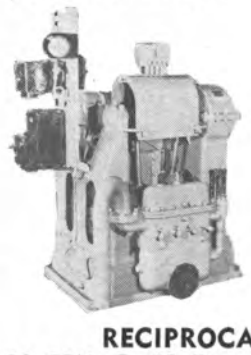
2-Stage 300 GPM @ 339 ft. Mfg. by Gould & Ingersoll-Rand. Bronze—5 x 4—50 HP 230 VDC —2500 RPM—with magnetic starters—reconditioned.

MOORE C2 AUXIL. CONDENSATE

Worthington—1½ UZ-3—20 GPM @ 208'—5 HP—230 VDC—1577/2250 RPM—2½" suction —1½" discharge.

BRONZE FEED-WATER BOOSTER PUMPS

220/237 GPM @ 144' head—2-stage—1750 RPM with 30 HP 440/3/60 motor control & spares. Built for USN.



MOTOR DRIVEN RECIPROCATING BILGE PUMP WITH AIR DOME

RECIPROCATING PUMP

80 GPM @ 60 lbs.—self-priming motor-driven, with air dome. 2-Cylinder—5" bore—8" stroke—4" suction—3" discharge Variable speed 6 HP motor—230 VDC—reduction gear ratio 22:1. German-built—long a favorite on foreign ships for reliability.

$1250.00

NEW ALL-BRONZE BUFFALO PUMP

Fire & General service—550 GPM @ 30 lbs.—14.5 440/3/60 motor—built for USN.

INGERSOLL-RAND FIRE & BILGE PUMP

Self-Priming

200 GPM—bronze—224' head—90/100 lbs fire service—suction lift 23'—3500 RPM. MOTOR: 20 HP—440/3/60/3500 RPM—28 amps—G.E. type KF—frame 326—class B—totally enclosed—Navy Service A — 3½" suction — 3" discharge. PRIMER MOTOR: 1½ HP — 440/3/60/3600 RPM—fan cooled—totally enclosed—2.2 amps. Nash priming pump complete with priming valve. Reconditioned.

$497.50

INGERSOLL-RAND FIRE & FLUSHING PUMP

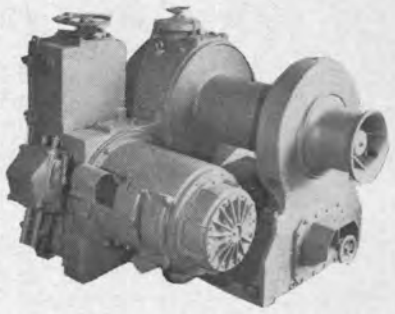
200 GPM—total head 224'—discharge pressure 100 PSI — 3½" suction — 3" discharge — 3500 RPM—bronze construction—flanged. MOTOR: 20 HP — 440/3/60/3600 RPM — G.E. type K.F.—frame 326 — full load amps 28 — fan cooled — ambient 50°C—class B insulation—totally enclosed — Navy Service A. DIMENSIONS: OAL 37¼"—OAW 18 31/32"—OAH 18½"—total weight 1225 lbs. Reconditioned.

$397.50

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
539-1900 301 355-5050

SPECIAL WINCH OFFER



10 A.E.G. Unit-Type Winches—with all controls attached to winch. In very good condition—removed from vessel run for only 1 year. 3-Ton capacity—25 H.P.—230 volts D.C.—Priced to sell!!

$1850 EACH

THE BOSTON METALS COMPANY

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

CARRIER REFRIGERATION UNITS

40-Ton Air Conditioning & Cargo Refrigeration Units

Carrier compressor—model 7G8-EF—freon compressor with manual cylinder cut-out—426 RPM—39.4 tons—suction temp. 45°F—cond. temp.—105°F—35 HP—230 volt DC motor. Complete with motor control—refrigeration condenser—receiver — fittings. 8 Complete units. Dimensions: Compressor 6'8½" long—4' 10½" OAW—approx. 6' high over suction connection. Condenser about 14' long—approx. 12" diameter. Just removed from Grace Line vessels. Excellent for fishing industry, banana boats, air-conditioning quarters, etc.

THE BOSTON METALS COMPANY

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

NEW - UNUSED

1-5/16 ANCHOR WINDLASS

Made by Ideal Electric Co.—with spares. Double wildcat—1-5/16"—15 HP—115 volts DC—1750 RPM—all controls—two outboard gypsies. Wildcats 36" between centers—6000 lb line pull @ 50 FPM. DIMENSIONS: O.A. width over gypsies—84"; OA length 81". Will sell windlass without power if desired.

THE BOSTON METALS COMPANY

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

M.G. SETS

NEW JANETTE 1 KVA SETS

2-Bearing Sets—type D.E.—3L. MOTOR INPUT: 2 HP—115 volts DC—3.5 amps—1800 RPM. OUTPUT: type C.E.I.—120 volts 60 cycle single phase. 8.3 amps—40°C Temp rise—0.8 P.F.

$179.50

UNUSED SURPLUS 1 KVA SETS

INPUT: 1.75 HP—115 Volts DC—17 amps—1800 RPM. OUTPUT: 1 KVA—115 volts—8.7 amps—60 cycle single phase—0.9 PF. Unit is self-excited and will carry load immediately on starting. Regulation ±5%. Complete with magnetic starter & spare parts. Units designed and built to rigid Navy specs. SIZE: 19.5" long—26.5" wide—16" high. Weight 285 lbs. SPARES: 85 lbs. CONTROL: 20"X15"X10"—75 lbs.

$189.50

1.24 KW G.E. MG SETS

G.E. Motor—3 HP—115 volts DC—1800 RPM. OUTPUT: G.E. generator—1.24 KW—1.56 KVA—120/60/1—0.8 PF—14.2 amps—1800 RPM. With spare armature. Overspeed trip on motor side.

$339.50

NEW 0.5 KVA HERTNER SETS

Type CHT-211761. INPUT: Motor 115 volts DC—9.0 amps—1800 RPM—1 HP. OUTPUT: 0.5 KVA—115 volts single phase 60 cycle—4.3 amps—.85 PF.

$127.50

25 KW IDEAL M.G. SETS

INPUT: 40 HP—115 volts DC—290 amps—1800 RPM—frame 445. OUTPUT: Generator 31.5 KVA—25KW—440/3/60—1800 RPM. Control cabinet includes motor starter & generator control.

CONTINENTAL: 3.7 KW—Input: 7½ HP 230 volts DC/28 amps/1800 RPM. Type D-324X—continuous. Output: Generator type DS-324XB 3.7 KW/7.5 KVA/120/1/60—62.5 amps—0.5 PF compound wound.

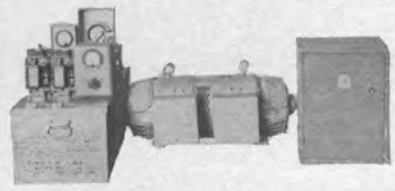
THE BOSTON METALS COMPANY

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

NEW YORK OFFICE: 11 Broadway — New York, N. Y. 10004 PHONE: 943-2640

NEW — UNUSED 3.5 K.V.A.—2.97 KW GENERAL ELECTRIC

MOTOR GENERATOR SETS



G.E. Type CG-21ACR in a single frame. MOTOR: 5 HP—115 V.D.C.—38 amps—3600 RPM. GENERATOR: 3.5 K.V.A.—2.97 KW—115 volts—1 phase—60 cycle—30.4 amps—model 5LY128A5. DIMENSIONS: 30¾" long x 14" wide x 12¾" high. Includes magnetic motor starter—Westinghouse 115 V.D.C.—size 3DC—class 6311-S31—push button station. Voltage regulator: type CG-23ACE——weight about 800 lbs. each. 2 Boxes of spare parts.

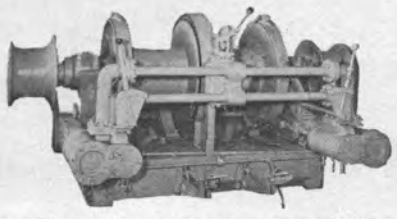
230 VOLT D.C. ALSO AVAILABLE:
Exactly as above, except input is 230 volts DC.

THE BOSTON METALS COMPANY

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

7 x 10 CLYDE DOUBLE DRUM

WINCHES



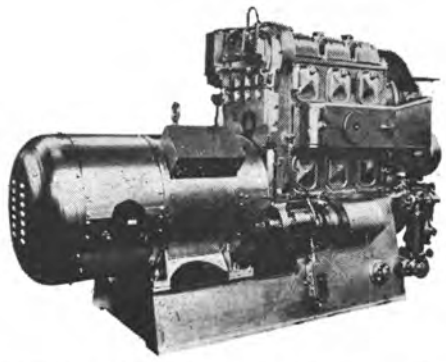
Drum 8500 lbs @ not less than 120 FPM; 13,000 lbs at no specified speed. Gypsy head 22,500 lbs. static pull. Foot brake to hold 17,000 lb. pull. Steam cylinders with standard 250 PSI.
DIMENSIONS:
9' 5¾" wide over winch heads
5' 10½" wide on bedplate
4' 1" deep over bedplate
6' 5" overall—brake pedal, etc.
2" steam—2½" exhaust.
Drums 16" diameter—20" wide—33 13/16" over flanges. Rebuilt by U.S.N. equal to new.

THE BOSTON METALS COMPANY

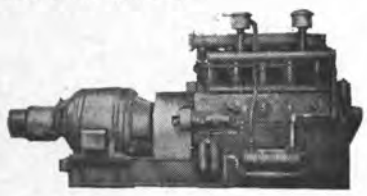
313 E. Baltimore St. Baltimore, Md. 21202
539-1900 (301) 355-5050

MARINE DIESEL GENERATORS

SUPERIOR, 10 KW, 120 Volts DC.
HERCULES, D0OC, 10 KW, 120 DC, Radiator cooled.
BUDA, radiator cooled, 15 KW, 120/240 Volts DC.
FAIRBANKS-MORSE, radiator cooled, 25 KW Continental Generator, 120/208/3/60.
Hercules DJXC, 25 KW, 120 DC.
GM 3-71, 30 KW, 120 DC.
Cummins A1, 30 KW, 120 DC.
MURPHY, Model ME 66, radiator cooled, 75 KW, 120/240 Volts DC.
CATERPILLAR DIESEL ENGINE, Model D17000, 167 HP, 900 RPM, Heat Exchanger cooled, with Louis-Allis Generator, 85 KW, 220/3/60.
LORIMER, F5SS, 75 KW, 120/240 DC, radiator cooled.
COOPER-BESSEMER, JS-5, 250 KW, 240 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.

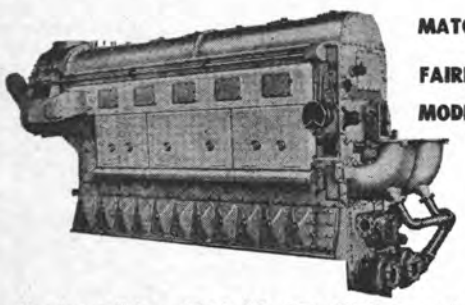
SUPERIOR, Model IDB-8, 100 KW, 450/3/60.

GENERAL MOTORS Diesel Generator Sets Model 3-268A, 152 BHP, 1200 RPM, heat exchanger cooled, 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.

GENERAL MOTORS DIESEL ENGINES, Model 8-278, with 500 KW Generators, 115/230 DC.

MARINE DIESEL ENGINES



MATCHED PAIR . . .

FAIRBANKS-MORSE

MODEL 38D8-⅛

1 Port;

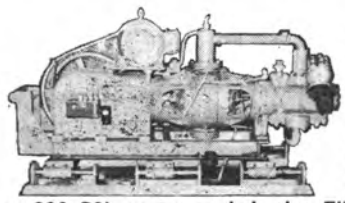
1 Starboard

Used condition, 1800 HP, 800 RPM, 2 cycle, 8½" bore, 10" stroke, Air Start. Complete with Westinghouse Reduction Gears, 2.216:1 ratio—with hydraulic coupling.

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

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 Air Compressors Class WG82, 2-stage rated 100 CFM at 300 PSI, water cooled, size 7" x 3⅜" x 7", Typical Shop #75652, with Reliance motor, 30 HP, 220/440 AC/3/60.

SULLIVAN, 60 CFM, 110 PSI, with 15 HP Motor, 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.

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.

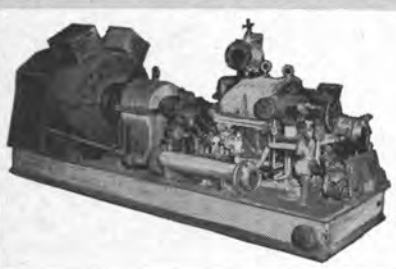
STEAM AIR COMPRESSORS
Westinghouse Air Brake Company, Size 11 x 11 x 12, Vertical, rated 66 CFM at 100 PSI (2 available).

REDUCTION GEARS . . .

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, 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. Gears are available as complete assemblies and/or rotating elements in sets. Gears offered with a current inspection report of condition by a representative of Falk Corporation.



WESTINGHOUSE Turbines, 440 PSI, 740° F, with Westinghouse Generators, 250 KW, 120/240 DC.

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

TURBINE GENERATORS

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

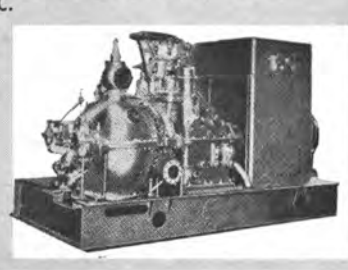
WORTHINGTON Turbines, Form S-4, 440 PSI, 740° F, driving on same comman shaft a 250 KW Generator, 440/3/60, and a 90 KW Generator, 125 Volts DC.

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

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

JOSHUA HENDY Turbines, with Westinghouse Generators, 150 KW, 120 volts DC.

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



WATERTIGHT DOORS

As removed from reserve "mothballed" 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."

Save over new replacement costs as shown in the **"Typical Price"** listing below . . .
26" x 48"—4 dog type $ 60.00 ea.
26" x 66"—6 dog type $ 85.00 ea.
26" x 66"—Quick Acting $175.00 ea.

USED, GOOD STEEL
"QUICK-ACTING WHEEL TYPE"
and DOG TYPE

Other sizes and prices quoted on request.

ZIDELL EXPLORATIONS INC.

Marine EQUIPMENT

Need it now?
Contact
Ralph E. Ingram

(503) 228-8691

3121 S.W. Moody
Portland, Oregon 97201

Phone: (503) 228-8691
Telex: 036-701

TURN PAGE . . . more buys!

BEST BUYS!

AC & DC *Marine* PUMPS

ZIDELL

EXPLORATIONS, INC.

3121 S.W. Moody
Portland, Oregon 97201
Phone: (503) 228-8691
Telex: 036-701

Contact
Ralph E. Ingram
(503) 228-8691

Hundreds of other pumps in our stock
Phone or mail required specifications.

AC PUMPS—Horizontal Centrifugal

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

1—Ingersoll-Rand, 3000 GPM, 250' head, Size 8ALV, with Westinghouse Motor, 250 HP, 2200/3/60, 1775 RPM.

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

2—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.

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.

1—Worthington, 75 GPM, 22', 3" suction, 2½" discharge, with G.E. motor, 1.9 HP, 440/3/60, 3450 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.

AC PUMPS—Vertical Centrifugal

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

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.

2—Weil, 400 GPM, 100 PSI, with 40 HP Motors, 230 DC.

1—Goulds, Figure 3380, 4" suction, 3" discharge, 250 GPM, 100 PSI, with 30 HP Motor, 230 DC, 2200 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.

4—Gardner-Denver, 900 GPM, 30' head, with Crocker-Wheeler Motors, 10 HP, 230 DC.

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

DC PUMPS—Horizontal Centrifugal

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.

1—Ingersoll-Rand, 1050 GPM, ... 5" suction, 5" discharge, with Crocker-Wheeler Motor, 15 HP, 230 Volts DC. 1150 RPM.

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

1—Allis-Chalmers, 750 GPM, 30.3' head, 5" suction, 5" discharge, with Star Motor, 10 HP, 230 Volts DC, 1750 RPM.

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

3—Ingersoll-Rand, Size 1VHM, 18 GPM, 75 PSI, 3¼" suction, 1½" discharge, with G.E. Motors, 7½ HP, 230 Volts DC.

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.

1—DeLaval, IMO, 250 GPM, 40 PSI, with G.E. Motor, 15/20 HP, 230 Volts DC, 1310/1750 RPM.

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

4—Worthington, Model 4GRVS, 175 GPM, 50 PSI, with G.E. Motors, 7½/10 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 5UV, 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.

3,000 pound size
8,000 pound size
10,000 pound size

STOCKLESS ANCHORS

USED, GOOD QUALITY . . . SAVE!

ANCHORS... Unused, surplus 3000 # size Danforth

ANCHOR CHAIN . . . Used, good, with or without test certificate . . .
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 2⅛" Chain, 65 HP, 230 DC, complete.

7—American Hoist and Derrick Company, horizontal, double wildcat—for 2¼" chain double gypsy, 70 HP, 230 Volts DC, with electric controls.

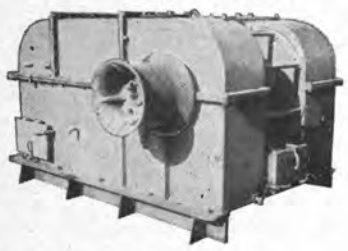
3—Hesse-Ersted, horizontal, double wildcat, 2⅛" chain, 60 HP, 230 DC.

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

ANCHOR WINCHES

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

UNIWINCHES



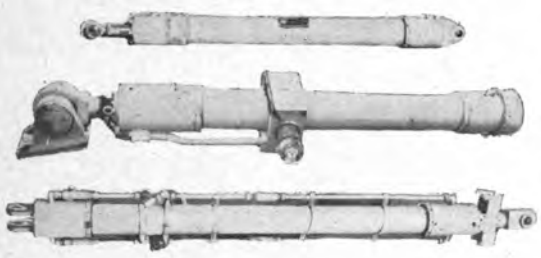
LAKESHORE UNWINCHES, with Allis-Chalmers Motors, 50 HP, 230 Volts DC, complete with Control Equipment.

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.

HYDRAULIC CYLINDERS



3000 PSI

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

STEERING STANDS

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

$149.50 each

CAPSTAN WINDLASSES

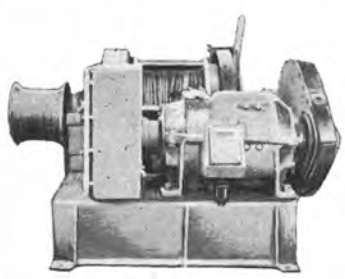
Model CWP-3, Vertical 24" Planetary Capstan Windlasses, Single Wildcat — using 1¼" Anchor Chain, Single Gypsy with 20 HP motor, 230 volts DC, complete with Contactor Panel, Master Switch, and Resistors.

3—Hesse-Ersted Vertical, Single Wildcat—for 1⅜" Anchor Chain, single gypsy, with HP General Electric Motor, 230 Volts DC, complete with Controller equipment.

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

McKiernan — Terry, Single Wildcat — for ¾" chain, Single Gypsy, with underdeck drive with Star Motor, 7½ HP, 115 DC, with Electrical control equipment.

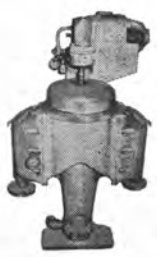
CARGO WINCHES



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

Type 66—single speed, single drum.

Type 67—two speed, single drum.



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

FAIRLEADS

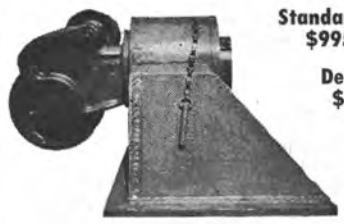
Designed and Manufactured by ZIDELL EXPLORATIONS, INC.

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.

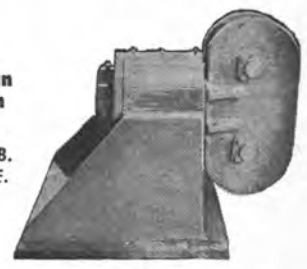
Dependable and Ruggedly built to perform consistently year after year with minimum maintenance.



Standard Design $995 each

Deluxe Design $1250 each

Model Design $1350 each



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

SPECIAL MARINE ITEMS

HIGH SPEED COUPLINGS

(Flexible Couplings between Turbines and Reducing Gear)

1—Set from C3-S1-A3 Vessel

1—Set from C2 Vessel (Moore built)

1—Set from AP2 Victory Ship

PROPELLERS

From C2-SU Vessel

From C2 Vessel (Moore built)

From AP2 Victory Ship

From Liberty Ships and LST Vessels

PROPELLER SHAFTS

From C3-S1-A3 Vessel

From C2-S-B1 Vessel (Moore built)

From C2-SU Vessel

From Liberty Ships and LST Vessels

Contact
RALPH E. INGRAM

IMMEDIATE DELIVERY

on all your needs!

ZIDELL EXPLORATIONS, Inc.

3121 S.W. MOODY
PORTLAND, OREGON 97201
PHONE: (503) 228-8691

AXIAL FLOW FANS

Rebuilt—Guaranteed

LaDel, STURTEVANT etc.

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

EXAMPLE LISTING:

Size A¼	**@ $160 each**
Size A½	**@ $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

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.

Machinery and EQUIPMENT

as removed from

S.S. "JAMES O'HARA" (AP-179) C3-S1-A3

for

Immediate Sale!

Contact
Ralph E. Ingram
503/228-8691

ZIDELL

EXPLORATIONS, Inc.

3121 S.W. MOODY
PORTLAND, OREGON 97201
PHONE: (503) 228-8691
TELEX: 036-701

CARGO HOISTER BLOCKS

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

$29.50 each

$35.00 each with pull test certificates.

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.

2 — TURBINE GENERATORS, Allis-Chalmers, Turbines: Impulse Condensing Type, 740° F, 440 PSI, 8000 RPM, Generators: 300 KW, 240 Volts DC, 2 wire, 1200 RPM.

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

SALT WATER EVAPORATOR, Davis, Size 36-17, rated 2500 lbs. per hour.

MAKE UP FEED EVAPORATOR, Davis, Size 26-8, rated 1500 lbs. per hour.

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.

MAIN CONDENSER, Allis- Chalmers, 7800 sq. ft. cooling service, 2 pass, horizontal.

LUBE OIL PURIFIER, Sharples, Type M-34-W-22U43, 350 GPH, 230 Volts DC Motors.

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.

FIRE & STANDBY PUMP, Worthington, vertical duplex, Size 12 x 8½ x 12, 400 GPM, 150 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, double suction, 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, double suction, 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.

AIR COMPRESSOR, Ingersoll-Rand, Type 40, 2 stage, air cooled, 194 CFM, 110 PSI, 40 HP, 230 DC.

FORCED DRAFT BLOWERS, 2—American Blower, Sirocco capacity 17560 CFM, 5½ SP, 75 HP, 230 DC.

COURSE RECORDER, Sperry, Mark 65091.

AUTOMATIC PILOT, Sperry, Mark 642840.

LIFEBOAT DAVITS, 2—sets, Welin, gravity trackway type, Size 135, capacity 21,500#.

AIR COMPRESSOR, Chicago Pneumatic, 161 CFM, 100 PSI, 2 stage, air cooled, Model PB2, 40 HP, 230 DC.

Attention Shipbuilders!

FORGED STEEL LINE SHAFTING

Excellent buys on used—good shafting for re-machining to your requirements:

6—Sections 19" diameter, 23'—11" long, flanged

1—Section 19" diameter, 23'—8" long, flanged

3—Sections 19" diameter, 22'—10" long, flanged

12—Sections 19" diameter, 22'—6" long, flanged

6—Sections 14⅛" diameter, 26'—6" long, flanged

2—Sections 14⅛" diameter, 18'—6" long, flanged

2—Sections 14⅛" diameter, 13'—9" long, flanged

39—Sections 13½" diameter, 22'—0" long, flanged

15—Sections 13½" diameter, 14'—0" long, flanged

1 Only, Model 17-DE-90

CLYDE WHIRLEY CRANE

LIFTING RATE: 25 tons at 50 foot radius at 50 to 60 FPM.

BOOM: 80' to headblock (with 10' whip)—WHIP: 10 tons at 125 FPM—2 part line—TRACK CENTERS: 20' — ENGINE: Cummins HBIS 601, 180 HP supercharged, elec. start —MOTORS: each leg (4 tot.) 7½ HP, 230 DC—POWER: Diesel Electric (DC).

1 Only

ORTON WHIRLEY GANTRY

With specifications similar to Clyde 17-DE-90. Complete specifications and prices on request.

SALT WATER EVAPORATORS

Overhauled—Tested

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

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

PROMPT QUOTATIONS & DELIVERY

ELECTRIC MOTORS

Many Radio, Radar & Electronic Equipment. Motor-Generator Sets. Let us have your inquiries.

MISCL. D.C. MOTORS

1—Westinghouse, 304 HP, 115 V, DC, 900 RPM, Sh. Wd., 2 pedestal bearings.

3—Allis-Chalmers, 50 HP, 230 V, DC, 600 RPM, Comp'd Wd., Mod. MDS-11975.

6—Westinghouse, 50 HP, 230 V, DC, 600 RPM, Comp'd Wd., Type CK, Fr. 9.

4—Westinghouse, 9.3 HP, 230 V, DC, 640/852 RPM, Type SK, Fr. 93.

20—Westinghouse, 7½ HP, 120 V, DC, 1750 RPM, Stab. Sh. Wd., Type SK, Fr. 43.

Others in stock: 5 HP & up . . . 115 & 230 V.

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 RPM, Compound Wound, Horizontal, 2 B.B.

1—40 HP, G.E., Type CDM, FR 95, Model 35A1663, 1800 RPM, Compound Wound, Horizontal, 2 B.B.

1—18/25 HP, Electro-Dynamic, 1225/1750 RPM, Compd. Wd., FR. 7½ S, Horizontal, 2 B.B.

6—15 HP, Allis-Chalmers, 1225/1750 RPM, Stab. Sh. Wd., Type EB90, Horizontal, 2 B.B.

2—10 HP, Allis-Chalmers, 1225/1750 RPM, Compd. Wd., Type EB80, Horizontal, 2 B.B.

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

120 VOLT D.C. MOTORS

1—304 HP, Westinghouse, 900 R.P.M., Shunt Wound, Horizontal, Pedestal Bearing.

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

20—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.

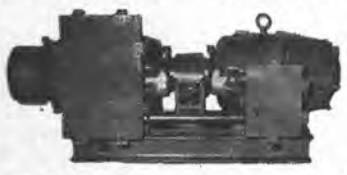
SHIP'S LIGHTING M-G SETS

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, 18⅝" 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 & up—115 and 230 V.

ROTOTROLS

15—Westinghouse Rotorols, driven by 5 HP, 440 V, 3 phase, 60 cycle, 1700 RPM, AC Motors.

D.C. TRANSFER PANEL

Cutler-Hammer, 3-pole, 300 A, 120/240 V, DC, Bul. 6007, No. B870102A2.

SPARE ARMATURES

For C-3-S1-A3 Auxiliaries . . . Send for List A-1. Many others — Let us have your inquiries.

SWITCHBOARDS

Westinghouse Propulsion Control Switchboards as used on S-4 Vessels. AC and DC Switchboards. Let us know of your requirements.

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.

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.

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, GE, 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.

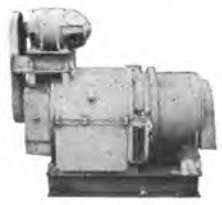
6—60 KW, 120 V, Westinghouse, Type SK, FR 143, Style 3B2855-PH, 1800 RPM, 1 B.B. Removed from Turbines.

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

A.C. TO 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.

Reconditioned
MOTOR GENERATOR SETS



MANY SMALLER UNITS IN STOCK

230 VOLTS D.C. TO A.C.

Hertner. Input: 230 V, DC, 24A. Output: 3.5 KVA, 440 V, 60 cy., 3Ø.
Hertner. Input: 230 V, DC, 28A. Output: 5 KVA, PF .85, 115 V, 60 cy., Ø1.
Continental. Input: 230 V, DC, 28A. Output: 7.5 KVA, 3.5 KW, 120 V, 1Ø, 60 cy., 62.5A.
Century. Input: 10 HP, 230 V, DC. Output: 7.5 KVA, 3.75 KW, 120/1/60.
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.
General Elec. Input: 25 HP, 230 V, DC. Output: 18.75 KVA, 15 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, 24A, 1800 RPM.
Star Elec. Input: 125 HP, 240 V, DC. Output: 93.75 KVA, 75 KW, 450/3/60.

115 VOLTS D.C. TO A.C.

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.
Elec. Spec. Input: 1 HP, 90/130 V, DC. Output: .500 KVA, .500 KW, 115/1/60.
Century. Input: 1.5 HP, 115 V, DC. Output: .750 KVA, .600 KW, 102/1/60.
Janette. Input: 13 Amp, 115 V, DC. Output: 1 KVA, 110/1/60.
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.
Star Elect. Input: 12½ HP, 115 V, DC, 1800 RPM. Output: 7½ KW, 120 V, 60 Cy.
Ideal. Input: 40 HP, 115 V, DC. Output: 31.3 KVA, 25 KW, 450/3/60.
Continental. Input: 50 HP, 115 V, DC. Output: 50 KVA, 25 KW, 120/3/60.
Burke. Input: 20 HP, 115 V, DC. Output: 25 KVA, 12½ KW, 120/1/60.
RCA. Input: 4 HP, 105/130 V, DC. Output: 2.22 KVA, 2 KW, 120/1/60.

ZIDELL for Electrical EQUIPMENT

Tremendous stock of electrical equipment at the "right" prices . . . for prompt service or further details phone or write H. S. "Mac" McIntosh at 503/228-8691 . . . you'll be glad you did!

3121 S.W. MOODY
PORTLAND, OREGON 97201
PHONE: (503) 228-8691
TELEX: 036-701

CONTACT
Ralph E. Ingram
503/228-8691
for electrical needs!

All other marine equipment, please call Ralph Ingram!

INQUIRIES INVITED ON:

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

BUYERS DIRECTORY *for* ADVERTISERS

AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Carrier Air Conditioning Co., Carrier Parkway, Syracuse, N.Y. 13201

ANCHORS AND ANCHOR CHAINS
Baldt Anchor, Chain & Forge, P.O. Box 350, Chester, Pa. 19016
Blue Water Marine Supply, Inc., 2102 69 St., P.O. Box 9156, Houston, Texas 77006
DiMattina Supply Co., 59-61 Seabring St., Brooklyn, N.Y. 11231

BEARINGS
BJ Marine Bearings, a Borg-Warner Industry, P.O. Box 2709, Terminal Annex, Los Angeles, Calif. 90054
Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, Ohio 44309

BOILERS
Combustion Engineering, Inc., Windsor, Connecticut 06095
Foster Wheeler Corp., 666 Fifth Ave., New York, N.Y. 10019

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

BULKHEAD PANELLING
Johns-Manville, Box 290-T, New York, N.Y. 10016

BUNKERING SERVICE
Fuel Service Inc., P.O. Box 712, Pascagoula, Miss. 39567
Gulf Oil Trading Co., 1290 Ave. of the Americas, N.Y. 10019
Independent Petroluem Supply Co., 277 Park Ave., N.Y. 10017
Refineria Panama, S. A. 277 Park Ave., New York, N.Y. 10017
The West Indies Oil Co., Ltd., St. John's Antigua, W. I.

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

CABLE - ELECTRIC MARINE
L. F. Gaubert & Co., 700 So. Broad St., New Orleans, La. 70150

CARGO CONTAINERS—Components
Fruehauf TrailerDiv.,Fruehauf Corp., 10940 HarperAv.,Detroit 32,Mich.

CATHODIC PROTECTION
Engelhard Industries, Inc., 850 Passaic Ave., E. Newark, N.J. 02029

CLUTCHES, GEARS & BRAKES
Koppers Company, Inc., Power Transmission Dept., 3602 Scott St., Baltimore, Md. 21203
Wichita Clutch Co., Inc., Wichita Falls, Texas 76307

COATINGS—Protective
Amercoat Corp., 201 N. Berry St., Brea, Calif. 92621
Calfonex, Inc., 166 Coolidge Ave., Englewood, N.J. 07631
E. I. Dupont De Nemours & Co., Inc., Wilmington, Delaware 19898
Enjay Chemical Company, 60 West 49th St., New York, N.Y. 10020
Eureka Chemcial Co., 234 Lawrence Ave., South San Francisco, Calif. 94080
Plasma Chemical Systems, Inc., 13909 Lee Jackson Hway, Chantilly, Virginia 22021
USS Chemicals (Div. of U. S. Steel), P. O. Box 86, Pittsburgh, Pa.

CONTAINER HANDLING SYSTEM
A.A.I. Corp., Cockeysville, Maryland 21030
Clyde Iron Works, Inc., P.O. Box 370, Duluth, Minn. 55801
Lighter Aboard Ship, Inc., 225 Baronne St., New Orleans, La. 70112
Pacific Coast Eng. Co., P.O. Drawer E, Alameda, Calif. 94506
RPC Corp., Marine Sales, 200 Park Ave., New York, N.Y. 10017
Star Iron & Steel Co., 336 Alexander Ave., Tacoma, Wash. 98421
York Trailer Ltd., Corby, Northants, England

CONTAINER LASHINGS
American Forge & Mfg. Co., Box 74, McKees Rocks, Pa. 15136

CONTROL SYSTEMS
Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913
Lake Shore Electric Corp., 205 Willis St., Bedford, Ohio 44014
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
Todd Products, Div. of Todd Shipyards Corp., Brooklyn, N.Y. 11231

CORROSION CONTROL
Eureka Chemcial Co., 234 Lawrence Ave., South San Francisco, Calif. 94080
Radiator Specialty Co., 1400 Independence Blvd., Charlotte, N C 28205

CRANES—HOISTS—DERRICKS—WHIRLEYS
ASEA Marine, Rep. in U.S.A. by Stal-Laval, Inc., 147 E. 50th St., N.Y. 10022
Clyde Iron Works, Inc., P.O. Box 370, Duluth, Minnesota 55801
Lidgerwood Mfg. Co., (Superior Lidgerwood Mundy Corp.), 7 Dey Street, N.Y., N.Y. 10007
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany
Pacific Coast Eng. Co., P.O. Drawer E, Alameda, Calif. 94506
Star Iron & Steel Co., 326 Alexander Ave., Tacoma, Wash. 98401
Wiley Mfg. Co., Box 97, Port Deposit, Md. 21904

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

DECK MACHINERY—Cargo Handling Equipment
ASEA Marine, Rep. in U.S.A. by Stal-Laval, Inc., 147 E. 50th St., N.Y. 10022
Blackburn Marine Equipment, 6105 England St., Houston, Tex. 77021
Beebe Bros., Inc., 2724 - 6th Avenue So., Seattle, Wash. 98134
Clyde Iron Works, Inc, P.O. Box 370, Duluth, Minn. 55801
Garrett Marine Div. of the Garrett Corp., 255 Attwell Dr., Rexdale, Ontario, Canada
Lidgerwood Mfg. Co., (Superior Lidgerwood Mundy Corp.), 7 Dey Street, N.Y., N.Y. 10007
Markey Machinery Co., Inc., 79 S. Horton St., Seattle, Wash. 98134
Nashville Bridge Co., P.O. Box 239, Nashville, Tenn. 37202
A. S. Pusnes, MeK. Verksted, Arendal, Norway
Smith-Berger Mfg. Corp., 3236 16th Ave.S.W., Seattle, Wash. 98134
Western Gear Corp., Heavy Machinery Div., Everett, Wash. 98201

DECKING
Asbestolith Mfg. Corp., 257 Kent St., Brooklyn, N.Y. 11222
Metropolitan Floor Covering, Inc., Div. of Drehmann Paving & Flooring Co. 2101 Byberry Rd., Philadelphia, Pa. 19116

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

DIESEL ENGINES
Alco-Worthington Corp., 401 Worthington Ave., Harrison, N.J. 07029
Bruce GM Diesel, Inc., U.S. Route 46 at Savoy St., Lodi, N.J. 07644
Burmeister & Wain, 2 Torvegade, Copenhagen K, Denmark
Electro-Motive Division General Motors, La Grange, Illinois 60525
Fiat, Turin, Italy, U.S.A. 375 Park Ave., New York, N.Y. 10022
Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231
M.A.N. Maschinefabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany.
H. O. Penn Machinery Co., Inc., Caterpillar dir., 140th St. & East River, New York, N.Y. 10454
Stewart & Stevenson Services, Inc., 4516 Harrisburg Blvd., Houston, Texas 77011
Stork Dieselmotoren, Kromhout Motoren, P.O. Box 4196, Amsterdam, Holland.

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

DOORS—Watertight—Bulkhead
Blue Water Marine Supply, Inc., 2102 69 St., P.O. Box 9156, Houston, Texas 77006
Overbeke-Kain Co., 209 Aurora Rd., Bedford, Ohio 44014
Walz & Krenzer, Inc., 20 Vesey St., New York, N.Y. 10007

ELECTRICAL EQUIPMENT
Arnessen Marine Systems, Inc., 335 Bond St., Brooklyn, N.Y.
L. F. Gaubert & Co., 700 So. Broad St., New Orleans, La. 70150
Oceanic Electrical Mfg. Co., Inc., 148 Perry Street, N.Y. 10004
Owesen & Co., Inc., 315 Notre Dame, New Orleans, La. 70130
Pauluhn Electric Mfg. Co., Inc., 422 Broome St., New York 10013
Worthington Corp., 401 Worthington Ave., Harrison, N.J. 07029

EVAPORATORS
Aqua-Chem, Inc., 225 N. Grand Ave., Waukesha, Wis. 53186
Bethlehem Steel Corp., Shipbuilding, 25 B'way, N.Y., N.Y. 10004
Mechanical Equipment Co., Inc., 861 Carondelet St., New Orleans, La. 70130

FITTINGS & HARDWARE
Kerotest Mfg., Corp., 2516 Liberty Ave., Pittsburgh, Pa. 15222
Nashville Bridge Co., P.O. Box 239, Nashville, Tenn. 37202

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

FUEL RECOVERY
Tretolite Div., Petrolite Corp., 369 Marshall Ave., St. Louis, Mo. 63119

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

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

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

HYDRAULICS
Bond Hydraulics Equipment Service Inc., 9264 Kennedy Blvd., North Bergen, N.J. 07047
Vickers, Marine & Ordnance Division, P.O. Box 302, Troy, Mich. 48084

INSULATION—Marine
Bailey Carpenter & Insulation Co.,Inc.,74SullivanSt.,Brklyn,N.Y.11231
Johns-Manville, Box 290-T, New York, N.Y. 10016
Reef Industries, Inc., P.O. Box 23221, New Orleans, La. 70123

MACHINE SHOP—TROUBLE SERVICE
Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231
Metal Finishers, Inc., (Mecrome Division), 3125 Brinkerhoff Road, Kansas City, Kansas 66115

MARINE DRIVES—GEARS
Philadelphia Gear Corp., Schuylkill Expressway, King of Prussia, Pa. 19406
Western Gear Corp., Industrial Products Div., P.O. Box 126, Belmont, Calif. 94003

MARINE ELECTRONIC NAVIGATION EQUIPMENT
Decca Radar, Inc., 386 Park Ave. So., New York, N.Y. 10016
Electronics Concepts Inc., (Div. of Automatic Sprinkler Corp. of America) P. O. Box 813, Charlottesville, Va. 22902
Fisher Research Laboratory. 1890 Embaracadero Road, Palo Alto, California 94303
Griffith Marine Electronics, Inc., 79 Fourth Street, New Rochelle, N. Y. 10801
Kaar Electronics Corp., 2250 Charleston Road, Mountain View, Calif. 94041
Marquardt Corp., 16555 Saticoy St., Van Nuys, Calif. 91406
National Marine Service, 1750 So. Brentwood Blvd., St. Louis, Mo.
Radiomarine Corp., 20 Bridge Avenue, Red Bank, N.J. 07701
RCA Service Co., A Division of RCA, Marine Communications and Navigation Equipment Service, Bldg. CHIC-225, Camden, N.J. 08101
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

MARINE EQUIPMENT
Beaver Tool & Machine Co., P.O. Box 94717, 525 S.E. 29th St., Oklahoma City, Okla. 73109
Brazos Engineering, a div. of Metallic Bldg. Co., 4625 Holmes Road, Box 14240, Houston, Texas 77021
Gadelius, K. K., P.O. Box 802, Kobe Port, 651-01 Japan
Gulf Coast Marine, Inc., P.O. Box 52987, Houston, Texas 77052
H & H Engineering Co., 430 So. Navajo, Denver, Colo. 80223
Nicolai Joffe Corp., P.O. Box 2445, 445 Littlefield Ave., So. San Francisco, Calif. 94080
Kearfott Marine (Div. of The Singer Co.) 21 West St., New York, N.Y. 10006
Pacific Coast Eng. Co., P.O. Drawer E, Alameda, Calif. 94506
Vokes Filter Div. (Cardwell Machine Co.), Cardwell and Castlewood Rd., Richmond, Va. 23221
Worthington Corp., 401 Worthington Ave., Harrison, N.J. 07029

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

MARINE INSURANCE
Adams & Porter, Cotton Exchange Bldg., Houston, Texas

MARINE PROPULSION
The Buehler Corp., 9000 Precision Drive, Indianapolis, Ind. 46236
Combustion Engineering, Inc., Windsor, Connecticut 06095
De Laval Turbine, Inc., 853 Nottingham Way, Trenton, N.J. 08602
Foster Wheeler Corp., 666 Fifth Ave., New York, N.Y. 10019
General Electric Co., Schenectady, N.Y. 12305
Mathers Controls, Inc., 902 N.W. Ballard Way, Seattle, Wash. 98107
Murray & Tregurtha, Inc., 2 Hancock St., Quincy, Mass. 02171
Port Electric Turbine Div., 155-157 Perry St., New York 10014
Stal-Laval, Inc., 147 E. 50th St., New York, N.Y. 10022
Western Gear Corp., Precision Products Div., P.O. Box 190, Lynwood, Calif. 90262

MARINE RADIO COMMUNICATIONS EQUIPMENT
Collins Radio Co., M/S 416-118, Dallas, Texas 75207
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
Kaar Electronics Corp., 2250 Charleston Road, Mountain View, Calif. 94041
Motorola Communications & Electronics, Inc., 4935 W. LeMoyne Ave., Chicago, Ill. 60651
RF Communications, Inc., 1680 University Ave., Rochester, N.Y. 14610
Radiomarine Corp., 20 Bridge Avenue, Red Bank, N.J. 07701
Raytheon Marine Products Operation, 213 East Grand Avenue, South San Francisco, California 94080
RCA Service Co., A Division of RCA, Marine Communications and Navigation Equipment Service, Bldg. CHIC-225, Camden, N.J. 08101

NAVAL ARCHITECTS AND MARINE ENGINEERS
BG Marine Services, Div. of Genge Industries, Inc., 4419 Van Nuys Blvd., Sherman Oaks, Calif. 91403
Coast Engineering Co., 711 West 21 St., Norfolk, Va. 23517
Commercial Radio Sound Corp., 652 First Avenue, N.Y., N.Y. 10016
Crandall Dry Dock Engineers, Inc., 238 Main St., Cambridge 42, Mass
Cushing & Nodstrom Inc., 50 Trinity Place, New York, N.Y. 10006
Design Associates, Inc., 3308 Tulane Ave., New Orleans, La. 70119
Designers & Planners, Inc., 114 Fifth Ave., New York, N.Y. 10011
M. Mack Earle, 103 Mellor Ave., Baltimore, Md. 21228
Christopher J. Foster, 17 Battery Place, New York, N.Y. 10004 14 Vanderventer Ave., Port Washington, N.Y. 11050
Friede and Goldman, Inc., 225 Baronne St., New Orleans, La. 70112
Gibbs & Cox, Inc., 21 West St., New York, N.Y. 10006
W. R. Henderson & Co., 3611 Revere, Houston, Texas 77006
Morris Guralnick, Associates, Inc., 74 New Montgomery St., San Francisco, Calif. 94105
J. J. Henry Co., Inc., 90 West St., New York, N.Y. 10006
L. K. Homyer, Box 408, Corona Del Mar, California 92625
James S. Krogen, 1460 Brickell Ave., Miami, Fla. 33131
Littleton Research and Engineering Corp., 95 Russell Street, Littleton, Mass. 01460
Robert H. Macy, P.O. Box 758, Pascagoula, Miss. 39567
Marine Applications Co., Inc., P.O. Box 167, Mineola, N.Y. 11502
Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, Ohio 44114
Marine Design Inc., 1180 Ave. of Americas, N.Y., N.Y. 10036
Rudolph F. Matzer & Associates, Route 1 - Box 314 D, Jacksonville, Fla. 32211
John J. McMullen Associates, Inc., 17 Battery Pl., New York, N.Y.
George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
Robert Moore Corp., 350 Main St., Port Washington, N.Y. 11050
Gunnar Nelson, 2185 Lemoine Ave., Ft. Lee, N.J. 07024
Pearlson Engineering Co., Inc., 2825 Oak Ave., Miami, Florida 33133
Research & Design Corp., 17 Battery Place, Suite 1227 New York, N.Y. 10004
Philip L. Rhodes, 369 Lexington Ave., New York, N.Y. 10017
M. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013 and 45 Second St., San Francisco, Calif.
Sanders & Thomas, Inc., 1st-Federal Bldg., Pottstown, Pa. 19464
George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007
George Slifer, 1422 Lakewood Rd., Jacksonville, Fla. 32207
Philip F. Spaulding & Associates, 65 Marion St., Seattle, Wash. 98104
R. A. Stearn, Inc., 100 Iowa St., Sturgeon Bay, Wisc. 54235
Richard R. Taubler, 44 Court St., Brooklyn, N.Y. 11201

H. M. Tiedemann & Co., Inc., 74 Trinity Pl., New York, N.Y. 10006
Transcaribbean Shipping & Trading Corp., Panam Docks, Isle Grande, P.O. Box 564, San Juan, P.R. 00902
H. Newton Whittelsey, Inc., 17 Battery Pl., New York, N.Y. 10004

OIL PURIFIERS—Repair
Norse Electric Mfg. Co., Inc., 57-59 Commerce St., Bklyn, N.Y. 11230

OILS—Marine—Additives
Esso International Inc., Esso Bldg., 15 West 51 St., New York, N.Y.
Gulf Oil Trading Co., 1290 Ave. of the Americas, New York, N.Y.
Mobil Oil Co., Inc., 26 Broadway, New York, N.Y. 10004
Refineria Panama, S. A., 277 Park Ave., New York, N.Y. 10017
Shell Oil Co., 50 W. 50 St., New York 10020
Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017

PAINT—Marine—Protective Coatings
Amercoat Corp., 201 N. Berry St., Brea, Calif. 92621
Devoe & Raynolds Co., Inc., Marine Division, Newark, N.J. 07105
Enjay Chemical Co., 60 West 49th St., New York, N.Y. 10020
International Paint Co., 21 West St., New York, N.Y. 10006
Mobil Chemical Company, Metuchen, N.J. 08840

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

PLASTICS—Marine Applications
Atlas Minerals & Chemical Div., ESB, Inc., Mertztown, Pa. 19539
Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231
Philadelphia Resins Co., 20 Commerce Dr., Montgomeryville, Pa. 18936

POLLUTION CONTROL
Enjay Chemical Co., 60 West 49th St., New York, N.Y. 10020

PROPELLERS—New and Reconditioned
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
Baldwin-Lima-Hamilton Corp., Phila., Pa. 19142
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
Bird-Johnson Co., 883 Main Street, Walpole, Mass. 02081
Escher Wyss, G.M.B.H., 798 Ravensburg, Germany

PUMPS
Colt Industries, Inc., Fairbanks Morse Pump & Electric Div., 3601 Kansas Ave., Kansas City. Kansas 66110
De Laval Turbine, Inc., 853 Nottingham Way, Trenton, N.J. 08602

RATCHETS
American Forge & Mfg. Co., McKees Rocks, Pa. 15136
W. W. Patterson Co., 830 Broket St., Pittsburgh, Pa. 15233

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

ROPE—Manila—Nylon—Hawsers—Wire
American Mfg. Co., Inc., Noble & West Sts., Brooklyn, N.Y. 11222
Cating Rope Co., 309 Genesee St., Auburn, N.Y. 13022
Columbian Rope Co., Auburn, N.Y. 13022
Jackson Rope Corp., 9th & Oley, Reading, Pa. 19604
Plymouth Cordage Company, Plymouth, Mass. 02364
Tubbs Cordage Company, 200 Bush St., San Francisco, Calif.
Wall Rope Works, Inc., Beverly, N. J. 08010

RUBBER PRODUCTS—Dock Fenders, Hose, Life Preservers
Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004

RUDDER ANGLE INDICATORS
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

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

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

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

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

SHIP BROKERS
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
Oaksmith Boat Sales, Inc., Fisherman's Terminal, Seattle, Wash. 98119

SHIPBUILDING—Repairs, Maintenance, Drydocking
Albina Engine & Machine Works, 2100 N. Albina Ave., Portland, Ore. 97227
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Astilleros de Cadiz, S.A., Zurhono 72, Madrid 10, Spain
Atlantic Gulf & Pacific Co. of Manila Inc., 45 Muelle De La Industria, Manila
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
Barbour Boat Works, Inc., P.O. Box 1069, New Bern, N.C. 28560
Bender Ship Repair, Inc., 265 So. Water St., Mobile, Ala. 36602
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
Blount Marine Corp., P.O. Box 360, Warren, Rhode Island 02885
Brewer Dry Dock Co., Mariners Harbor, Staten Island, N.Y.
Ira S. Bushey & Sons, Inc., 764 Court St., Brooklyn, N.Y. 11231
Conrad Industries, P.O. Box 790, Morgan City, La. 70380
Dillingham Corp., P.O. Box 3288, Honolulu, Hawaii 96801
Dravo Corporation, Neville Island, Pittsburgh 25, Pa.
Equitable Equipment Co., Inc., 410 Camp St., New Orleans, La. 70130
Furness-Smiths Dock (Trinidad) Ltd., P.O. Box 893, Chaguaramas Dockyard, Port Chaguaramas, Trinidad, West Indies.
Gotaverken American Corp., 39 Broadway, New York 6, N.Y.
Groignard Shipyards, P.O. Box 829 Colbert, Marseilles, France.
Halifax Shipyards, Ltd., P.O. Box 640, Halifax, Nova Scotia, Canada
Halter Marine Services, Inc., Route 6, Box 287H, New Orleans, La. 70126
Hillman Barge & Construction Co., Grant Bldg., Pittsburgh 19, Pa.
Hitachi Shipbuilding Co.,25 Nakanoshima2-chomeKitaku,Osaka-Japan
Ishikawajima-Harima Heavy Industries Co., Ltd., 50 Broad Street New York, N.Y. 10004
Jacksonville Shipyards, 644 E. Bay St., Jacksonville, Fla.
Jeffboat, Inc., Jeffersonville, Ind. 47130
Kawasaki Dockyard Co., 8 Kaigan-dori, Ikuta-ku, Kobe, Japan
LISNAVE, P.O. Box 2138, Lisbon, Portugual
Litton Industries, 9920 W. Jefferson Blvd., Culver City, Calif. 90230
Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
Lone Star Marine Salvage Co., 7200 S. Harbor Drive, Houston, Texas 77001
Maryland Shipbuilding & Drydock Co., P.O. Box 537, Baltimore, Maryland 21203
Matton Shipyard Co., Inc., P.O. Box 428, Cohoes, New York 12047
Mitsui Shipbuilding & Eng. Co., Ltd., Nihonbashi-Muromachi, Chuo-ku, Tokyo, Japan
Nashville Bridge Co., P.O. Box 239, Nashville 1, Tenn.
National Steel & Shipbuilding Corp., San Diego 12, Cal.
Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
Nippon Kokan Kabushiki Kaisha, 2, 1-chome, Otemachi, Chivoda-ku, Tokyo, Japan
O.A.R.N. (officine Allestimento e Riparazioni Navi) Genoa, Italy
Pacific Coast Engineering Co., P.O. Drawer 6, Alameda, Calif. 94506
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Fla. 33156
Perth Amboy Dry Dock Co., Perth Amboy, N.J.
Puerto Rico Drydock and Marine Terminals, Inc., P.O. Box 2209, San Juan, Puerto Rico 00903
Rodermond Industries, Foot of Henderson St., Jersey City, N.J. 07302
L. Rodriquez Shipyard, 24 Molo Norimberga, Messina, Italy.
St. Louis Shipbuilding—Federal Barge, Inc. 611 East Marceau, St. Louis 11, Mo.
Sasebo Heavy Industries Co., Ltd., New Ohtemachi Bldg., Chiyoda-ku, Tokyo, Japan
Southern Shipbuilding Corp., P.O. Box 1089, Slidell, La. 70458
Tampa Ship Repair & Dry Dock Co., Inc., P.O. Box 1277, Tampa, Florida 33601
Terrin Agency, Inc., 17 Battery Place, New York, N.Y. 10004
Todd Shipyards Corp., 1 Broadway, New York City
Vare Corp., Equipment Systems Div., 516 Sylvan Ave., Englewood Cliffs, N.J. 07632
Vickers Ltd., 222 London Rd., St. Albans, Herts, England
Wiley Mfg. Co., Port Deposit, Md.
Wyatt Industries Inc., Port Houston Shipyard Div., P.O. Box 3052, Houston, Texas 77001

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

SHIP STABILIZERS
Lidgerwood Mfg. Co., (Superior Lidgerwood Mundy Corp.), 7 Dey Street, New York, N.Y. 10007
John J. McMullen Associates, Inc., 17 Battery Pl., N.Y., N.Y. 10004
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

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

STEVEDORING
M. P. Howlett, Inc., 415 32nd St., Union City, N.J.
Luckenbach Steamship Co., 120 Wall St., New York 5, N.Y.

SWITCHBOARDS
Hose McCann Telephone Co., Inc., 524 23rd St., N.Y. 10011

SYNTHETICS
E. I. Dupont De Nemours & Co., Inc., Textile Fibers Dept., Wilmington, Delaware

TANK CONTAINERS
Fruehauf Trailer Div., Fruehauf Corp., 10940 Harper Ave., Detroit, Mich. 48232

TOWING—Lighterage, Transportations, Barge Chartering
Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002
Curtis Bay Towing Co., Mercantile Bldg., Baltimore 2, Md.
G & H Towing Company, 509 Texas Building, Galveston, Texas 77550
Henry Gillen's Sons Lighterage, 140 Cedar St., New York, N.Y. 10006
James Hughes, Inc., 17 Battery Pl., New York, N.Y.
Jackson Marine Corp., P.O. Box 1087, Aransas Pass, Texas 78336
McAllister Bros., Inc., 17 Battery Pl., New York, N.Y.
McDonough Marine Service, P.O. Box 26206, New Orleans, La.
P. F. Martin, Inc., Mail Bldg., 325 Chestnut St., Philadelphia, Pa.
Moran Towing & Transportation Co., Inc., 17 Battery Place, N.Y.
Nickerson Marine Towing Co., 1670 Southeast 17th Street, Ft. Lauderdale, Fla. 33316
Red Star Towing & Transportation Co., 500 Fifth Ave., N.Y. 10036
L. Smit & Co., 11 Broadway, New York 4, N.Y.
Suderman & Young Towing Co., 329 World Trade Center, Houston, Texas 77002
M. & J. Tracy, Inc., 1 Broadway, New York, N.Y.
Turecamo Coastal and Harbor Towing Corp., 1752 Shore Parkway, Brooklyn, N.Y.
Vancouver Tug Boat Co., Ltd., 10 Pemberton Ave., No. Vancouver, B.C., Canada

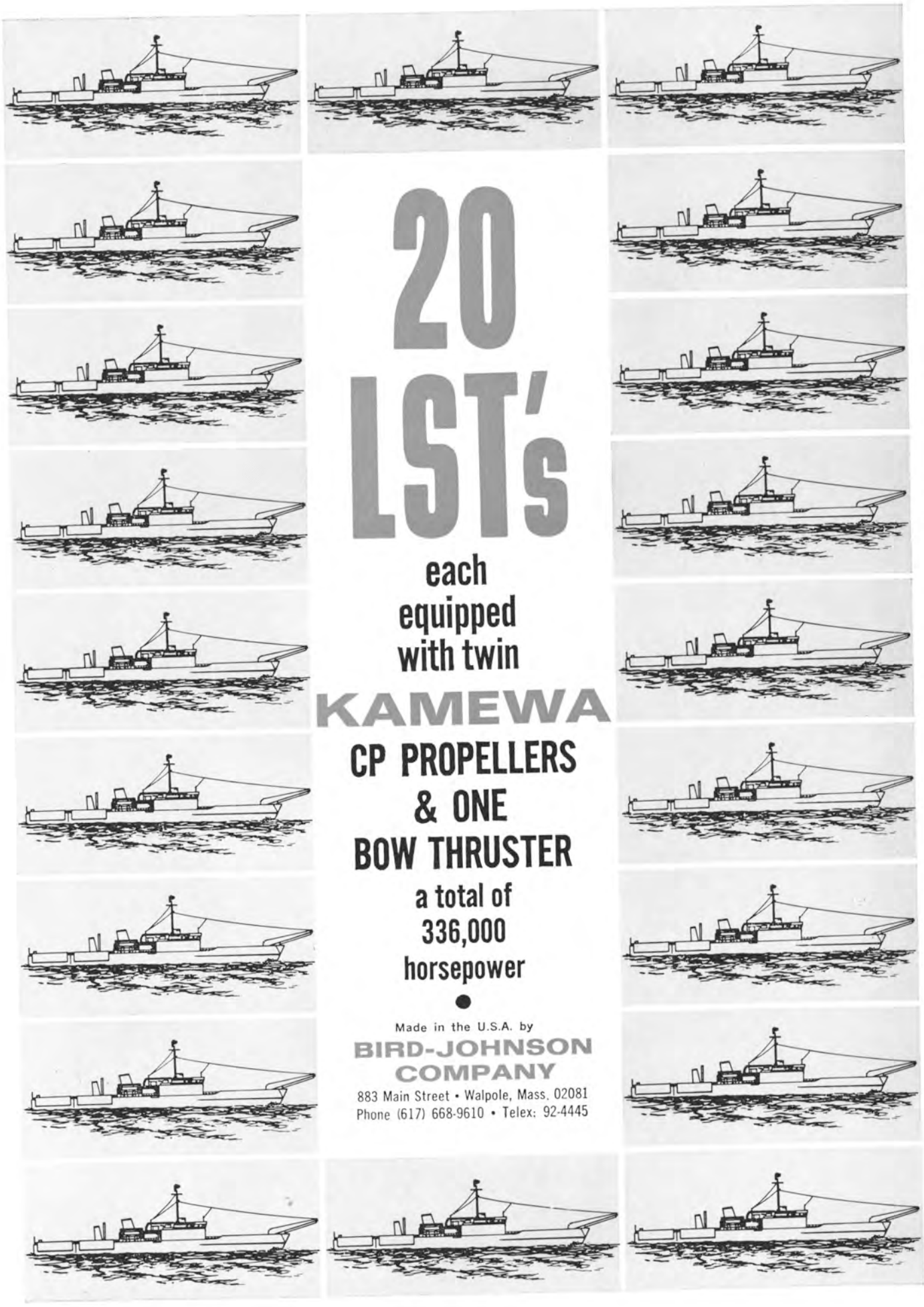
VALVES AND FITTINGS—Hydraulic—Safety Flanges
Hooper Valve & Engineering Corp., 24th St. & Virginia Ave., Newport News, Va.
Hubeva Marine Plastics-Lining, 435 Hamilton Ave., Brooklyn 31, N.Y.
Hydrasearch Co., Inc., Riva Rd., Annapolis, Md. 21401
Marine Moisture Control Co., 39 Redfern Ave., Inwood 96, L.I., N.Y.
Mechanical Marine Company, 45-15 37th St., Long Island City, N.Y.
Todd Products, Div. of Todd Shipyards Corp., Halleck St., Brooklyn, N.Y. 11231

VAN CONTAINERS—Insulated, Refrigerated, General Commodity
Fruehauf Trailer Div., Fruehauf Corp., 10940 Harper Ave., Detroit 32, Mich.

WEATHER ROUTING
Weather Routing, Inc., 90 Broad St., New York 4, N.Y.

WIRE ROPE
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., Bethlehem, Pa. 18018
DiMattina Supply Co., 59-61 Seabring St., Brooklyn, N.Y. 11231
United States Steel Corp., P.O. Box 86, Pittsburgh, Pa. 15230

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



20 LST's

each
equipped
with twin

KAMEWA CP PROPELLERS & ONE BOW THRUSTER

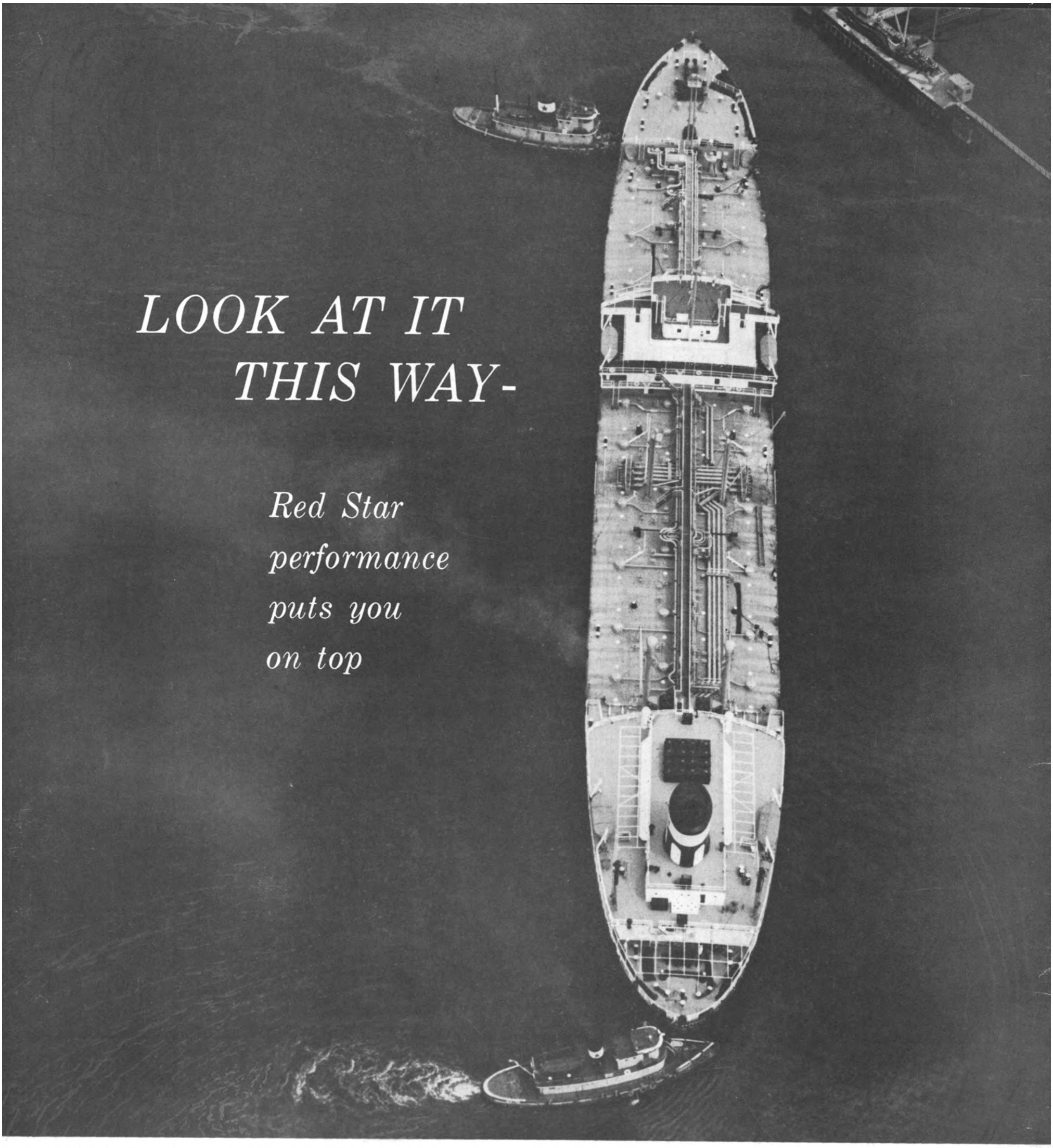
a total of
336,000
horsepower

●

Made in the U.S.A. by

BIRD-JOHNSON COMPANY

883 Main Street • Walpole, Mass. 02081
Phone (617) 668-9610 • Telex: 92-4445



SINCE 1897

Red Star

TOWING & TRANSPORTATION CO. · 500 FIFTH AVE., NEW YORK 10036 · Tel. 736-6040 · Cable: HAVTUGS, NEW YORK