# MARITIME REPORTER ENGINEERING NEWS



**Todd's Seattle Shipyard Delivers USNS Hayes** Navy's First Large Catamaran Research Ship (SEE PAGE 6)

SEPTEMBER 1, 1971

# Pytheas, the Greek. One of England's earliest visitors.

In the late 300's B.C., Pytheas of Massalia, explorer, geographer and navigator, set out to see what was on the other side of the Pillars of Hercules.

The purpose of the expedition was to find the source of the tin and amber that the traders of Massalia received from the north. Pytheas also wanted to find out if there really was a place where the sun shone all night long the legendary Thule.

He sailed up the coast to where Brittany is today and crossed the channel to the Cornish coast, becoming the first European to reach and describe the "Pretannic Isles."

Pytheas probably sailed around Great Britain. He described it correctly as being of a triangular shape with the sides

but he never got that far north. He did observe a day that was nineteen hours long (which could have been in the northern Shetlands) and he may have seen one twenty-two hours long (above 63°). But he never made it to Thule.

Pytheas returned home after six years. The book he wrote was lost and many of his observations were ridiculed. However, modern scientists have compared his surviving observations and notes with their own and have found many of them quite accu-

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







Put McAllister in the picture.

McAllister Brothers, Inc. • Towing and Transportation • 17 Battery Place • New York, N.Y. 10004 • Serving the ports of New York, Norfolk, Philadelphia, Montreal, Victoria, Vancouver and San Juan, Puerto Rico.



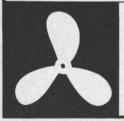




Telephone (512) 226-8271

The Tug BART J. TURECAMO is equipped with two 4 blade stainless steel Coolidge propellers.

The Coolidge Propeller Company, organized in 1910, has through sixty years of continuous service designed and produced quality propellers for every application. The development of special patented production equipment and measuring devices, designed solely for marine propellers, together with constant research in both engineering and materials, have made Coolidge Propellers the accepted standard worldwide.



111 MERCHANTS ST.

COOLIDGE PROPELLER COMPANY

1608 Fairview Ave. E. Seattle, Washington 98102 Phone 206 EAst 5-5100

#### Two Apply To MarAd For Title XI Insurance

Two companies have filed applications for Title XI mortage and loan insurance with the Maritime Administration. Astro-Marine Inc., Houston, Texas, has applied in connection with one 3,200-hp tugboat. The estimated cost of the vessel is \$1.1 million, and it is to be built by Corpus Christi Marine Service, Inc. Corpus Christi, Texas. Midland Enterprises Inc., Cincinnati, Ohio, has filed in connection with the construction of 232 open hopper barges, two 6,600-hp towboats, four 1,200-hp tugboats and two 3,000-hp tugboats. The total actual cost of the vessels is estimated at \$30 million

MarAd Approves Loan For PFEL Lighters

The Maritime Administration has given approval to the Bank of America National Trust and Savings Association on its application for Title XI mortgage and loan insurance which is to be used to aid in financing the construction of 300 lighters.

The lighters are to be leased to the Pacific Far East Line, Inc., for use with six barge-carrying vessels. Avondale Shipyards, Inc., will build the lighters, and the estimated total actual cost is \$12.3 million.

#### The Boeing Co. Wins \$2,650,000 Contract To Modify Patrol Craft

The Supervisor of Shipbuilding, Conversion & Repair, 13th Naval District, Seattle, Wash., has awarded the Boeing Co., Seattle, Wash., a \$2,650,000 contract to modify hydrofoil patrol craft High Point (PCH-1). A new control system, struts and modified foils including a steerable forward strut are called for by the contract. Work on the 110-ton vessel will be done at Boeing's Renton facility on Lake Washington and is scheduled to be completed by September 15, 1972.

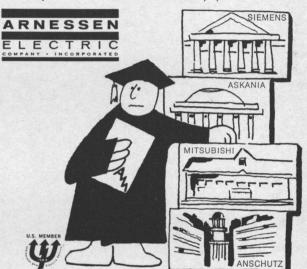
#### **Mooremac Charters** Two C-3s To MSC

Moore-McCormack Lines, Incorporated has time chartered two C-3 class vessels, the Mormacscan and the Mormacglen, to the Military Sealift Command for a period of one to three years, it was announced by James R. Barker, chair-

The charter rate is for \$5,050 per day for the first year, with an option of two additional years, in one year increments at \$5,000 per

#### **OUR TROUBLE SHOOTERS** ARE GRADUATES OF THESE FAMOUS EUROPEAN/ JAPANESE SCHOOLS

Every Arnessen service man has attended at least one of these foreign equipment service schools, in addition to receiving sound basic training from us. That's whyArnessen men make the best troubleshooters on your electric and electronic equipment.



335 BOND STREET, BROOKLYN, N.Y. 11231 • PHONE: 212-596-1500 CABLE ADDRESS: ELECRAFT, N.Y. • TELEX NO. 22 2028 HAMBURG • OSLO • TOKYO

## 360 **PARK AVENUE SOUTH**

NEW YORK

**SUBLEASE** 

JUST BUILT

4,000 SQUARE FEET

LOW RENTAL

**IMMEDIATE** 

PLANS AVAILABLE

ONE TO FIVE YEARS

**BROKERS PROTECTED** 

CALL DAVID R. ARONSON

#### The Beaugrand-Fisher Group, Inc.

REALTORS FOR AMERICA'S FOREMOST CORPORATIONS 200 PARK AVENUE, NEW YORK, N. Y. 10017

> CABLE: BEAUFISH, N.Y. 212/661-5549

REPORTER ENGINEERING NEWS

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

MUrray Hill 9-3266, 3267, 3268, 3269

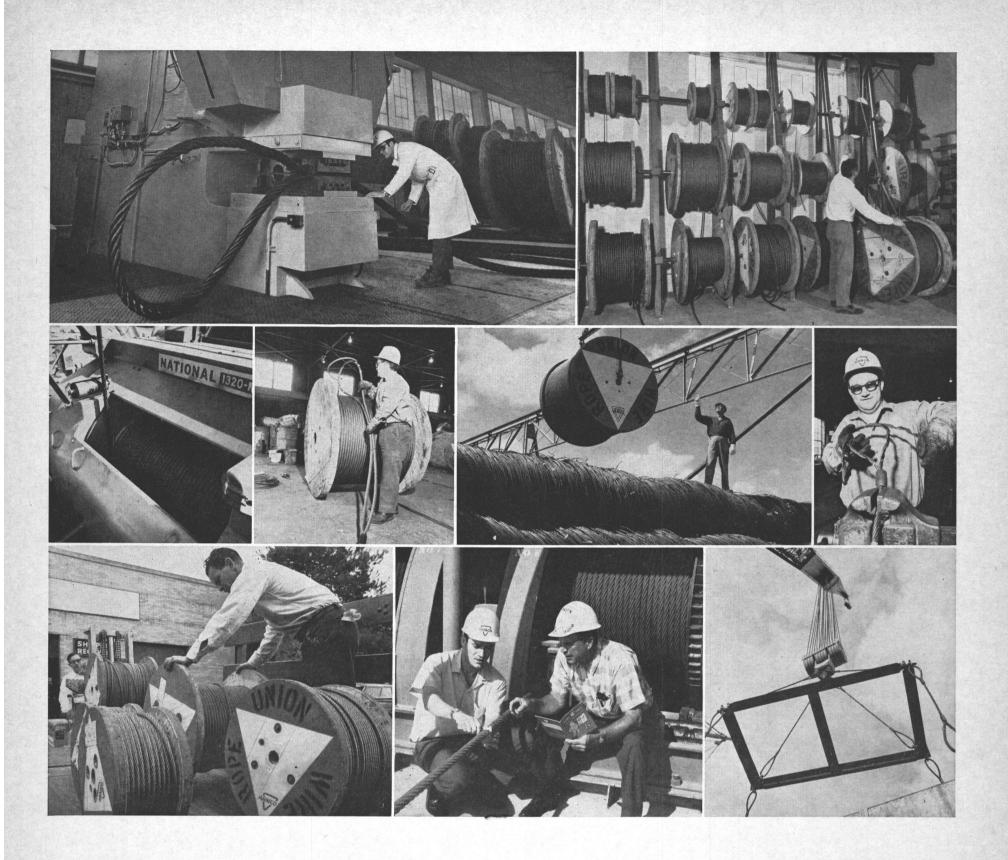
ESTABLISHED 1939

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



**Business Publications** Audit of Circulation, Inc.



# Versatile and ready-to-go: Your Union Wire Rope Marine Distributor

From custom-made slings to safety-engineered mooring lines, your Union Wire Rope Marine Distributor has the know-how and wire rope products to meet every need—conventional or special. Quick, too. He's backed up by a regional Union Wire Rope warehouse with quality rope products. And factory assistance is on call when he needs it.

For versatile and ready-to-go service, see your Union Wire Rope Marine Distributor . . . today. Write us for our Marine Rope Recommendation Bulletin or Sling Handbook. Union Wire Rope Sales, Dept. K-581, 7000 Roberts Street, Kansas City, Missouri 64125.

ARMCO STEEL



## The USNS Hayes (T-AGOR-16)

The Navy's First Large Catamaran Research Ship Provides Twice The Scientific Work Area Of Other AGORs. It Also Provides Better Maneuverability And A More Stable Platform

The United States' first large catamaran research ship, the USNS Hayes (T-AGOR-16), was recently delivered by the Seattle Division of Todd Shipyards Corporation to the Navy. The Navy expects outstanding results from the Hayes because of the special advantages provided by the catamaran design. These advantages are:

1. Heavy deck and scientific equipment can be handled at any deck location without excessive heel angles,

2. Hull separation and resulting separation of propulsion systems provides good station-keeping qualities at slow speeds,

3. Provides center well between the two hulls for scientific gear streaming or handling of deep sea research vehicles at the point of minimum ship motion, and

4. Separate forward and after center-body superstructures allow for separation of scientific spaces from the machinery and living spaces.

The Hayes was designed and constructed specifically to conduct acoustic research for anti-submarine warfare. The design of the ship was a product of a joint effort by the Naval Ship Systems Command, the Naval Ship Engineering Center, the Office of Naval Research and the Naval Research Laboratory. The Hull and Weapons Support Division of NSEC developed the contract plans and specifications and M. Rosenblatt & Son, Inc., served as design agent

To produce the detail construction plans, Todd Shipyards selected the J.J. Henry Co., Inc., as the prime contractor for the majority of the engineering work. In turn, in order to maintain close contact with the work in progress, the J.J. Henry Co. subcontracted certain

phases of the work to W.C. Nickum and Sons of Seattle.

The Hayes design provides for all the increased requirements for oceanographic research since the Navy's first oceanographic ship was designed almost a decade ago. That first design, the 208-foot, 1,300-ton ship T-AGOR-3, in itself represented many years of study. Experience acquired in operating the T-AGOR-3 indicated to oceanographers that a ship was needed with greater design flexibility and larger laboratory and scientific spaces. Such requirements as these led to the design of the T-AGOR-14, a 240-foot, 2,000-ton ship. From the T-AGOR-14, the design of oceanographic research ships progressed to the design of the T-AGOR-16. This ship has an area developed for laboratories and scientific stores more than double those of the T-AGOR-14.

There are 10 scientific spaces providing over 8,000 square feet of area, plus over 7,000 square feet of open deck space available for use in handling scientific gear.

The scientific laboratories, research-control center, computer and data-processing spaces, and calibration and instrument test facilities are housed in the after superstructure. The scientific chill and freeze rooms and the scientists' separate radio facility also are housed there

The main ship control, centralized machinerycontrol station, and living spaces are housed in the forward superstructure.

The arrangement of scientific-gear handling and deck equipment provides work areas forward, amidships on the starboard side, and aft on the starboard side. It provides for equipment handling through the center well and through the bow and stern slots between the



Bow view of the USNS Hayes while on trials clearly indicates the hull form. The forward lines are asymmetric while the stern lines are symmetric. This hull form was selected after extensive model testing by the Navy.

two hulls. Space on the port side amidships has been reserved for carrying portable vans of scientific equipment.

The forward winch complex consists of a main traction winch and an auxiliary winch. The primary use of the traction winch is for deep-sea anchoring in water up to 20,000 feet deep. It is required to provide a 50,000-pound pull at 80-feet-per-minute.

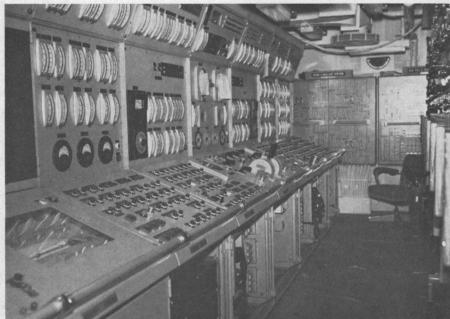
The aft winch complex, located on the 02 level, also has a 50,000-pound capacity traction winch and an auxiliary winch. The traction winch will be used to handle heavy acoustic transducers and to provide a capability of deep-sea anchoring by the stern.

The ship's normal anchoring equipment consists of two Baldt stockless anchors, each weighing 5,820 pounds, and conventional wind-lasses.

There are two electro- hydraulic cranes with telescopic booms rated at 8,000 pounds at an outreach of 60 feet, and 50,000 pounds at an outreach of 15 feet.

The stern crane is used for lifting large transducers and coring equipment and also serves as the fairlead for deep-sea anchoring from the stern. The crane on the forward end of the after superstructure is for general loading and stores handling and service to the midship as well.

(Continued on page 8)



The engineer's operating control room centralizes all the machinery-control operations in one place and has access to both machinery compartments and to the scientific generator spaces. The above view was taken from the port side looking to starboard.



The large pilot house is fully equipped for the ship's specialized mission. Shown in the foreground is the CRP-propeller control console. This unit is duplicated at the secondary ship-control station located in the starboard quarter-deck house.



- LST Mooring Line
- LST Work Boat Rope
   Polyethylene
- Super-8-Braid
- POLY-plus
- POLY-cron

- Polypropylene
- Nylon
- Dacron\*
- Manila

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

# WALL ROPE WORKS

Beverly, New Jersey 08010

Leadership in Rope Research and Development

\*DuPont polyester fiber

#### The USNS Hayes—

(Continued from page 6)

#### Hull Construction

The hull form, which is identical to that of the Navy's ASR ships but slightly smaller was developed after extensive model tests. When viewed from the bow, the two hulls appear as if a conventional hull was split longitudinally and then separated. When viewed from the stern, each hull is conventionally symmetrical about a buttock plane. Therefore, each hull by itself is not transversely stable and there is no parallel middle body.

Because of this design feature, Todd Ship-yards decided to use a modular technique for construction. A total of 55 modules were delineated, 27 of which are below the main deck. The start of construction of each was sequenced. The first modules incorporated the machinery spaces and were followed in order by the midships sections, the immediate bridg-

ing cross structure, and thence simultaneously forward and aft on both hulls and thereafter upwards.

The twin hulls are ice strengthened and transversely framed. The cross structure is designed to withstand the maximum load created by the ship being supported on one bow and the opposite stern. To carry these loads, there are six massive "I" beams running across the ship. They are about 21 feet deep and form part of the transverse bulkheads.

#### PRINCIPAL CHARACTERISTICS

PRINCIPAL	CHARACTERISTICS
Length overall	246 ft. 5 in.
Length bet. perps.	220 ft. 0 in.
Beam, maximum	75 ft. 0 in.
Beam, each hull	24 ft. 0 in.
Distance bet. hulls	27 ft. 0 in.
Depth, amidships	34 ft. 0 in.
Draft, full load	17 ft. 9 in.
Draft, navigational	21 ft. 3 in.
Displacement, light	2,329 tons
Displacement, full load	2,876 tons
Design full power	5,400 bhp
Aux. propulsion power	330 bhp
Shaft rpm, full power	139
Sustained sea speed	15 knots
Creep speed	2-4 knots
Ship's Complement	
Officers	11
Crew	33
Scientists	30

Machinery

The main propulsion plant consists of two (one in each hull) geared diesel engines furnished by the Electromotive Division of General Motors Corporation. The engines, Model 20-645E5, drive Lips/Ampower CRP 12-foot diameter propellers through Western Gear Corporation, Model 840 MGDP-180, reduction gears and 10-inch diameter shafting. The shafting is supported by Waukesha line-shaft bearings and have face-type shaft seals furnished by the Syntron Division of the FMC Corporation. The B.F. Goodrich Company furnished cutless rubber stern-tube bearings.

Besides the main propulsion engines which develop 2,700 bhp each, there are two auxiliary propulsion units for quiet operations which develop 165 bhp each. These units were supplied by Stewart & Stevenson, Inc. While the main units provide a sustained speed of 15 knots, the auxiliary units provide a sustained speed of two to four knots. These units are connected to the reduction gear by clutches. At slow speeds, the ship is able to turn in approximately its own length by reversing the pitch of one of the CRP propellers.

The ship's-service electrical plant consists of three 350-kw, 450-volt, 3 phase, 60-cycle Caterpillar diesel-generator sets. Two 75-kw generators, furnished by Western Branch Diesel Corporation, Model 4045N, provide for scientific and essential services equipment. They are located on the 03 level and are resiliently mounted to reduce the ship's noise during



All quarters are comfortably outfitted, as shown by the above view of the first mate's stateroom. His berth in this room is a single, twin-size bunk. All quarters are fitted with a recirculating air-conditioning system.

silent operations. One similar 75-kw dieselgenerator is provided for emergency use.

A General Electric Company centralized machinery-control system is provided to reduce manning requirements. The central control system provides for an engineering operation station (EOS), containing switchboards for the ship's service and scientific generators and for electric-power distribution, essentiallighting load center, the main control console, an alarm and data logger, bell logger, and numerous other machinery and valve remote controls, alarms, system status displays and indicators.

The EOS is designed for one licensed watch stander and completely unmanned machinery spaces. It is located on the main deck, astride the cross structure in the aftermost space of the forward deckhouse. Although it has relatively direct access to both machinery spaces, it does not have visual access. On the main control console, equipment is provided for remote selection, starting, speed control, and stopping of the propulsion engines. Provision is made in the EOS for remote starting, paralleling and stopping of generators, and for remote transfer of tankage among the other engineering functions that are also included.

The machinery-control console system provides for remote control of the propulsion machinery for ship speed and direction from the ship control consoles in the pilot house, both bridge wings and the auxiliary ship control station located aft. For ship speed, these controls and a similar control on the main console in the EOS are single-lever, programmed for automatic matching of propeller pitch and rpm relationships. Heretofore, such coordination was achieved with mechanical cams whereas in T-AGOR-16 electronic logic circuits, designed by General Electric, establish the control programs. This automatic control is supplemented remote-operated manual controls on the EOS main console for the separate control of propeller pitch and/or rpm which the engineer can use to make special adjustments for endurance runs.

The pilot house control can override the bridge wings and the auxiliary control station. Similarly, the EOS can override the pilot house. Further, the EOS can permissively transfer manual control to a local operating station at each main and auxiliary propulsion-engine complex. Features are incorporated so that transfer of control in the automatic mode can be made without change in the pitch/rpm settings.

The monitoring and display of machineryplant management information is accomplished in a General Electric data center which is relatively new for shipboard application. This center, located contiguous with the EOS main control console, monitors remote machinery performance. The most important operating data is displayed continuously, for example, propeller rpm and pitch, diesel cooling water and combined cylinder exhaust temperatures,



The CPO and crew messroom, shown above, is fitted for comfortable dining. All quarters are located in the forward superstructure. The beam of the ship provides for much larger spaces than is normal for a ship of this size.

etc. Further, in order to save space, subordinate operating data may be observed upon demand by "dialing" a unique digital display which will indicate a numerical value complete with its appropriate engineering unit.

The data center features a scan-monitor system which is continually comparing the output of the numerous remotely located transducers with prescribed limits for normal operation. At regular periods, data is logged automatically. In order to observe a trend, the operator may direct the system to log selected sense points at any time. As one would expect, audible alarms, visual indicators, and the automatic typewriter are all actuated when limits are reached.

Supplementing the above is a companion automatic typewriter for bell logging, a master digital clock system, all sorts of solid-state electronic circuitry and necessarily, a special non-interruptible source for 120-volt, 60-Hz., single-phase and 24-volt dec power.

single-phase and 24-volt d-c power.

Steering of the Hayes can be handled either from the bridge or the secondary control station through the Sperry Marine Systems' steering units

As can be expected, the Hayes is well outfitted with navigation and communication facilities. The navigation equipment consists of a Radiomarine Corporation Model CRM-N2C-30 radar, a Sperry Model A/C Loran unit, a Raytheon Model DE 714/715 depth sounder, and an ITT Mackay Marine 4004-A radio direction finder. The communications equipment consists of an ITT Mackay Marine MRU-29A/30A radio, a RF Communications Inc. Model RF 201M multi-frequency radio phone, and a Collins Radio Company MR 201 VHF radio phone.



The ship's control radio room is equipped with a transmitter and receiver, and a weather facsimile unit.

Moran Towing & Transportation Co., Inc., 17 Battery Place, New York, N.Y. 10004

#### New Lloyd's Rules For Dredges And Barges

At a meeting of the executive board of Lloyd's Register of Shipping, a complete revision of the Rules for the Construction and Classification of dredgers, hopper dredgers, sand carriers, reclamation craft and hopper barges was agreed. These resulted from the considerable changes in both the sizes of these vessels and their service requirements which have

taken place since the Rules for such craft first appeared in 1963.

The new Rules are applicable to vessels of all sizes and cover deepsea, coastal and inland water service. For the first time, the service restrictions for coastal vessels are based on weather conditions and available shelter rather than on geographical limits, thus giving operators and contractors a much greater freedom to deploy their vessels profitably.

The Rules have been written against

the background of the trends toward grab dredgers instead of bucket dredgers (which now account for only about 6 percent of the total) and toward large trailing suction hopper dredgers for port development work. This latter trend is often stated to be a direct result of the introduction of supertankers, but it would appear that beach replenishment work and new harbors for ore and general cargoes in the developing countries have contributed. It is of interest to note

that the world's largest dredgers are being used on inland waters of quite moderate depth.

Another type of vessel, the numbers of which are increasing at a significant rate, is the sand carrier. These are mainly used for obtaining sand and gravel for civil engineering work and are generally similar to suction hopper dredgers except that their hold spaces are not fitted with hopper doors. Of the 600 or so self-propelled, seagoing and coastal "dredger type" vessels of 500 tons deadweight and over which are listed in Lloyd's Register, more than a third are now involved in the sand carrier trade, and consequently, the new Rules make particular provision for their needs.

Another factor prompting changes in the Rules is that dredgers have greatly increased in length. Provision has had to be made for dredgers 60 percent longer than formerly. In addition, there has been a great increase in the use of dredgers on contract work involving long voyages. There-fore, a major change in the new Rules relates to longitudinal strength, which has to be fully calculated for all vessels of approximately 164 feet or more in length, and for certain smaller seagoing vessels where high bending moments are likely to occur. This takes account of service and weather conditions and allows higher stresses when the ship is dredging in sheltered water than when the vessel is making a long sea voyage.

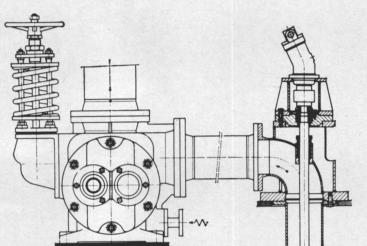
The Rules for hopper and well structure are now based on head and spoil density, and scantling requirements have been introduced for the upper and lower transverse members within the hoppers. Requirements for continuous hopper coamings have been given in considerable detail in order to eliminate, so far as is practicable, the possibility of local buckling instability when the vessel is sagging. This has been made necessary by the increase of the allowable compressive stress in these coamings from the former comparatively low value to as much as 17.5 kg/mm<sup>2</sup> in certain cases.

The Rules for anchors and moorings have also been revised and are now related (for oceangoing dredgers) to those for steel ships and (for sheltered water dredgers) to those recently published by Lloyd's Register in its Rules for vessels for navigation in inland waterways.

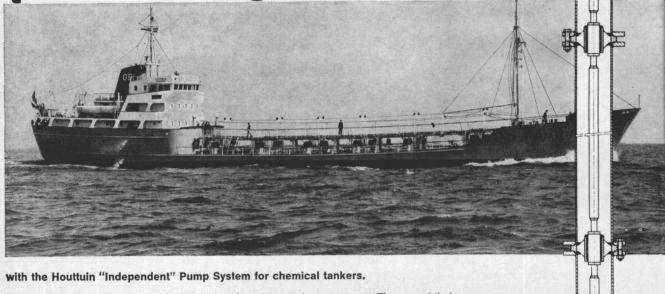
One type of vessel that the Rules do not provide for is the stern paddle wheel dredger. One of these is still operating in Pakistan, and although she was built in 1925, she is quite a youngster considering that about 3 percent of the world's dredgers were built before 1910, and one of them, the Joseph S. Scobell, was built in 1890.

#### Hillman Receives Order For 30 Hopper Barges

Hillman Barge & Construction Company, Pittsburgh, Pa., has received an order to build thirty 200-foot by 35-foot by 13-foot box-type open hopper barges for American Commercial Lines, Inc. These barges are to be used for the transportation of coal and are to be delivered during the period February through May 1972.



Quick Discharge of any Type of Cargo



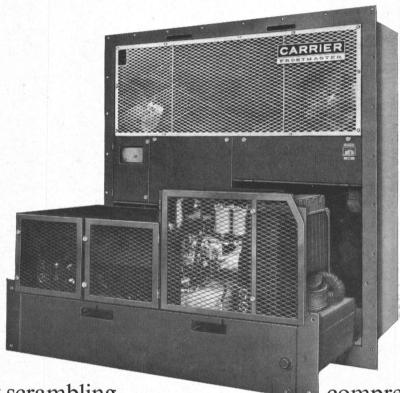
In tanker economy, the time taken in discharging plays an important part. Time spent tied up in Port is unproductive. The "Independent" pump system specially developed for chemical carriers by Houttuin-Pompen N.V., offers an ideal solution. Irrespective of the viscosity and density of the cargo and the back pressure generated at the jetty, the unloading capacity, and thus the discharging time, remains practically constant. The "Independent" system recently installed in the tankers "Jacobus Broere" and "Bastiaan Broere" owned by Gebr. Broere (Dordrecht, Holland) consists of booster pumps with independent drive mounted in the cargo tanks and a central main pump situated on the upper deck. The booster pumps increase the efficiency of the main pump and in this way it is possible to handle products with high vapour pressures. All tanks are emptied to within a few litres irrespective of tank depth and flow resistance in pipework. It is a relatively economical system, its hydraulic drive allowing close control and ensuring high reliability. It offers maximum protection against the explosion hazard and toxic risk.

Are you interested in obtaining further information on this complete tanker pump system? Ask Houttuin, the pump experts!



HOUTTUIN-POMPEN N.V., UTRECHT, SOPHIALAAN 4, TELEPHONE 030 - 44 16 44, TELEX 47280

# This refrigerated wall packs its own power.



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

Like many of our units, this one also becomes the front end of your container (and saves installation costs). Comes factory-charged with refrigerant and oil. Includes the long-life Carrier 6D compressor.

And an automatic close-limit thermostat controls refrigeration, electric heating, and evaporator defrost. Also available with

compressor cylinder unloading for capacity control.

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

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



See us at the Oakland Coliseum September 13-19 at Booth 426-429.

Foss Launch & Tug Promotes William Wood —Jurgensen Appointed

Sidney D. Campbell, president of Foss Launch & Tug Co., Seattle, Wash., has announced the promotion of William P. Wood to the position of senior vice president, and the appointment of Roy D. Jurgensen as vice president of sales and marketing.

Mr. Wood, formerly vice presi-

dent of marketing and engineering, will assume broader responsibilities in the overall management of Foss. Mr. Wood studied engineering at the University of Washington, and was with the Todd organization before joining Foss in 1946. He is a charter member of the Port Engineers Society of Puget Sound, a past chairman of the Pacific Northwest Section of The Society of Naval Architects and Marine Engineers, and a member

of their tug and barge panel MS-7. He is also a member of the A B S subcommittee on ship operation and of the Seaspan Technical Committee.

Mr. Jurgensen, prior to joining Foss, was affiliated with the cement group of Kaiser Cement and Gypsum Corporation in the capacity of regional sales manager. Previously, he was manager of distribution and transportation for Kaiser Cement, directing that

company's ship and barge operations. He is a graduate of the University of South Dakota.

"During the past year, both Foss Launch & Tug Co. and Foss Alaska Line have greatly expanded the number of ports served in regular, scheduled cargo transport and in contract towing, as well as increasing the size and diversity of our fleet," Mr. Campbell said. "Our plans call for even more accelerated expansion, with continued superior service, in the immediate years ahead. These organizational promotions assure us of having the capability to meet broadening marine towing needs of our present and future customers," he added. Foss Launch & Tug Co. and

Foss Launch & Tug Co. and Foss Alaska Line are affiliates of the Dillingham Corporation, Hono-

lulu.

#### Lockheed Low Bidder At \$52.6 Million To Build Icebreaker

Lockheed Shipbuilding and Construction Co., Seattle, Wash., with a bid of \$52,681,485, was the apparent low bidder for the construction of a 400-foot icebreaker for the U.S. Coast Guard.

Prosher Marine Corp. Formed To Operate Oceangoing Tonnage

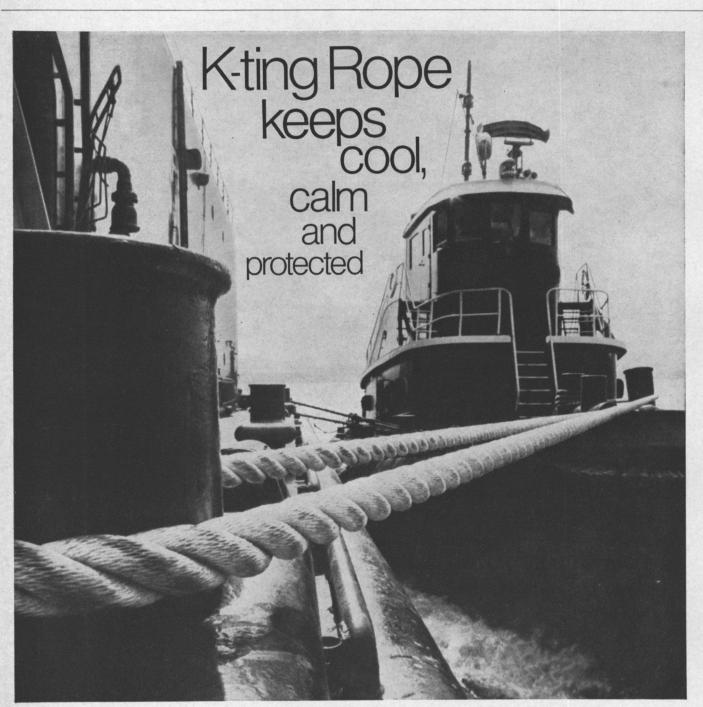
Prosher Corp., a Los Angeles based real estate development and building materials corporation, announced that in a joint venture with James J. Apostolakis and Spiros Milonas, shipping executives, it has formed a new company, Prosher Marine Corp.

According to Martine Landis, chairman of the board and president of Prosher Corp., the new company will be a wholly-owned subsidiary. The firm will own, manage and operate oceangoing vessels through the construction and purchase of oil and ore-carrying vessels. Prosher Marine will be headquartered in New York City.

#### Unique Ceremony At Todd-Houston

A unique christening and launching took place July 30 at Todd Shipyards' plant in Houston, Texas. In a most unusual ceremony, four barges and one river boat were christened. One of the four barges, the Alamo 2000, was launched afterward to complete the five unit tow, with a total capacity of 100,000 barrels and a total length of 1,165 feet.

The vessels were christened by the wife and children of E.A. Smith, president of Alamo Chemical Transportation Company. Miss Suzanne Virginia Smith christened the 4,500-hp river boat named in her honor. The barge Alamo 2000 was christened by Mrs. E.A. Smith, Alamo 2001 was christened by Catherine Anne Smith, and Alamo 2002 and Alamo 2003 were christened by Mr. Smith's sons, Stacy and Tom, respectively.



When frictional heat builds up in rugged marine use, K-ting's Docrylene® Rope has the "cool combo" of synthetic fibers to hold and render smoothly on bitts, capstans, cavels, winchheads or timberheads.

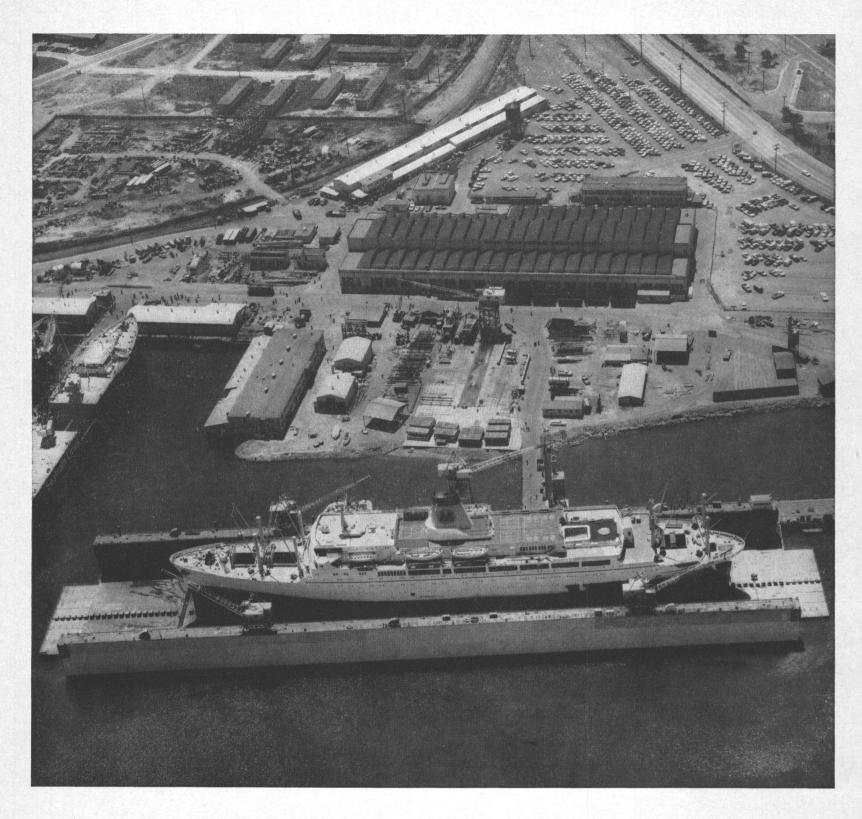
This custom blend is ideal for docking and mooring in harbor, sound, canal and lake towing operations. Docrylene combines a polypropylene core with outer yarns in Dacron\* jackets. These hold fusing below grabbing level, resist abrasion and handle easily. Polypro cores are extra strong, lightweight, waterproof and resistant to rot and mildew.

For tugs, barges and scows, K-ting Docrylene provides long life and low-cost performance in varied marine service. In 3-strand (or super-flexible 8-strand) design, it defies abuse from weather, water and wear. We couldn't hand you a smoother line.

\* DuPont trademark—polyester fiber

K-ting Rope

CATING ROPE WORKS, INC.
MASPETH, N. Y.



### MRV No. 1: Todd's big new facility for bigger ships.

Mobile Repair Vessel, that's what MRV means. A brand-new type of repair facility, the first one is now working at Todd's San Francisco yard. And MRV is big...for drydocking and repair of broad-beamed glants to 135,000 deadweight tons. And being mobile to boot,

yards. To serve you with even more economy, efficiency, and speed.

TODD SHIPYARDS CORPORATION . New York · Brooklyn · New Orleans · Galveston · Houston · Los Angeles · San Francisco · Alameda · Seattle, Executive offices: One State Street Plaza, it's far more flexible in serving shipping. New York, N. Y. 10004. Phone: (212) Todd's planning other MRV's at other 344-6900. Cable: "Robin" New York.

Talk to

#### Navy Timetable Set Up For Its Fifty-Vessel Patrol Escort Program

According to the Shipbuilders Council of America, the Navy has set up a timetable for its 50-vessel Patrol Escort Program. Eight shipyards will be invited to submit statements of interest and qualifications in October 1971. In February 1972, contracts will be awarded to two yards to work with the Navy on preliminary de-

signs. One of the above two yards will be selected in February 1973 to complete the design of and build the prototype ship. In December 1973, bids for the construction of 49 following vessels will be solicited, anticipating contract awards to three yards. The cost of each ship is currently pegged at \$50 million. The program may be finished by 1979, with differing amount of vessels to be built each year between FY 1973 and FY 1979.

#### New England Petroleum Names Peter Hunter Senior Vice President

The appointment of Peter R. Hunter as senior vice president of New England Petroleum Corporation, New York, N.Y., has been announced by Edward M. Carey, president.

Mr. Hunter's duties will include the planning and development, supply and transportation and refinery coordination functions of the com-

Mr. Hunter joined New England Petroleum Corporation in 1964 as vice president of its Canadian affiliate, Nepco Petroleum Limited, after extensive experience in the fields of crude and product supply and planning with the Gulf Oil Corporation in the U.S. and Canada. He was named director of supply and transportation for New England Petroleum Corporation in New York in 1966 and vice president, supply and transportation, in 1968.

From 1969 to his present appointment, Mr. Hunter served as vice president for planning and development and assistant to the president of New England.

#### Twin City Barge Conducting Study To Expand Shipyard

Twin City Barge & Towing Company, St. Paul, Minn., reported it is conducting a study to determine the feasibility of making a major expansion of its shipyard facilities.

John W. Lambert, president, said that if feasibility of the project is affirmed, additional shipyard facilities will be built on Twin City Barge's present 22-acre site in the Red Rock Industrial Park on Pigs Eye Lake in the Mississippi River.

In addition to its shipyard, Twin City Barge also operates towing and barge-fleeting service in the Twin Cities area and in Greater Chicago.

#### Universal Terminal Promotes Kennis

Edward Kennis has been appointed vice president for operations of Universal Terminal & Stevedoring Corp., it was announced by James J. Dickman, president.

Mr. Dickman said that Mr. Kennis would be in charge of the overall operation of the company's terminal facilities in the Port of New York

Prior to joining Universal, Mr. Kennis served 15 years with the U.S. merchant marine; his last assignment before coming ashore was as master for Farrell Lines.

Mr. Kennis has been with Universal since 1952, in various capacities in operations.

#### Adm. Powell To Direct NOAA Fleet Operations

Rear Adm. Allen L. Powell has been named to direct the operations of the National Oceanic and Atmospheric Administration's fleet of 46 ships. The fleet is devoted to deep ocean and fisheries research and surveys; ocean, coastal, and Great Lakes hydrographic surveys; coastal wire drag operations, and tidal current surveys.

The fleet headquarters are at Norfolk, Va. Admiral Powell has headed the NOAA's Atlantic marine center there since last 1968. Capt. Alfred C. Holmes will succeed him in that post.



# Slammed, banged, drenched and wrenched there is only one valve operator that can take rugged sea duty:

### LIMITORQUE

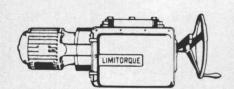
Fuel transfer in pounding seas demands rugged reliability—from the men that man our Navy's ships as well as from every piece of equipment aboard.

Proven rugged reliability, against shock, water, heat and cold, is the reason why the Navy chooses Limitorque valve controls to operate critical valves on most classes of U.S. Navy ships—from fleet oilers to LST's to nuclear aircraft carriers.

Explosion proof, weather proof and fully submersible, Limitorque operators automatically control valves on fuel, water and steam lines. Their precision operation protects valve components from wear and damage. They operate smoothly and instantly, by push button, by programmed automatic operation or on command from remote control stations.

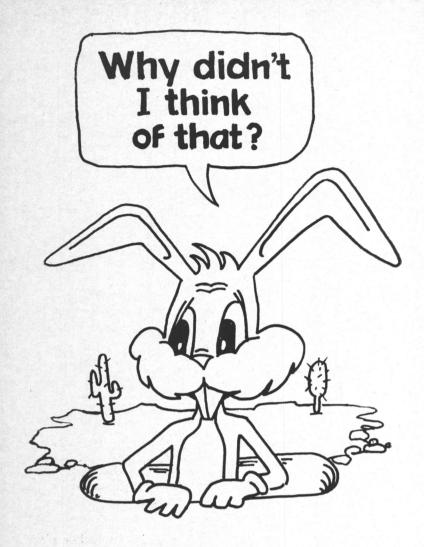
In addition, they operate watertight doors, hatches, catapults and loading ramps —wherever controlled linear or radial movement is required.

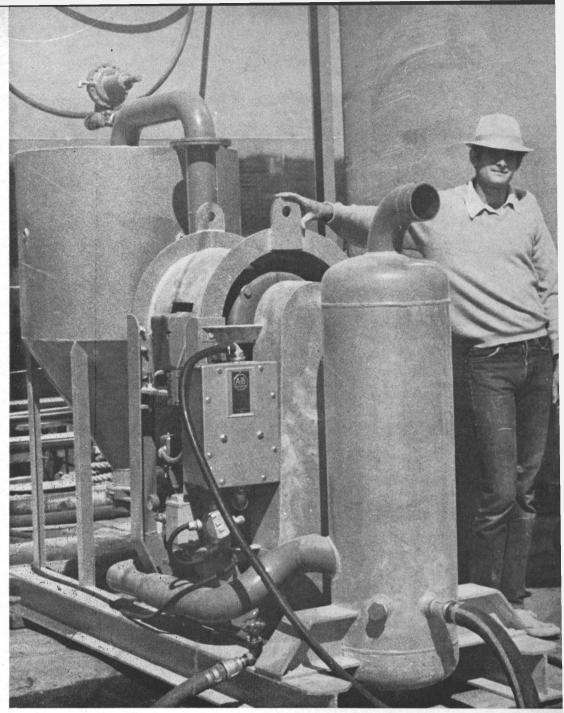
If precise, unfailing automated valve control in a demanding environment is your need —make sure it's a Limitorque. Write for catalog SMB. Limitorque Corporation, Dept. MTR 40, King of Prussia, Pa. 19406.











That's the general response from people who see our equipment for the first time.

We've been designing, building and using abrasive blasting and vacuum recovery equipment — and shot blasting systems — for over 30 years.

We've learned the components you need — and the ones you can do without. And we've learned to make the components we've retained versatile, reliable and economical.

Through the judicious application of the principle of simple design.

We build a range of blasters sized to fit practically any job. We've standardized a number of models.

But we have the capacity, the capability and the desire to custom build to your exact specifications.

Key Engineering Blast Units are fitted with Key metering and control valves specifically engineered for materials conservation, operating ease, and flexibility.

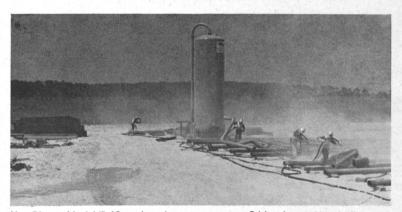
We'll be happy to arrange for an on-the-job demonstration at one of our satisfied user's locations.

We'd like you to compare our equipment with what you're using - or what you intend to buy.

We believe you'll decide ours is the best you can buy. You can pay more — but you can't buy better.

And if the ecology issue is putting a squeeze on your blasting operations, talk to us about our "wet blast" equipment.

The Key VR-3600 vacuum recovery unit develops 26 inches of mercury for removing spent abrasives and debris. GULFPORTSHIPYARD



Key Blaster Model T-40 equipped to operate up to 8 blast hoses. Uses bulk abrasives and requires no labor except the men handling the blast hoses. Equipped with KEY "dead-man" remote controls and abrasive metering valves BROWN & ROOT

CALL JIM GIESE

# **KEY** engineering

12502 Woodthorpe Lane Houston, Texas 77024 Telephone 713/465-6245

## Turbopitch Propulsion System

A High-Speed Gas Turbine, Unique Gear Box And CRP Propeller Are Combined To Provide Reliability For Offshore Supply/Tug Vessels

Ronald G. Hall, John K. Liu, and T.B. Lauriat\*

The mode of transportation for offshore supply/tug vessels dictates that speed and reliability are the two most important prerequisites.

Since the weight of the propulsion system would have an important influence on the speed, range and payload, it was decided to use a lightweight gas-turbine prime mover, a lightweight reduction gear box and a controllable-reversible-pitch propeller. This led to the development of the "Turbopitch" propulsion system.

This propulsion system is designed with two configurations:

1. Straight drive where the prime mover is mounted forward of the gear box and

gear box, and
2. "U" drive where the prime mover is mounted aft of the gear box and over the propeller shaft.

As the type, size and speed of the vessels would vary considerably, it was decided to standardize as much as possible and keep to a minimum the different sizes of the major components. The system was developed primarily for horse-powers from 1,000 to 2,500. This appeared to meet the requirements of owners who operated medium and high-speed vessels from 75 feet to 120 feet in length and speeds from 25 knots to 40 knots with single or twin-screw configurations.

The speed of the propeller was another variable. This could vary between 900 rpm and 1,400 rpm. The propeller speed selected as the most suitable was 1,200 rpm.

The final range of sizes selected were 1,000 hp, 1,250 hp, 2,000 hp and 2,500 hp. This range required two different sizes of propeller hubs and reduction gear boxes and four sizes of gas turbines.

Propeller

The controllable reversible propeller (CRP) is of A.M. Liaaen A/S, Aalesund, Norway, design. This particular type of propeller has been tested and proven since 1962 when Kongsberg Vapenfabrikk was involved in a project to evaluate the marine application of a 500-hp gas turbine. This project

\* Mr. Hall, Propulsion Systems, Inc.; Mr. Liu, Philadelphia Gear Corporation, and Mr. Lauriat, Avco Lycoming Division, presented the paper condensed here before the recent Offshore Technology Conference held in Dallas, Tex. involved building a 32-foot single-screw vessel, the Rimfakse.

This project at its inception had a fixed-pitch propeller system. However, due to the problems in obtaining a reliable lightweight reduction gear for a high-speed marine turbine A.M. Liaaen was consulted to design a prototype CRP propeller so that the advantages of the lightweight high-speed features of the gas turbine could be utilized.

The KV-AML high-speed propeller system represented an advance in marine propulsion as it contained a number of new technical solutions enabling the system to operate reliably and efficiently under high loadings and rpms.

The propeller system consists of an oil-control box, shaft, hub-blade assembly and a reduction gear box.

The blades have super-cavitating sections which were developed after intensive model tank testing. Despite the fact that such sections are optimized for operation from around 40 knots and above, the propeller demonstrated very good efficiency all the way to the lowest speeds.

The initial 50-hour test program proved the propeller system to be smooth in operation and continu-

ous control was achieved at all power levels.

The test demonstrated that in conjunction with a free-power turbine, variable pitch should not be resorted to as means of speed control under normal operation. The optimum pitch angle was approximately constant from 5 to 32 knots, and this angle gave at any forward speed the highest propeller performance and the lowest fuel consumption.

In comparison with a similar prototype gas-turbine-powered vessel employing a conventional fixed-pitch propeller system the program showed that the KV-AML super-cavitating propeller was capable of satisfactory performance at all speed levels.

Conventional cavitation erosion was present, but to a lesser extent than anticipated. The propeller was, cavitation wise, suitable at all speed levels.

The propeller is of A.M. Liaaen three-bladed, double-crank design with servomotor located in the hub, Figure 1. The hub is of corrosion resistant steel. The blades also are of corrosion-resistant steel and are each bolted to the crank disc by means of six stainless-steel bolts. The crank discs are each fitted with two crank pins located oppo-

site of each other. Each crank pin is fitted with a slipper which is held between the forward piston and the guide block.

The propeller hub is completely sealed to prevent water from entering or oil from leaking out. The hub is under oil pressure from a head tank located in the vessel.

The servo control box, Figure 2, is mounted on the forward side of the reduction-gear box. Its purpose is to transmit pitch-control handle motion to the spool valve in the propeller hub. It also serves as a distributor for the supply and exhaust oil

When operating propeller pitch from the control stand, the handle travel or pitch called for on the control stand is transmitted to the control handle on the side of the servo control box. This angular motion is transferred to linear motion through the control-shaft slipper to the yoke to the spool valve. When the control handle has been moved to the desired pitch, the spool valve will take a center position and the servo piston and hence the propeller blades will stop their motion. The propeller pitch will now correspond to the pitch called for on the control handle.

(Continued on page 18)

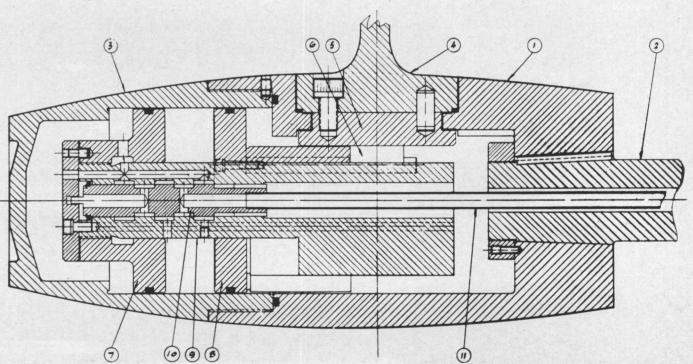
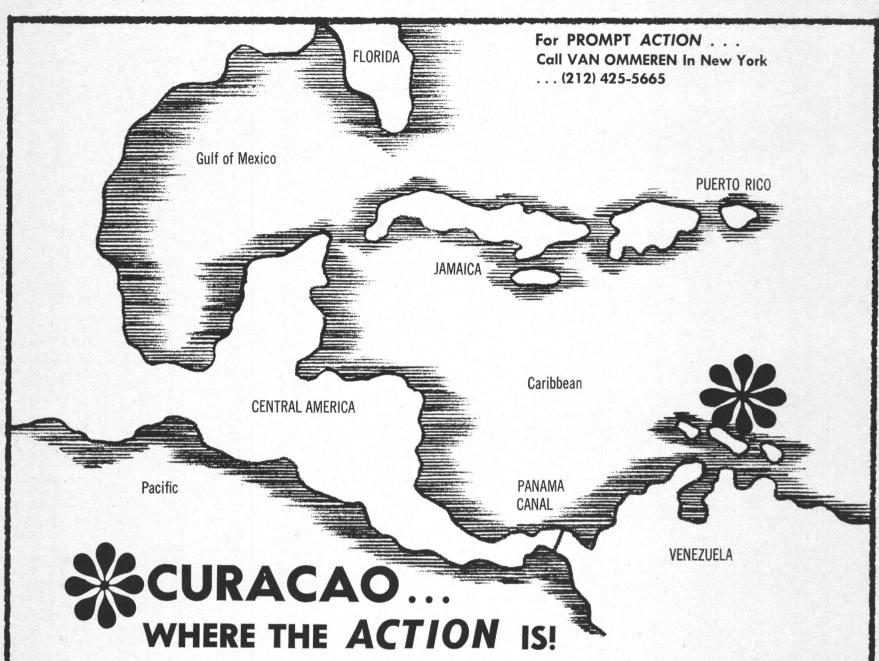


Figure 1—The cross sectional view of the CRP propeller hub shows: 1-propeller hub, 2-propeller shaft, 3-fairwater cap, 4-propeller blade, 5-crank disc, 6-crankpin, 7-forward piston, 8-aft piston, 9-piston rod, 10-spool valve, and 11-oil tube.



THE NEW ACTION ...

New 120,000 DWT Graving Dock scheduled for operation this year

THE NOW ACTION ...

3,500 Ton Floating Dock 28,000 DWT Graving Dock THE COMPLETE ACTION ...

Complete Shipyard Services, including Ship Repair, Underwater Cleaning, Engineering Accomplished by Skilled Dutch Craftmanship



#### DRYDOCK COMPANY CURACAO

P.O. Box 153

Curacao, Netherlands Antilles—Cables: SHIPYARD CURACAO

Phone 37200



U.S. General Agents

PHS VAN OMMEREN SHIPPING (U.S.A.) INC.

11 Broadway

N. Y., N. Y. 10004

(212) 425-5665

#### Turbopitch Propulsion—

(Continued from page 16)

#### Reduction Gear

To take advantage of the weight and space savings possible with a lightweight gas turbine, traditional reduction-gear arrangements, designs and manufacture were discarded in favor of an advanced, lightweight and compact design. The basic goal was to develop a unitized reduction gear / prime mover/propeller assembly with the simplest possible engine mounting and foundation. To this end, the gas turbine was cantilevered off the input side of the reduction gear, and the oil-distribution box for the CRP propeller integrated with the output shaft assembly. The output shaft bearings were sized to take full propeller thrust, which is transmitted to the hull via the gearbox mounting. This arrangement achieved several significant results:

1. Gas turbine to gear box alignment problems are non-existent. A double engagement gear-type coupling on the input shaft accommodates any slight misalignment.

2. No engine foundation is required.

3. No separate propeller thrust bearings are required, nor thrustbearing supports.

4. The CRP oil-distribution box may be mounted forward of the reduction gear, eliminating large-diameter high-pressure oil seals. The hollow bore of the gear accommodates the oil tubes leading to the CRP hub.

5. Accessory drives, such as for the CRP oil pumps, are taken off the reduction gear.

The reduction gear is the Philadelphia Gear Model 13 VMGHS with Model CQ 33 clutch and brake.

The reduction gear is a helical, double-reduction unit, using hardened and ground gearing throughout. Anti-friction bearings are used except on the high-speed input shaft, which uses sleeve bearings and a pivoted shoe-type thrust bearing. The housing is of lightweight welded-steel construction, stress relieved after welding. The housing is split at each shaft centerline. The splits are ground and sealed without the benefit of gas-kets by virtue of the smooth finish. An even lighter weight housing of welded aluminum was considered. However, the potential weight savings was not sufficient to warrant the higher material and manufacturing costs.

The essential reduction-gear characteristics are given in Table 1.

#### Table 1-Reduction Gear Data

1,250 hp
1.50
18,500 rpm
885 rpm
20.90
3,628 rpm
3,628 rpm
20,000 hr.
Motor driven
Integral
Forged
Alloy steel
Sleeve type
Pivoted shoe
Tapered roller
Tapered roller
Tapered roller

The basic reason for the sizeable weight and bulk reduction is the adoption of hardened and ground, single-helical gearing. The helix angles for the gears range from 11 to 12 degrees. These angles result in low bearing thrust loads, which in turn permit all but the high-speed gears to be straddle mounted

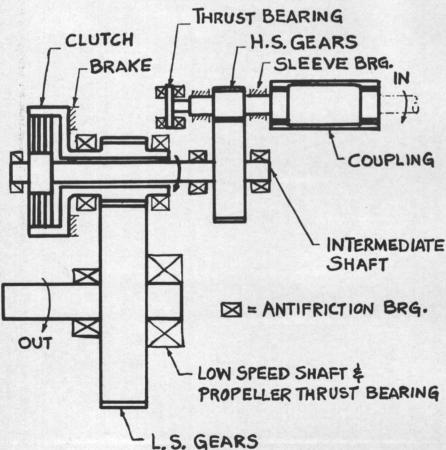


Figure 3—Schematic arrangement of the reduction gear, which incorporates in the assembly the clutch, brake and thrust bearings. The total dry weight is 1,915 pounds.

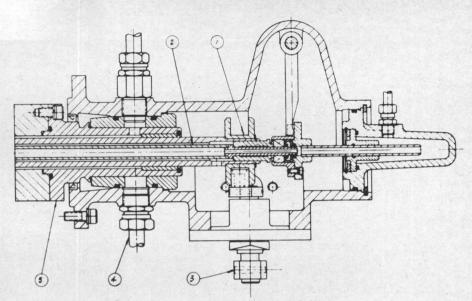


Figure 2—The servo control box is mounted on the reduction gear box. Shown in this view are: 1-yoke, 2-oil tube, 3-control handle, 4-drain, and 5-shaft extension.

on pairs of tapered roller bearings. This arrangement is shown in Figure 3.

A clutch is incorporated on the intermediate shaft to allow the gas turbine to be idled and started at no load. The propeller can be picked up with the clutch at any speed from idle to full speed, and with the propeller pitch neutral or any other setting. The clutch is of multiple-disc construction, and uses forced oil for cooling and lubrication. The clutch is air operated, using the ship's air supply at 85 psi. The air is introduced to the piston through an external rotary union which may be serviced without disturbing the clutch itself. The oil-cooled clutch and brake were chosen due to the relatively high intermediate shaft speed (3,628 rpm).

In order to keep the propeller from creeping with the engine idling, and to keep the propeller from back-driving the turbine, a brake is built into the clutch. This brake is attached to the low-speed pinion, and grounds it to the housing when engaged. The brake also is air operated and is interlocked with the clutch controls. The brake may be engaged when the engine speed has been reduced to idle, or approximately 10 seconds after the clutch has been released.

#### Gas Turbine

In high-speed craft where weight is important and in work boats where precise control is required, the selection of a gas turbine as the driver seems natural.

The gas turbine is available in two basic mechanical forms, fixed wheel or constant speed and free-power turbine or variable speed. The free-power turbine gives the greatest versatility to the CRP system in terms of control, adaptation to various craft and performance. Free-power turbine powerplants also differ from other engines in that their power production and power delivery systems are mechanically separated.

The series of gas turbines—1,000 hp to 2,500 hp—selected for this project all employ the same basic

sections and all are about the same size and weight: 36 inches high, 36 inches wide and 48 inches long and weighing about 1,100 pounds. Because of the design of these engines, output shaft speeds are naturally quite high, in the order of 15 to 17 thousand rpm.

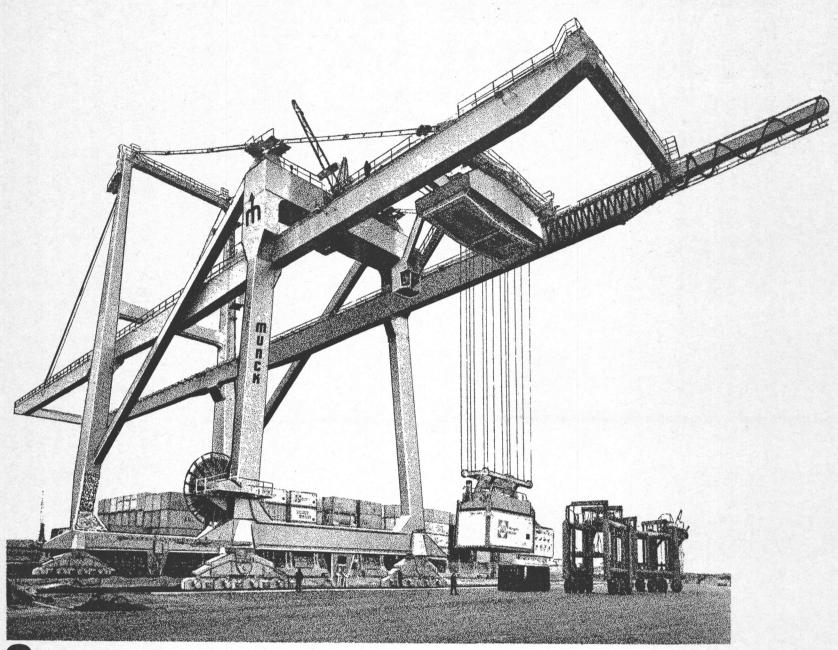
Gearing to cope with this speed and to produce a useable propeller rpm provided a unique mounting arrangement. The engine was cantilevered directly from the gear, using the inlet housing flange as a mounting ring. This engine mounting makes change-out a simple job and alignment checking no longer a requirement. The turbine accesgear provides the mounting pads for the starter, fuel control, governor and assorted drives for up to five separate items, such as lube pumps for external equipment, generators, hydraulic pumps, etc.

Each engine is equipped with an electrical control system complete with instrumentation and solid-state control box. The control box includes replaceable modules, sequence failure diagnostic devices and a service data recorder.

The power-management request for a change in power or torque is translated to the engine as a variation in fuel flow. The maximum rate of this flow is normally present as a function of ambient temperature and compressor pressure. This scheduling to prevent either excessive temperature during increases, or flame-out during decreases, over-rides the control motion. Thus, the operator may slam the throttle or speed-select lever without concern.

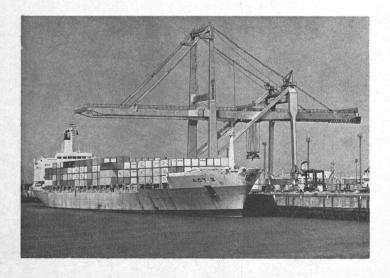
Lightweight gas turbines suitable for marine use have been derived from extensively developed and produced aircraft gas turbines. These latter engines are conventionally, manually started and utilize wide-cut jet fuel of low viscosity suitable for very cold operating conditions.

Engines for marine use have a different optimization, including use of heavier fuels for economy, elimination of smoke and odor, and preferably automatic sequencing with integral safety circuits for simplified operation.



Sure • • • • • we built these two Portloaders at NEW YORKLAAN OCEAN CONTAINER TERMINAL ZEEBRUGGE, 70 meters high, 102 meters long, with a capacity of more than 30 cycles per. hour, handling containers of 45 tons each . . . . . But, if you think that we build only "GIANT CRANES" you are wrong. There will always be a MUNCK for a lift.

Hoists - cranes - shiploaders - portloaders.



Munck Canada Ltd., Montreal, Canada, Munck Continental SA., Esneux, Belgium, Munck GmbH, Aachen, Germany, Munck Incorporated, Douglassville, U.S.A., Munck Industri AB, Ørebro, Sweden, Munck International A/S, 5000 Bergen, Norway, Munck (U.K.) Ltd., London, England.



#### TRACOR, Inc. Awarded \$4.9 Million Contract

TRACOR, Inc., has received a \$4.9 million contract from the Naval Ship Systems Command, Department of the Navy, Washington, D.C., for engineering analysis and technical consultation supporting the development of sonars aboard the Navy's missile-carrying submarines, the SSBN.

The SSBN Sonar System, which processes and displays underwater acoustic information, enables naval submarine operators to detect potential enemies at sea.

According to Dr. Wayne Rudmose, TRACOR Group vice president, the main objective of TRA-COR's contract with the NSSC is to standardize and coordinate the software and hardware development of the SSBN Sonar System

for the Navy.
"In meeting this objective, the expertise of TRACOR sonar scientists, engineers, and managers lo-

cated in Maryland, Virginia, Connecticut, and Texas will be involved," Dr. Rudmose said. "They will provide the Navy with specifications for proposed SSBN sonar systems hardware, predictions of the system's performance, as well as installation and checkout procedure outlines for sonar equipments, field engineering and configuration management, and will establish equipment evaluation and test criteria for the SSBN.'

Long-established in the field of sonar, TRACOR's initial work in sonar began in 1962 with studies for the Navy in the areas of sonar signal reception and detection for the AN/ SQS-26 sonar system during its early stages of development. In 1966, the company began its work on submarine sonar systems.

Headquartered in Austin, Texas, TRACOR is involved in sponsored research and development projects in a wide range of scientific disciplines. With operations in 14 states, Mexico, Hong Kong, Puerto Rico, Taiwan, and England, the company is also heavily engaged in the manufacture of electronic and electromechanical components and systems, computer products, dedicated computer systems, and scientific instru-

#### Hillman Transportation Names Zadroga VP



Albert Zadroga

Albert Zadroga has been appointed to the office of vice president of Hillman Transportation Company, as announced by Frank P. Silliman, chief executive officer.

Mr. Zadroga started his career with Hillman at their Dravosburg, Pa., office in 1938. He was promoted to chief dispatcher in 1950, when the base of operations moved to its present location at Brownsville, Pa. In 1956, he became assistant manager and in 1970 was advanced to the position of manager.

Mr. Zadroga is a member of The Propeller Club, Port of Pittsburgh, and the Ohio Valley Improvement Association.

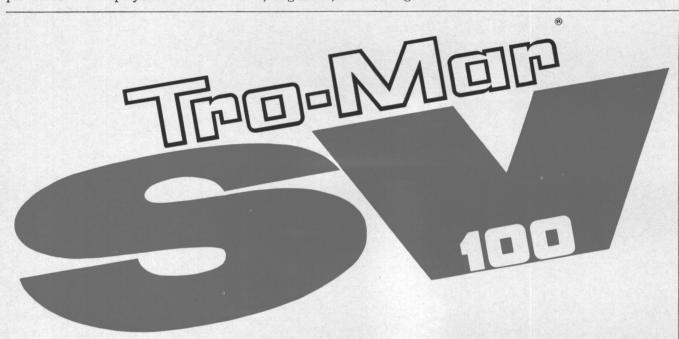
#### MSC Announces Award To Sea-Land

The U.S. Navy's Military Sealift Command, Washington, D.C., has announced the award of a shipping contract to Sea-Land Service, Inc. for ocean transport of military breakbulk and container cargo between Seattle, Wash., and Kodiak and Adak, Alaska.

The award, announced by MSC Deputy Commander, Rear Adm. John D. Chase, is effective on or about April 1, 1972, and covers a two-year period. It is anticipated that about \$3 million will be expended annually under the con-

Military Sealift Command now employs two small Governmentowned ships to support military forces in the Aleutian area which will be phased out of this service.

The Sea-Land offer was submitted in response to an MSC Request for Proposals issued May 7, 1971. (RFP No. N0003371R0602)



#### For low maintenance cost, use Tro-Mar SV 100.

Typical results in over 500 ships using Tro-Mar SV 100:

- More than a year between piston overhauls.
- Wear rates so low that liners may last 20 years.

We get these results despite the revolution that has occurred in crosshead engine operation. In 20 years, heavy fuel has replaced marine diesel, BMEP's have doubled, horsepower per cylinder has quadrupled. Tro-Mar SV, our premium cylinder oil, meets the test.

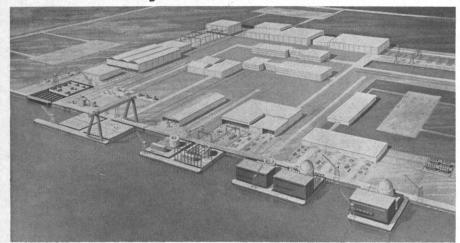
We do it with the right base stock and a unique additive package: high alkalinity to fight corrosion, detergency to keep your engine clean, a special anti-wear agent.

To learn more, call your local Esso man. He'll be glad to work with you.



**FUELS AND LUBRICANTS** 

#### Westinghouse, Tenneco Plan To Build Floating Offshore Nuclear Plants



Artist's concept of the proposed joint Westinghouse-Tenneco facility for the manufacture of floating platform-mounted nuclear power plants for offshore sites. Production flow of the platform-mounted plants is from left to right.

Westinghouse Electric Corporation and Tenneco Inc. have announced plans for jointly building platform-mounted nuclear power plants for offshore installation.

N.W. Freeman, chairman and president of Tenneco, and Westinghouse chairman D.C. Burnham, said the companies intend to build floating nuclear power plants on a production line basis in a \$200-million facility that will bring together the talents of both corporations.

Westinghouse is a pioneer in the development of commercial nuclear power. Tenneco, a diversified multi-industry company, has been heavily involved in the transportation and production of energy for many years through its natural gas pipeline and integrated oil operations. Additionally, a Tenneco subsidiary, Newport News Shipbuilding and Dry Dock Company, is the nation's largest shipbuilder.

Tenneco and Westinghouse have entered into an initial agreement which calls for the completion of technical and economic studies by year-end 1971. At that time, a proposal for the development, design, manufacture and sale of the floating power stations will be submitted for approval by the boards of directors of both companies.

Provided that construction of the unique manufacturing facility could begin in mid-1972 at a site yet to be determined, it is anticipated that the first completed platform atomic power plant would be ready for delivery in 1979. The facility would have the capacity to build four 1,200,000-kilowatt nuclear plants a year once full production is achieved and could employ more than 8,000 people at that time.

In heavily populated seaboard areas, the platform-mounted nuclear plant provides a way to meet man's increasing power requirements with a minimum effect on his environment, Mr. Burnham explained. For those areas, the project would: (1) meet the needs of utilities in finding sites for future nuclear power plants economically close to load centers; (2) reduce the threat of future power shortages by shortening construction

time by one to two years; (3) reduce lead time for regulatory procedures by standardizing plant design; (4) reduce concentrated thermal effects of plant operation because of the vastness of the sea, and (5) reduce utility land acquisition costs. Some utilities now buy future plant sites as much as 10 years in advance of construction schedules.

The construction facility would be equipped to install standardized components weighing as much as 600 tons on a repetitive, assembly line basis as the platform is floated from one station to another through the facility, Mr. Freeman explained. A test basin would be located at the end of the assembly area, with all non-nuclear, functional tests to be conducted there to demonstrate operability of the plant. Only then would the platform reactor be towed to a utility

customer's site, installed and fueled within a breakwater.

The design calls for the nuclear steam supply system, turbine, generator and associated equipment to be installed on a square platform measuring 400 feet on a side. The floating platform would have a steel honeycomb construction to assure watertight security and would be designed to withstand salt water exposure for the life of the plant. The entire plant would have a displacement of 150,000 tons—about that of a large,

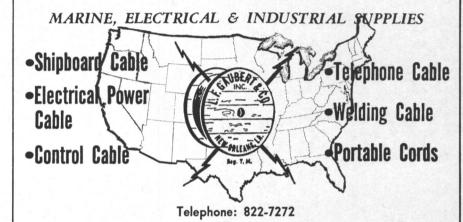
oceangoing tanker — and would draw 30 feet of water.

When permanently installed, the platform reactor would float and be anchored in a stable, man-made lagoon isolated on four sides from agitation of the ocean surface. The breakwater's outer profile would be sufficiently gradual that an off-course ship would run aground before it could hit the protective portion of the breakwater.

Power from the plant's generator would be transmitted ashore by means of an underwater line.

#### L. F. GAUBERT & CO.

**INCORPORATED** 



700 S. Broad Street • P.O. Box 50500 New Orleans, Louisiana 70150

The slugger

A POWERHOUSE WINCH



Write, wire, or call for literature and more information.

# THE FACTS ABOUT JAPANESE SHIP MACHINERY

Ship machinery from Japan powers and equips vessels of nearly every major flag you can name. In fact over 50% of all ship machinery Japan produces goes abroad. This is one of the reasons why the more than 60 first-rate companies belonging to JSMEA (the Japan Ship Machinery Export Association) are proud of their products. They pride themselves, too, on their product quality, performance and reliability, and thorough servicing. Why not find out what Japan's ship machinery industry has to offer? Just let us know what kind of equipment you are interested in, and we will put you in touch with the manufacturers who can help you, or their U.S. distributors. No charge or obligation, of course.

Phone, write, or visit us anytime.

Ask for our brochure.



**Ship Machinery Division** 

#### JAPAN TRADE CENTER

437 FIFTH AVENUE, NEW YORK, N.Y. 10016 (212) 683-1730

#### Bethlehem Beaumont Shipyard Launches 261,000-Bbl Barge For Interstate Marine Transport

One of the world's largest unmanned oceangoing barges, Ocean 255, was recently launched at the Bethlehem Steel shipyard in Beaumont, Texas, by Interstate Marine Transport Company of Philadelphia, Pa.

The barge was sponsored by Mrs. Doris C. Jensen of Louisville, Ky., wife of Edward H. Jensen, vice president of supply and distribu-

tion, Standard Oil Company.

Ocean 255 is under charter to Standard Oil Company, Division of Chevron Oil Company, Louisville, Ky. On completion, she will be placed into operation immediately, transporting petroleum products in the Gulf Coast area, serving such ports as Pascagoula, Houston, Corpus Christi, Jacksonville and Tampa.

The superbarge will be operated by Interstate

Oil Transport Company of Philadelphia.

Adrian S. Hooper, president of the Interstate Group, indicated that "Ocean 255 is one of three superbarges under construction at the Bethlehem yard, all for the express purpose of distributing petroleum products for the in-dustry." Interstate Oil Transport originated the superbarge concept, which is fast replacing some of the tankers on the Gulf and East Coasts of the United States.

Ocean 255 has a deadweight of 31,000 long tons, or about twice that of a conventional T-2 tanker, the World War II standard. Yet, she is capable of carrying her full cargo on the same draft. The superbarge has a length of 546 feet, breadth of 85 feet, and a depth of 40 feet. At a 32-foot draft, she has a maximum capacity of 261,000 barrels. The barge is pushed or towed by a specially designed 5,750-hp,

twin-screw tugboat, The Seafarer. Two adjustable rudders on the barge can be trimmed to meet the best towing or pushing conditions.



Pictured on the christening platform just prior to the launching are, left to right: Adrian S. Hooper, president of Interstate Oil Transport Co., owner and operator of the superbarge; Mrs. Doris C. Jensen, sponsor of Ocean 255; Mrs. Adrian S. Hooper, wife of the president, and Mr. Edward H. Jensen, vice president of supply and distribution, Standard Oil Company, Division of Chevron Oil Company, Louisville, Ky.

The superbarge was designed by George Drake of New York. Seven separate stern models were constructed and tested for seakeeping stability and speed in the Netherlands Ship Model Basin, the Netherlands.

Ocean 255 has semi-automatic anchoring, automatic running lights and a 40-foot V shaped notch into which the tug's bow fits when pushing. The barge has a center line bulkhead, 14 cargo compartments, each ap-

proximately 70-feet long.

Mr. Jensen, vice-president of supply and distribution, Standard Oil Company, pointed out that "dollar for dollar, superbarging has proven more economical than tanker transportation for Standard Oil Company in the Gulf Coast

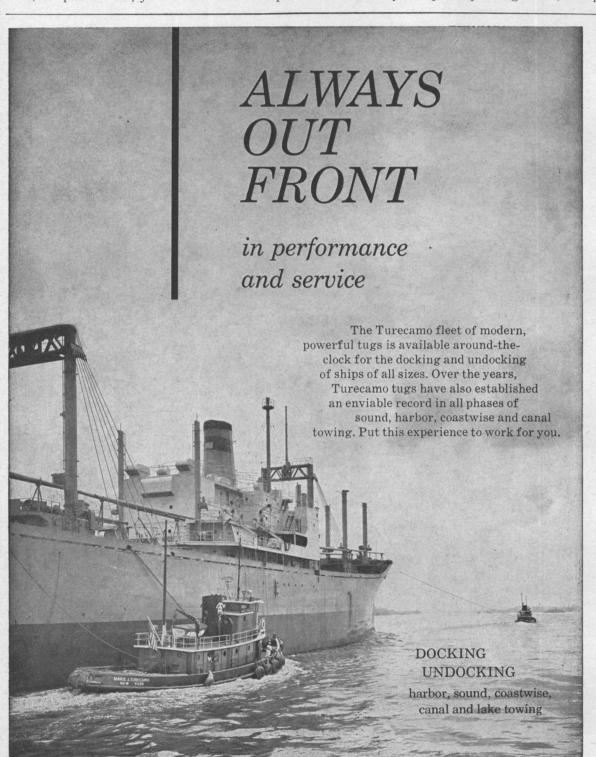


The Ocean 255 slides down the ways at Bethlehem Steel's Beaumont, Texas shipyard. She has a 40-foot deep Vshaped notch into which the tug's bow fits when pushing.

#### Lockheed Awarded Contract To Construct Sugar Carrier

The California and Hawaiian Sugar Co., San Francisco, Calif., has signed a contract with Lockheed Shipbuilding & Construction Co., Seattle, Wash., for the construction of a 28,000dwt diesel-powered bulk carrier for the carriage of raw sugar between Hawaii and the West Coast.

The sugar carrier was designed by J.J. Henry Co., Inc., naval architects, and the rumored price is \$15.5 million. Delivery is expected within 24 months after the date of signing.





1752 SHORE PARKWAY, BROOKLYN, N.Y. 11214 TEL: ES 2-5200

TRANSPORTATION CO., \* TRANSPORTATION CORP. \* SHIPYARD CO., INC. \* CONTRACTING CO., \* TURECAMO TANKERS,

MarAd Appoints Pierre Becker To Inland Waterways Post

Andrew E. Gibson, Assistant Secretary of Commerce for Maritime Affairs, has approved the establishment of a new position in MarAd's Central Region. The position, Special Assistant for Inland Waterways, demonstrates MarAd's recognition of the important role the waterways will play in foreign commerce, as a result of new ocean shipping concepts such as barge-carrying vessels and oceangoing tug and barge systems.

MarAd's Central Region Director Frank X. McNerney announced the appointment of Pierre R. Becker to the new post, with headquarters in New Orleans. Mr. McNerney further stated that it will be Mr. Becker's responsibility to work closely with inland and intercoastal tug and barge, as well as LASH and SEABEE operators with the object of maximum facilitation of foreign commerce cargo

movements.

A graduate of the U.S. Merchant Marine Academy, class of 1942, Mr. Becker has been active in the maritime field since graduation. He began his career by sailing in various engineering capacities with the United States Lines and was appointed chief engineer of a 20,000-ton naval transport at the age of 23. As an active Naval Reservist with the rank of captain, Mr. Becker served in World War II and the Korean Conflict and has experienced eight years as commanding officer of various units, including destroyers.

Mr. Becker's recent position as Chief, Division of Manpower Development, Maritime Administration, included assisting the inland water industry leaders in developing and administering the National River Academy in

Helena, Ark.

Reduction In Laker Freeboard Indicated At Close Of SNAME Symposium Held In Canada

At the concluding session of the recent Society of Naval Architects and Marine Engineers Symposium on Great Lakes Ore Carriers, Dr. Pierre Camu, the administrator of the Canadian Marine Transportation Administration and president of the St. Lawrence Seaway, advised that "The most recent studies have indicated that a substantial reduction in the winter seasonal freeboard can begin this year. The proposed reduction should permit not all, but some existing large carriers presently entitled to the reduced freeboard, to carry approximately another extra thousand tons of cargo during the winter season (between November 1 to April 15)."

These timely remarks represent the culmination of many years of study of hull stresses in bulk carriers in the Great Lakes and Gulf of St. Lawrence wave environment. These studies have been coordinated by The Society of Naval Architects and Marine Engineers in cooperation with U.S. and Canadian Great Lakes regulatory, governmental and other organizations to assist the Load Lines Joint Technical Committee in the review and updating of load lines

for Lakers.

Research began with model studies designed to predict wave forces and resulting stresses in full-size ships. Comparison was made between the model and the 730-foot Edward L. Ryerson, on which elaborate measurements of hull stresses and deflection were made. Thus, for four years simultaneously wave measurements were recorded and then matched to the ship's actual response. Technical papers presented at this Symposium summarized this on-going program and stimulated illuminating discussion which will be of value in blending this research into meaningful regulations. From Dr.

Camu's remarks, it is obvious that this research has already made a significant contribution to the shippers on the Great Lakes; continuing studies, including measurements to be made on the new 1,000-foot bulk carrier Stewart J. Cort, and comparison with model tests of 730-foot and 1,000-foot ships, could possibily mean further updating of load line standards.

Dr. Camu expressed a continuing interest on the part of the Ministry of Transport in research that may ultimately result in regulations such that "lake vessels, normally laid up from the latter part of December to the beginning of April, like most of us, will work on a 12-month year." Extension of the St. Lawrence Seaway operating season to Christmas was also cited as an objective, according to Dr. Camu. He further noted that his staff would review the papers presented at this SNAME Symposium from an economic viewpoint as

part of a continuing effort to increase the productivity of Great Lakes ships.

The Symposium, held July 21-23 in the Chateau Laurier, Ottawa, represented the combined efforts of over 14 industry organizations, government agencies, academic institutions, and regulatory bodies from both Canada and the United States. Proceedings of the Symposium, both papers and discussion, will be available from The Society of Naval Architects and Marine Engineers, New York, N.Y., as Bulletin S-2 "Hull Stresses in Bulk Carriers in the Great Lakes and Gulf of St. Lawrence Wave Environment." The data obtained from the four years of operating this research program is contained in SNAME Bulletin 2-17 "Wave Climate Study, Great Lakes and Gulf of St. Lawrence," and Bulletin 2-18 "Seaway Stresses Observed Aboard the Great Lakes Bulk Ore Carrier Edward L. Ryerson (1965-1968)."

Drydocking and ship repair in



**Special Services** 

Airless Spray Painting, Licenced Builders of Kort Nozzels & Rudders, Metal Spraying, Shot Blasting, Tulurit Splicing, "Metalock" Houseman & Thompson Marine Chemical Cleaning & Treatment, Licenced Repairers for M.A.N. Diesel Engines, Sprayed 'Limpet' Asbestos, Ultrasonic Measurement, Crankshaft Grinding, Honing and Polishing.

Five diesel launches fitted out for harbour repair work, including welding services.

Drydocks	Max. Length	Breadth At Top	Breadth At Keel Blocks
No. 1 Dock	700' - 3"	127' - 3"	88' - 41/2"
No. 2 Dock		92' - 10"	58' - 51/2"
No. 3 Dock		61' - 6"	38' - 6"
No. 4 Dock	47 i' - 4"	82' - 0"	58' - 6"

Towage & Harbour Services

M.T. "LAIMUN"
M.T. "TAY RIVER"
M.T. "HUNGHOM"
M.T. "WHAMPOA"

1834 BHP, 30 tons Bollard Pull 1650 BHP, 21 tons Bollard Pull 1600 BHP, 25 tons Bollard Pull 1150 BHP, 18 tons Bollard Pull 440 BHP, 5 tons Bollard Pull

#### **HONGKONG & WHAMPOA DOCK CO. LTD**

Telex: HX3547 Telegrams: "KOWLOONDOCKS" HONG KONG

United States and Canadian Representative

\*ROBERT M. CATHARINE 11 Broadway, New York, 10004 Telephones (212) 944-6050 ITT Telex: 423175 W.U.I. Telex: 62685 943-7050

M.T. "EDITH"

# Bulk lube oil delivery



# at major U.S. ports



Shell distributors at 13 U.S. ports are lifting lube oil in bulk directly into ships' tanks.

Advantages: faster than drums, safer than drums, more economical than drums, and with less material handling, less likelihood of product contamination.

Our large photo on the opposite page shows a bulk lube oil delivery by Standard Boat Company, Shell's marine distributor at the Port of New York.

Those silvery objects on the lighter's deck are "jumbo tanks."

Pumping from the 450-gallon jumbos, Standard Boat delivers more than 1300 gallons of lube oil in 30 minutes.

At Port of Portland, Maine, the Shell marine distributor delivers lube oil in bulk by "tank boat"—a four-compartment vessel with total capacity of 48,000 gallons.

From port to port, equipment may vary but results are the same: fast, clean, safe delivery. Minimum assistance needed from ships' hands. No interference with cargo operations. No hold-ups on turn-around.



Shell has completed bulk lube oil delivery systems at the ports shown on the map. For details, call the Shell Marine representative at the Shell Transportation Sales area office nearest you.

■Standard Boat Company, Shell's marine distributor at the Port of New York, pumps lube oil from 450-gallon "jumbo tanks" directly into ship's tanks at a rate of 2640 gallons per hour. A fast, clean, safe delivery.



"Jumbo tanks" positioned on lighter of Standard Boat Company. Each jumbo is "dedicated"—receives only one type of oil—thus assuring freedom from contamination.

And with the increasing use of Shell's Melina Oil, a heavy-duty multipurpose lube oil, this bulk delivery trend is accelerating.

The more motorships that use Shell Melina® Oil, the more advantage there is to bulk delivery facilities. And the more reason to believe that bulk lube oil facilities are a good investment for all concerned.

If you want to take full advantage of the speed, cleanliness, safety and economy of bulk lube oil delivery, Shell is ready for you at major ports on the East, West and Gulf Coasts. Shell Commercial Marketing, One Shell Plaza, Houston, Texas 77002.

For details, call the nearest Shell Transportation Sales area office:

Stamford, Conn., (203) 327-3600 Baltimore, Md., (301) 821-5905 Chicago, Ill., (312) 341-3275 New Orleans, La., (504) 521-2684 Menlo Park, Calif. (415) 325-0721

### **Bulk Lube Oil Delivery**



# **Bethlehem Moving Full Ahead**



The nation's largest building basin is nearing completion at our Sparrows Point Yard. Measuring 1,200 by 200 ft, it can accommodate the construction of ships as large as 300,000 dwt. A new panel shop and a new abrasive-blasting and paint building (behind the basin) have already been completed.

The nation's largest floating drydock was placed in service in 1970 at our San Francisco ship repair yard. Measuring 900 ft over the aprons by 150 ft between wingwalls, it will handle distributed to 150 1000 duty and come as large as 220 000 duty.

Bethlehem shipyards are among the most active in the nation—and we're working to keep them that way. At Sparrows Point, Maryland, we have over 1,000,000 tons of shipping on order or under construction, including four 120,000-dwt oil tankers, which will be built in our new basin (at left). These tankers will be larger than any commercial vessel constructed in America to date. The new drydock we recently built and installed at San Francisco (below) is the only floating drydock in the U. S. capable of fully servicing these giant tankers.

Our yard at Beaumont, Texas, has just completed a major expansion program which enables it to handle more building and repair work than ever before . . . and complete it faster and with greater economies all around. This yard is currently building their 19th and 20th Bethlehem-designed mobile offshore drilling platforms for the petroleum industry.

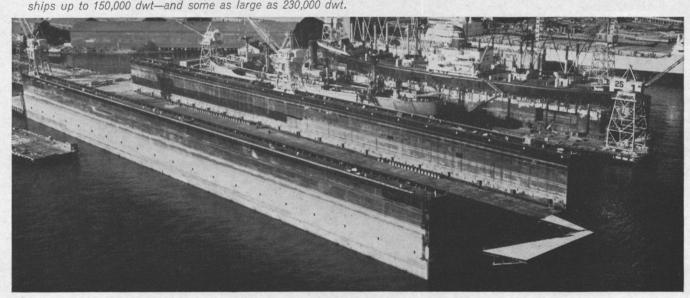
Bethlehem's newest yard—in Singapore—is already fully operational. Built primarily to service the booming offshore industry in the Far East, it can handle the construction of work and crew boats, and of such large equipment as mobile and stationary drilling platforms, barges, and underwater storage tanks. It can also perform miscellaneous fabricating work of all kinds.

Bethlehem yards are moving full speed ahead into the seventies.

### BETHLEHEM STEEL Shipbuilding

Executive Offices: Bethlehem, PA 18016
Telephone: (215) 694-2424
Sales Offices: 25 Broadway, New York, NY 10004
Telephone: (212) 344-3300 Cables: BETHSHIP





K&K Marine Corp. Named As Agents For Five Companies

The New York based K & K Marine Corp. announced that the firm has been named as general agents in the United States and Canada for the following steamship companies: Trinity Shipping Corp. S.A.; Galaxias Shipping Co., Ltd.; Ariadne Shipping Co. Ltd. S.A., and Seamasters Shipping Co., Ltd., all of Piraeus, Greece, and of Phoenix Management Corp. of Chicago, Ill.

Capt. Mike Kiousis, vice president of the agency, made the announcement

#### Radiomarine Introduces Complete New Line Of Marine Radars

An impressive array of advanced marine radar systems—the first complete new line developed by a U.S. manufacturer in recent years—has been announced by Radiomarine Corporation, Red Bank, N.J. The radars will be made in this country.

C. Webber Parrish, Radiomarine's vice president-general manager, said the new radar line is designed to provide greater navigating safety for commercial vessels in harbors, rivers and on the high seas. "The sizeable engineering development investment required to produce this new line demonstrates Radiomarine's faith in our Government's commitment to rebuild America's once-great merchant marine fleet," Mr. Parrish declared.

He stressed that the new radars will be manufactured solely in the United States and will offer a host of radar innovations. Mr. Parrish said the entire line utilizes integrated circuits and features extremely reliable, accurate data for collision avoidance programs. Anticollision alarms are available as options with all units.

The line includes 3 CM radar units available with 40-kw or 75-kw minimum peak power, and 10 CM units with 30-kw or 50-kw minimum peak power. All units feature a big 16-inch display and provide seven ranges of 34, 1½, 3, 6, 12, 24, and 48 miles. Circuit boards of all models are plug-in type for fast inspection and service, and the individual modules can be quickly replaced without removal or tearing down of entire circuit boards.

Charles E. Moore, Radiomarine's vice president-engineering and Joseph Hnat, project engineer, said a large number of special features are contained in the new radar line. These include variable range marker, off-centering, built-in reflection plotter, crystal stabilization high accuracy range rings and transmitter repetition rates, electronic bearing marker, low noise figure, AFC, servo-controlled deflection coil, heading or north-up stabilized picture and true or relative motion.

All units also provide a range

accuracy of 1 percent, and a range resolution of 20 yards with a bearing accuracy of 1 degree. Minimum range of all models is 20 yards. The units are also compactly designed so as to occupy minimum space in crowded navigation centers aboard ships.

centers aboard ships.

Mr. Moore said large vessels using Radiomarine's new radars will be afforded maximum surveillance protection while under way. The 3 CM unit will be ideal, he

said, for approaches to harbors and for movement within crowded harbor areas, while the 10 CM unit will give less sea return from rain, thus providing better coverage in the open sea.

Mr. Moore also stressed that the complete interchangeability of components will enable vessels to maintain minimum parts supplies on board. For the first time, he said, vessels can avoid radar downtime simply by carrying two sets

of spares. This way, he stated, if one part needs replacement, one spare can be used, keeping the second spare in reserve, and enabling the faulty part to be dropped off for service without delay or sacrificing backup protection.

Radiomarine Corporation, a subsidiary of Electronic Assistance Corporation, is one of the nation's oldest manufacturers of marine navigation and communications equipment.

# Introducing Super Fenders. The great defenders of property rights.

hey're better at defending your property from those horrible bumps and scrapes.

The clouts that cost you too much time and too much money.

Super Fenders protect so well, in fact, even a hard-nosed marine insurance underwriter could learn to love them.

WHAT'S SUPER FENDERS?
Super Controlled-

Buckling Dock Fenders.
These big modern bruisers can take more, last longer.

They're designed that way. With both a permanent chemical bond and our exclusive mechanical bond.

One good measure of bond strength and rubber greatness is a deflection test. Our Dock Fenders test out with a whopping 70% deflection. Still bonded, still with tons of energy absorption power for more protection.

Super Heavy-Duty
Modular Fenders. Steel
mounting plates mean fast,
strong welded installation.
Installation and maintenance
cost less. Replacement is less
expensive, too—the damaged
module or segment (it
happens, you know) can be
replaced individually.

Choose from two basic styles that make up con-

tinuous protective fenders. Customized to fit curves, too.

Super Extruded Rubber Fenders. Choose from six basic shapes in lengths up to 20 feet. They can be precurved, with special modifications for unusual needs.

All six are easy to install, either suspended or bolted into place.

BUT THAT'S NOT ALL, FOLKS!

If the three lines above

If the three lines above don't fit your needs, BJ fendering specialists can help you custom engineer the best protection.

Super Fenders are from BJ rubber and bonding specialists (and the great engineers of Borg-Warner). And protection is our business.

Telephone for more information and special BJ engineering service (Los Angeles – 213 583-1811; Keokuk, Iowa – 319 524-8430). Or simply complete and mail the coupon

Tel informa enginee Angeles Keokuk 524-843 plete an
BJ Mari A Subsic P,O. Boy Los Ang I need be' more info
Name

MAIL FOR	FREE BULLETINS.
P.O. Box 2709	Products of Borg-Warner Corp D-A, Terminal Annex California 90054
more information	otection. Rush me on on: olled-Buckling Dock Fenders. Outy Modular Fenders.
☐ Super Extrud ☐ Super Pushn ☐ I'm intereste	ed Rubber Fenders.
☐ Super Extrud ☐ Super Pushn ☐ I'm intereste	ed Rubber Fenders. ee Bumpers. ed in special custom-made
☐ Super Extrud ☐ Super Pushn ☐ I'm intereste	ed Rubber Fenders. ee Bumpers. ed in special custom-made
□ Super Extrud □ Super Pushn □ I'm intereste fenders. Plea	ed Rubber Fenders. ee Bumpers. ed in special custom-made
☐ Super Extrud☐ Super Pushn☐ I'm intereste fenders. Plea	ed Rubber Fenders. ee Bumpers. ed in special custom-made
Super Extrud Super Pushn I'm intereste fenders. Plea	ed Rubber Fenders. ee Bumpers. ed in special custom-made
Super Extrud Super Pushn I'm intereste fenders. Plea	ed Rubber Fenders. ee Bumpers. ed in special custom-made

**BJ** Marine Products



# Multiply your advantages with compound propulsion systems from Caterpillar

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

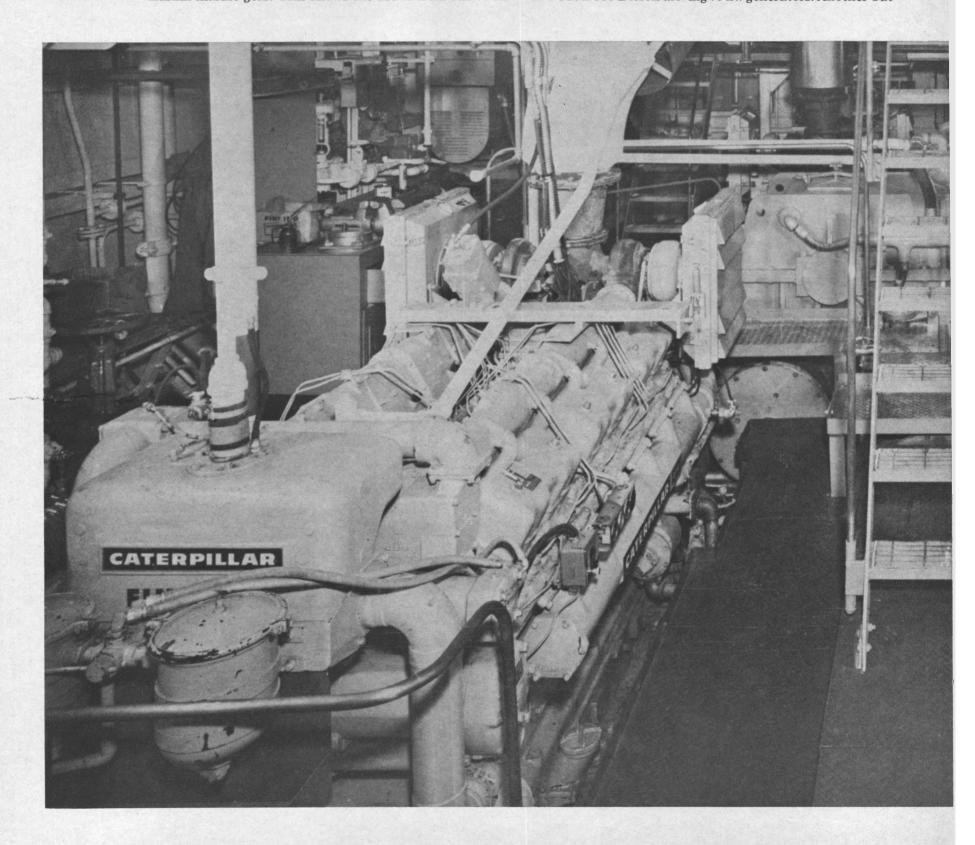
A compound propulsion system incorporating Caterpillar Diesels will multiply your reliability and safety factor and give you economies in power flexibility, too. It gives you the ability to adjust power to the load, reducing fuel consumption and required maintenance.

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

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

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

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

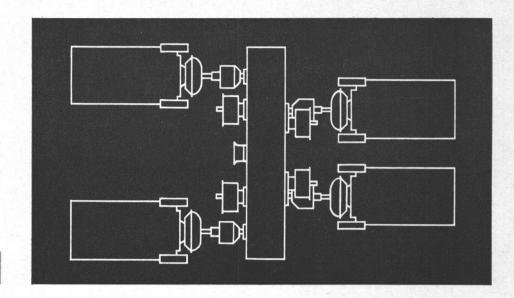


Engine drives the towing winch through a torque converter. Ask your Cat Dealer to help plan a Cat Diesel compound installation for you. He has all you need: Diesels 85 to 1425 hp. Marine gears. Electric Sets 40 to 900 kw.

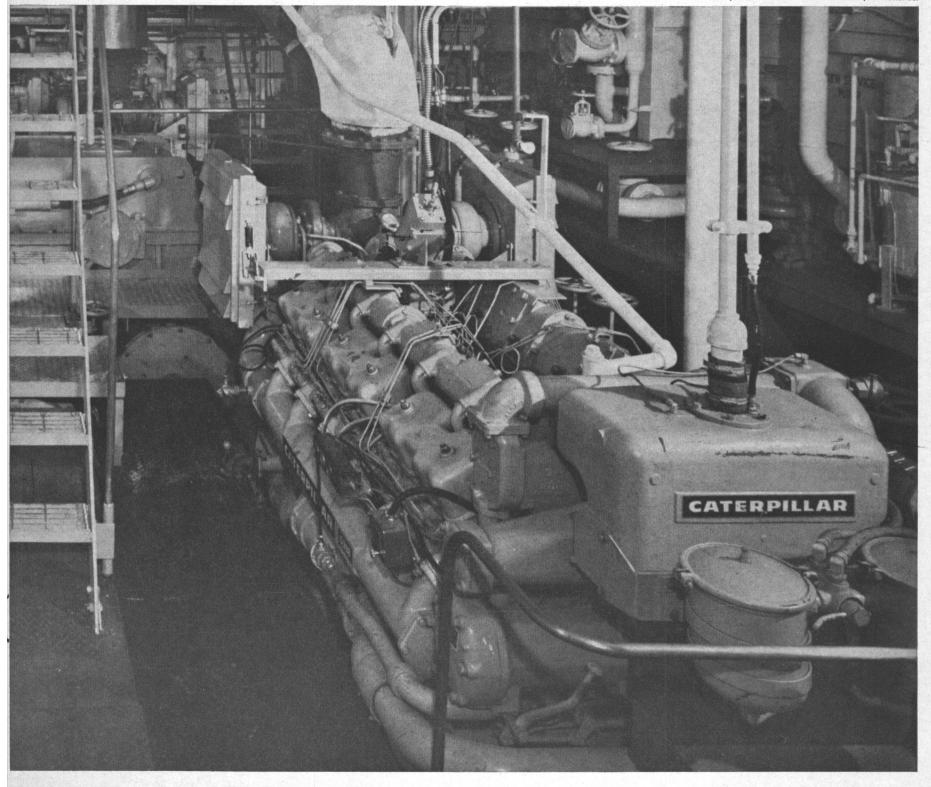
85 to 1425 hp. Marine gears. Electric Sets 40 to 900 kw. All Caterpillar-built, with dealer service available the world over.

Multiply your chances to increase your profits.





Caterpillar, Cat and 🖪 are Trademarks of Caterpillar Tractor Co.



September 1, 1971



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

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

#### **TURBO** GENERATOR SETS



WESTINGHOUSE 200 KW UNIT

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



WESTINGHOUSE 60 KW 120 VDC M-20-EH

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



300 KW WORTHINGTON-MOORE CROCKER-WHEELER UNITS

AP2 ExMedina Victory units, Worthington-Moore turbine—440 lbs—740°TT—28½" vac.—type S4—5-stage—6097 RPM—serial 7547 & 7548. GEAR: 14x7—6097/1200. GENERATOR: Crocker-Wheeler 300 KW 120/240 DC—1250 amps—type 102-H—compound—973643—999759—armature flange 8½"—bolt circle 7"—12 holes, Also new armature in stock (weighs 1840 lbs). Also have 2 units—generator 102 HP—300—KW120/240—stab. shunt—1200 RPM.



VICTORY 300 KW WESTINGHOUSE TURBO GENERATOR SET

440# — 740°F — 5930 RPM — 2A-9794-15-16-17 — coupling non-recessed on steam end of pinion—53/4". GENERATOR: Westinghouse 300 KW—120/240 DC—1250 amps—1200 RPM—C.B: 208.4.



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

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

#### DIESEL GENERATOR SETS



G.M. 6-71 DIESEL GENERATOR SET

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



350 KW 120/240 VDC DIESEL GENERATOR SET

Ingersoll-Rand heavy duty type S engine—8 cyl.—505 HP— $101/_2$  x 12. GENERATOR: G.E. 350 K.W. 120/240—600 RPM—switchgear. Good condition—as removed from Grace Line ships.

250 KW DIESEL GENERATOR SET

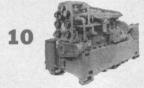


ENGINE: Enterprise 12 x 15 DSG-6—6 cyl.—450 RPM crank No. 50J. GENERATOR: Westinghouse 250 KW—120 /240 DC—1040 amps—450 RPM. Typical serial No. 3S-10P-913. Complete with switch gear. \$12,500.



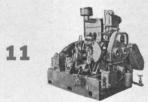
UNUSED 500 KW 120/240 VDC BALDWIN/ALLIS CHALMERS DIESEL GENERATOR SET

ENGINE: Baldwin-DeLaverne 725 HP—12%"x15½"
—8 cyl.—500 RPM—air starting. Dry weight 54050
lbs. GENERATOR: Allis-Chalmers 500 KW—120/240
VDC—500 RPM—550 RPM overspeed. 60°C riseclass B insulation—3-wire—25% unbalance—2083
amps—stab. shunt—open—drip-proof—self-ventilated
—8-poles



UNUSED 100KW SUPERIOR DIESEL GENERATOR SET

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



UNUSED 10 KW SUPERIOR DIESEL GENERATOR SET

GENERATOR: Delco 10 KW — 120 VDC — 83.3 amps— 1200 RPM. ENGINE: Superior diesel—2 cyl.—4½x53½ — 15 HP — heat exchanger

#### TURBINE ROTORS

#### MAIN PROPULSION



13

15

19 STAGE WESTINGHOUSE H.P. ROTOR FOR **AP2 VICTORY** 

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

#### SPECIAL!

COMPLETE TURBINE OR ROTORS

8500 HP G.E. C-3 Victory-Sun C-4's

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

NEW L.P. BLADE RINGS 14 for large 8500 H.P. Victory

Joshua Hendy Westinghouse

**NEW 8500 H.P.** G.E. TURBINES

Large Victory or C-3

H.P. #72271 L.P. 72272

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

ALSO AVAILABLE U.S.M.C. 16 RECONDITIONED SET H.P. & L.P.

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

8500 H.P. G.E. — C-3 OR VICTORY

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

6000 H.P. G.E. - NORTH CAROLINA C-2 18

17

19

20

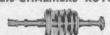
H.P.—8-stage—serial 78040 L.P.—7-stage—serial 78043 G.E.I. 16262

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

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

#### AUX. GEN. ROTORS

250 KW & 300 KW ALLIS-CHALMERS ROTORS



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

300 KW 5965 RPM JOSHUA HENDY 21

Turbine—3H-69 Turbine—3H-52 Turbine—3H-62

Gear—52269 Gear—52252 Gear—52262

#### T-2 ROTORS, STATORS COOLERS, ETC.

**ELLIOTT 10-STAGE MAIN PROPULSION** 22 TURBINE ROTOR

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



24

LARGE G.E. MAIN PROPULSION SCHENECTADY TURBINE ROTOR

Turbine serial 77418—reconditioned with certificate.

Just out of Beth shop 1970.

**AUXILIARY GENERATOR ROTORS** 



DORV-325M-T-2 Tanker Aux. Generator.

25

WESTINGHOUSE MAIN PROPULSION REVOLVING FIELD

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



WESTINGHOUSE MAIN GENERATOR STATOR

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



G.E. MAIN GENERATOR STATOR

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



WESTINGHOUSE MAIN GENERATOR AIR COOLER

Reconditioned with A.B.S.

UNUSED G.E. MAIN GENERATOR AIR COOLER 29

#### PUMPS



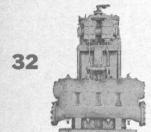
VICTORY AP2 MAIN CIRCULATOR

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



UNUSED 10x9x12 VERTICAL SIMPLEX FUEL OIL TRANSFER PUMPS

Furnished on some T-2 Tankers. 160 GPM Bunker C —viscosity 70 to 700 SSF 122°F @ 100 lbs. discharge pressure. WP steam 150 lbs.—exhaust 10 lbs. 11/4" steam inlet—11/2" exhaust. 4" Pump suction—31/2" discharge.



WORTHINGTON 16"x14"x18" VERTICAL DUPLEX STRIPPING PUMP

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



NEW BLACKMER FUEL OIL TRANSFER PUMP

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



35

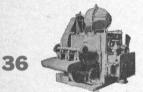
UNUSED BLACKMER VERTICAL ROTARY PUMP

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



R-2418 WATEROUS CARGO PUMP

Bronze—14"—top discharge—capacity 2500 GPM— 20 PSI. Bilge service—oil service—2400 GPM—75 PSI. Reduction gear. ENGINE: Cummins JN-130M— 6 cylinder—41/8 x 5—130 HP—air starting.



UNUSED BOILER FEED PUMP

Worthington Triplex—3 stroke— $2\frac{3}{4}$  × 5— $P_2$  VDC—1800/2400 RPM.



UNUSED WARREN BRONZE PUMP

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



NEW WORTHINGTON VERTICAL SUBMERS-IBLE BILGE PUMP

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



NEW-UNUSED BRONZE VERTICAL LST BALLAST PUMP

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



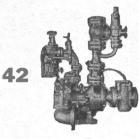
**EXCELSIOR MOLASSES** 

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



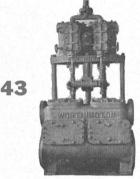
UNUSED SIZE 4

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



COFFIN MODEL F VICTORY OR T2

Control valve 1½"—Form V1—constant pressure regulator — type C — 150 HP—200 GPM at 575 lbs discharge pressure. 7200 RPM—440 PSI—500°TT.



BRONZE 14x14x12 CARGO STRIPPING PUMPS

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

#### WINCHES AND VINDLASSES



VICTORY UNIT WINCHES

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



MODEL U-6 DOUBLE DRUM WINCHES WITH GYPSIES

50 HP-230 VDC-reconditioned.



HYDE NO. 7 WINDLASS

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



48

NEW—UNUSED LINK BELT WINDLASS

15%" and 7000 lb. anchors. 56" Centers—50 HP—230 VDC—spares.



IDEAL WINDLASS-UNUSED

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



UNUSED 70 HP McKIERNAN-TERRY WINDLASSES

23/4" Chain and two 10640 lb anchor & 30 fathoms chain @ 30 FPM. 70 HP—230 volts—shunt DC motors—233 amps—550 RPM—55°C rise. Wildcat centers 471/2". Base 9'5" wide x 11' long. Weight 36,000 lbs.



LCT-6 JAEGER GASOLINE DRIVEN WINCH

With torgue converter & free declutchable drum, 31,000 lbs @ 6 FPM or 3000 lbs & 350 FPM. DRUM: 20"x233/"x377/2". GYPSY: 15"x13". Twin Disc torque converter—6 cyl. Hercules gas engine model WXLC-3. Total weight approx. 4500 lbs—serial 81843.



4 SINGLE DRUM ELECTRIC HYDRAULIC WINCHES

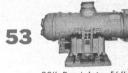
From Navy Research Ship Liberty AGTR-5. Like new. Mfg. by Lakeshore Engineer-ing Co. Gypsy heads can be operated separately from drum. 7400 lbs @ 220 FPM; 624 ft. of 3/4" rope in 5 layers. Total weight of winch, motor & pump 7221 lbs. OAW 841/4"; OAL 88"; OAH 58". With remote control stands.

#### MISCELLANEOUS



VICTORY P2—WESTINGHOUSE MAIN PROPULSION GEAR

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



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

 $20^{\prime\prime}$  Ex. inlet—5%  $^{\prime\prime}$  Cu-Ni tubes—with or without air ejector.



1 PAIR OF 300 HP UNION DIESEL ENGINES

Port and storboard—model 06—1300 HP at 350 RPM—4 cycle—direct reversible—11 x 15—overhauled 1966—in good condition. Just in from Navy.



MODEL 0-2-D M&T RECONDITIONED UNITS

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



HYDE 30" DOCK CAPSTAN

10" x 10"—reversible—W.P. 125 lbs— $2\frac{1}{2}$ " steam—3" exhaust.



DOUBLE INPUT— SINGLE OUTPUT DIESEL REDUCTION **GEARS** 

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



INGERSOLL-RAND MODEL 40 AIR COMPRESSOR

Two stage—135 CFM—7" x 61/4" x 5"—110 lbs—870 RPM—inner cooler. MOTOR: Allis-Chalmers 40 HP—230 VDC—145 amps—1750 RPM—Model EB 121.

1	PLEA	SE SE	ND II	INFORMATION			THE	FOLLOWING:		(Please circle items)				9/1/		
1	- 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	
	46	47	48	49	50	51	52	53	54	55	56	57	58			
ME							0	OMPAN	1Y							
DRESS.						POS	SITIO	٧				PHO	NE			

**SNAME Calls For Papers** To Be Read At Conference On Offshore Technology

The Offshore Technology Conference will be held May 1-3, 1972, at the Astroworld Exhibit Complex, Houston, Texas.

The Society of Naval Architects and Marine Engineers, one of the sponsoring societies and a founding member of the Offshore Technology Conference (OTC), is represented on the 1972 OTC program committee by Donald L. Frisby. Working jointly in the selection of SNAME sponsored papers are A.E. Allan and Walter B. Devine. The Society is represented on the OTC executive committee by Blakely Smith.

The following subjects are desired: ocean environment, weather, offshore platforms and structures, drilling barges and vessels, drilling

rigs and operations, subsea well completions, mechanical design and equipment, metallurgy, electronics and instrumentation, communications, underwater pipelining, subsea operations, ocean mining, water transportation, logistics, sea state, navigation and surveying, positioning, materials and economics and fi-

Those interested in submitting a paper for this conference may write to The Society of Naval Architects and Marine Engineers, 74 Trinity Place, New York, N.Y. 10006, for a copy of "Guidelines for Potential SNAME Au-thors" and a "Data Reporting Form."

Completed forms, including an abstract of the paper, should then be forwarded to one of

the three addresses as follows:

The Society of Naval Architects and Marine Engineers, c/o Donald L. Frisby, Armco Steel Corp., P.O. Box 723, Houston, Texas 77001;

c/o A.E. Allan, Schuller & Allan, Inc., 5012 Telephone Road, Houston, Texas 77023; or c/o Walter B. Devine, Humble Oil & Refining Co., P.O. Box 1512, Houston, Texas 77001.

#### Three-Company Joint Venture Sponsored By Dravo Corp. Awarded \$83.8 Million Contract

Construction of Smithland Locks near Paducah, Ky., the first navigation facility on the Ohio River with two 1,200-foot-long chambers, will require removal of a 138-acre island, excavating of nearly 9 million cubic yards of earth and rock, and placement of nearly 1 mil-

lion cubic yards of concrete.

Work on the structure will begin late this summer under an \$83.8-million contract recently awarded by the U.S. Army Corps of Engineers to a three-company joint venture sponsored by Drayo Corporation, Pittsburgh, Page 1981 sored by Dravo Corporation, Pittsburgh, Pa. The locks are scheduled for completion late in

Other members of the joint venture are S.J. Groves and Sons Company, Minneapolis, Minn., and Gust K. Newberg Construction

Company, Chicago, Ill.

The locks will be built on the Illinois side of the Ohio in the vicinity of Dog Island, 12 miles upstream from Paducah, near the mouth of the Cumberland River. Dog Island will form part of the cofferdam for construction of the locks. It will be completely removed later in preparation for construction of an adjoining 3,500-foot-long dam under a separate contract.

When completed, Smithland Locks and Dam will provide a lift of 22 feet and will replace obsolete locks and dams 50 and 51. The new facility is one of two structures remaining to be built in the Corps' modernization program

for the Ohio River navigation system.

Two 1,200-foot chambers are included because of steadily increasing river traffic and due to the facility's location on the lower Ohio, where tows and heavy traffic are common. Both chambers will be 110 feet wide. Other new locks on the Ohio have one 1,200-foot chamber with an auxiliary chamber 600 feet

Smithland Locks will also include a 1,650foot-long upper guard wall, a 650-foot-long middle guide wall and a 1,050-foot-long lower guard wall. The guide wall will be 64 feet wide -considerably wider than usual—to accommodate two culverts needed to handle the two

large chambers. To be built inside a cofferdam encompassing 110 acres, the project will require 900,000 cubic yards of concrete and 6.3 million pounds of reinforcing steel. This will be about 50 percent more concrete than normal for most Ohio River locks. Concrete will be supplied by an

on-site batch plant.
Some 8.5-million cubic yards of common excavation and 300,000 yards of rock excavation will precede construction. The rock excavation will be difficult because of the geologic nature of the limestone, which contains many solution

In addition to the locks themselves, Dravo's joint venture contract calls for construction of an access road, an operations building and hydraulic, compressed air, raw water and electrical systems, as well as placement of 139,000

cubic yards of rip-rap for slope protection up-stream and downstream of the site.

#### **Engineers Award Grafton Boat** Contract For 3 Deck Barges

The Corps of Engineers, St. Louis, Mo., has awarded a contract in the amount of \$218,580 to Grafton Boat Co., Inc., Grafton, Ill, to construct three deck barges.



# Moisture in your diesel fuel reduces horsepower and cuts engine life.



## Keep water out the sure way with a United **Fuel Dehydrator**

Moisture can originate at the pump or from condensation in your tank. Either way, your engine suffers. Prevent moisture intrusion through your fuel line with a United Fuel Dehydrator. Two sock elements, acting as primary and secondary filters, allow full fuel flow while efficiently removing moisture and contaminants. Sizes from 12 GPM to 72 GPM.

Can be installed, for service and drainage convenience, anywhere in engine area — by your own main-

Call your United Filter Dealer for complete information or write or call: United Filtration Corporation, 9705 Cottage Grove Avenue, Chicago, Illinois 60628, (312/734-5000) or 9600 John Street, Santa Fe Springs, California 90670, (213/698-8277).

# A step ahead.

AIR CLEANER DIVISION/United Engine Life Division makers of O.E.M. and replacement air, oil, fuel and transmission filters.

#### NYC Fire Department Contract To M. Rosenblatt & Son, Inc.

M. Rosenblatt & Son, Inc. has received a contract from the New York City Fire Department to prepare contract plans and specifications for rehabilitation and modernization of the fireboat John J. Harvey and the tender

Under the modernization program, the silhouette of the Harvey will be lowered to permit the fireboat to reach the upper Harlem River without experiencing the present delays caused by required drawbridge openings. Also under the program, the Smoke II will be reengined for greater speed and provided with substantially improved firefighting capabilities by the installation of fire monitors and two 1,000-gpm pumps.

#### Interocean Trading Named Japanese Distributor For Arnessen Chipping Hammers

Corrosion Dynamics, Inc., of Roselle, N.J., manufacturers of the well-known line of Arnessen chipping hammers and production deck scalers, has announced the appointment of Interocean Trading Co., Ltd., Tokyo, Japan, as their distributor for Japan.

According to Kenneth Westphal, vice president of Corrosion Dynamics, Interocean Trading Co. will stock a complete line of chipping hammers and deck scalers, as well as a full spare parts inventory for fast shipment throughout the Far East area.

Further information may be obtained directly from Interocean Trading Co., Ltd., Kyosho Building, 9-3 Hirakawa-Cho, 1 Chome, Chiyoda-Ku, Tokyo 102, Japan, or in the United States from Corrosion Dynamics, Inc., 1100 Walnut Street, Roselle, N.J. 07203.

#### **Telemetry Used To Measure** Stresses In Main Gears

By using compact miniaturized transmitting and receiving equipment, the Technical Investigation Department of Lloyd's Register is now able to take measurements of stresses in moving machinery parts which, by reason of their high speed or inaccessibility, have hitherto precluded the use of slip rings and brush gear for taking off strain gage or other transducer readings.

A recent example of this technique was provided during investigations into failures of reduction gearing on an oil tanker. There had been a previous failure of the main gear wheel rim, and measurements of axial vibration and shaft alignment taken at the time were not conclusive in establishing the cause of failure, so a more definite method of assessing gear tooth load distribution was needed.

For this purpose, very short base electrical resistance type strain gages were affixed to gear teeth on the main gear wheel. The gages were located at the forward and aft ends of the face width, in the tooth root radii at expected positions of maximum tensile stress due to bending. Each gage functioned as either an active or temperature compensating transducer as the teeth passed through the port and starboard meshes in turn.

Gages were also affixed to the forward and after faces of the rim in order to measure variations in radical and circumferential strain when meshing. Power was supplied by high duty battery cells attached to the wheel. The strain gage signals from the rotating wheel were transmitted by a miniature transmitter fixed to the gear wheel and a wire wound aerial on the shaft journal, to a receiving head on the gear case.

For this particular investigation, convention-

al methods of measurement were also used to collect information about other aspects of the system, including torque, axial vibration, pro-

peller pitch, etc.

The findings supported the theory that concentrated tooth loading could cause rim failure at the aft end of the gear mesh, and that the level of vibration in the system could lead to failure of the pinion support bearings, which would eventually allow misalignment to develop between the pinions and gear wheel. It also emerged that the cylinder combustion pressures could produce excessive torsional vibration if the variation from cylinder to cylinder departed from agreed close tolerances, and that high vibratory torques were inflicted on rubber couplings when clutches were engaged or when the engines were running with uneven cylinder combustion pressures.

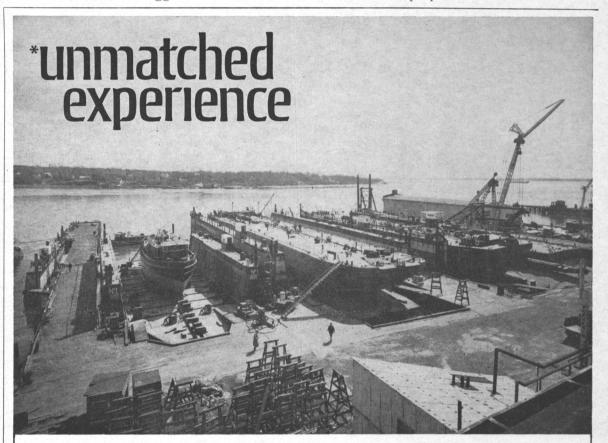
Modifications were suggested to overcome

these faults, together with interim recommendations to make the system safe until the modifications could be implemented.

Remote controlled switching devices allow several measurements to be made on the same gear wheel without stopping the engine. Telemetry has also proved to be an invaluable technique for the investigation of stresses in turbine shaft systems, where the high peripheral speeds of the shaft surfaces and adverse ambient conditions make the use of slip rings and brushes impracticable. Stresses in diesel engine crankshafts and other moving parts within the crankcase may also be more easily determined under full working conditions.

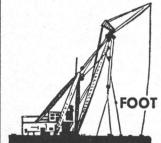
In the near future, it is intended to assess the running alignment of a propeller shaft system, using the telemetric equipment to measure dynamic bending in the shafting, including

that due to the propeller forces.



\*SINCE 1887 THE FINEST REPAIRS IN LESS TIME

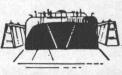
3 Floating Dry Docks — Capacity to 5,560 Tons Diesel Lighter — Capacity 50 Tons Complete Machine, Electrical, Carpenter, Boiler, Shipfitting and Hull Departments Fast 24 Hour Service Voyage Repairs a Specialty Less Than 3 Miles From Seven Major Oil Terminals Steel Fabrication — Rudders and Stern Frames



Perth Amboy

FOOT OF COMMERCE ST. PERTH AMBOY, N. J.

Night or Day Telephone: 201-826-5000 Founded 1887



#### Shipping Group Names Directors And Officers

Selection of new officers and a new board of directors, to reflect the vesting of voting power with the contracting stevedore members, has been announced by the New York Shipping Association.

Named president, was James J. Dickman, president of Universal Terminal and Stevedoring Corp., while Michael Maher, president of Maher Stevedoring Co., Inc., was elected vice president

In addition to the president and vice president, other new board members are: Durel J. Talbot, president, International Terminal Operating Co. Inc.; Robert Chiarello, president, Pittston Stevedoring Corp.; Joseph McGoldrick, president, John W. McGrath Corp.; Capt. Russel Neitz, president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, vice president, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, Vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, Vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, Vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, Vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll, Vice president, Northeast Stevedoring Co. Inc.; Edward J. Carroll Co. Inc.; Edward J. Carroll Co. Inc.; Edward J. Carroll Co. Inc.; Edward Co. Inc.; Edward Co. Inc.; Edward Co. Inc.; Edward Co. Inc.;

dent, Nacirema Operating Co.; Michael R. Mc-Evoy, chairman, Sea-Land Services, Inc.; Donald J. Schmidt, vice president, Farrell Lines.

The Association bylaws were recently amended by overwhelming vote to vest sole voting rights with the contracting stevedores who are the direct employers of 75-80 percent of the daily work force, giving them authority to negotiate the waterfront labor contracts and administer the fringe benefit funds and the Association. Steamship lines which previously had voting rights will be classified associate members.

This restructuring was made by NYSA members in recognition of the need to establish unity among the employers in conducting bargaining during the coming negotiations with the International Longshoremen's Association

As the direct employers of the bulk of the waterfront work force, the contracting steve-

dores have both a large fiduciary interest in the way of pier rentals and equipment, as well as in moving cargo of all descriptions for their clients—whether container or breakbulk carriers. The contracting stevedores do not own ships or transport waterborne cargo. As handlers of tonnage across the docks, their primary interest lies in increasing the volume and keeping the Port competitive.

Speaking on behalf of the new board, Mr. Dickman, president, said: "Our objective in the coming negotiations with the ILA is to achieve a contract that is equitable, that can be lived with by all segments of the industry, and that will sustain and strengthen the competitive position of this great port. With the united support of our membership, I am confident we can achieve these goals."

#### Bethlehem Steel Corp. Shipbuilding Division Names William Scott

The appointment of William J. Scott as manager of contract administration in the Bethlehem, Pa., offices of the vice president in charge of the Bethlehem Steel Corporation's Shipbuilding Department has been announced by Walter F. Williams, vice president of shipbuilding.

Mr. Scott has been assistant to the manager of ship repair sales in New York City since he joined the corporation in March 1952. In his new post he will be responsible for contracts, claims and credit for the Shipbuilding Department

Prior to his association with Bethlehem, Mr. Scott had more than 20 years of experience in the marine field. He worked for the Todd Shipyards Corporation from 1929 to 1949 and held various sales and administrative posts, including service as general manager of Todd's World War II South Portland, Maine, ship repair yard, as Washington representative, and as assistant to general manager of Todd's Hoboken, N.J., shipyard.

Mr. Scott is a member of The Society of Naval Architects and Marine Engineers and of the American Military Engineers.

#### Burton Shipyard Building 2 Vessels For Otto Candies

Two twin-screw supply vessels, measuring 160 feet by 38 feet by 13 feet, will be built by Burton Shipyard, Inc. of Port Arthur, Texas, for Otto Candies, Inc., Des Allemands, La.



SECOND OF TWO single-skin tank barges recently built by Dravo Corporation, Pittsburgh, Pa., for Anderson Petroleum Transportation Co., Inc., Houston, Texas, is readied for launch into the Ohio River. The 297-foot by 54-foot by 12-foot vessels, built at Dravo's Neville Island plant below Pittsburgh, will be used to transport petroleum commodities on the intercoastal waterway. Both of the new semi-integrated barges have pumping capacities of 2,800 gallons per minute. They feature high-speed rakes with 150-foot radius and are coated with epoxy paint for maximum hull preservation.



This original brass key opened the door, in the 1890's, to one of several Gillen offices in the New York area. Located at India Street in Greenpoint, the building was used as a paymaster's office and shape-hall

Gillen had another key in those days and still has it . . . the key to providing the finest in lighterage and towing services. We will be happy to show you how long experience and the best equipment can open the

LIGHTERAGE AND TOWING

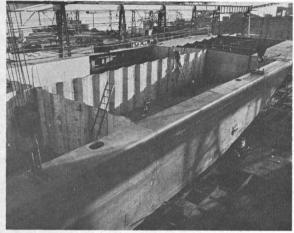
enry Fillen's Sons Lighterage, Inc.

WEST END AVENUE, OYSTER BAY, NEW YORK, N.Y. 11771 • 212-895-8110

door for you . . . to better service keyed to your needs.

where Gillen crews received assignments.

#### Eight Barges For Union Carbide With Stainless Steel Tanks Delivered By St. Louis Ship



One of the new chemicals-carrying river barges takes shape at St. Louis Ship's yard. Sections of four of the six stainless steel cargo tanks are visible in the picture. The stainless steel plate for the tanks was rolled at U.S. Steel's Homestead (Pa.) Works.

Eight new unmanned river barges, specially designed for the carriage of liquid chemical cargoes, have been delivered to Union Carbide Corporation by St. Louis Ship, a division of Pott Industries, Inc. This design meets the highest standards and has been approved by the American Bureau of Shipping and the United States Coast Guard.

The barges will operate on rivers and intracoastal waterways throughout the United States.

The barges meet United States Coast Guard Type II Hull Construction Standards for barge hulls "designed to carry products which require significant preventive measures to preclude the uncontrolled release of the cargo. They are certified to carry a long list of commodities, including highly corrosive materials. The Federal regulations governing the design of the new barges became effective June 1, 1970, and established regulations for carrying specified potentially hazardous materials," said Allen Zang, vice president, production, St. Louis Ship.



Resting in shallow water at the foot of the launching ways at St. Louis Ship's Mississippi River Yard is one of eight new Union Carbide chemicals-carrying barges. The unmanned, double-skin barges each have six stainless steel cargo tanks inside.

The barges are built with a "double skin." Interior cargo tanks are made of stainless steel plate supplied by U.S. Steel which, in addition to offering corrosion resistance, slideability and ease of cleaning, add to the structural strength of the hull. The outer skin of the barge is carbon steel.

Tops and bottoms of the stainless steel cargo tanks are flat. The interior bulkheads are corrugated for extra strength. Cofferdams run the width of the barge between three pairs of cargo tanks on six of the barges. Each cargo tank has been hydrostatically tested to a four-foot head above the tank top to insure complete tightness

The sides, ends and tops of the cargo tanks are of Type 304 stainless. Bottoms are of Type 304L stainless.

The stainless steel plates for the cargo tanks were produced at U.S. Steel's Homestead (Pa.) Works and were shipped direct to St. Louis Ship's Mississippi River Yard

Louis Ship's Mississippi River Yard.
Six of the barges are 118 feet long, with capacity of 360,080 gallons each at 100 percent capacity. Another is 180 feet long with a capacity of 602,570 gallons. The eighth barge is 236 feet long with a capacity of 673,820 gallons. All the barges are 52 feet 6 inches wide, with a 12-foot 6-inch depth.

Each of the barges has six cargo tanks run-

ning its length, three to port and three to starboard.

On the smaller barges the cargo tanks are each 32 feet to 34 feet long, 22 feet 9 inches wide, and 11 feet 6 inches deep. The middle-size barge has 54-foot to 56-foot by 22-foot 9-inch by 11-foot 6-inch tanks. On the largest barge, they measure 62 feet by 22 feet 9 inches by 11 feet 6 inches.

A total of 839 tons of stainless steel plate was used in building the cargo tanks. The plate thickness ranged from ¼ inch to ¾ inch, with the largest measuring .280 inches thick by 129 inches wide by 412 inches long. Tolerances were held to plus or minus 1/16 inch on plate length and width and diagonal tolerances to 3/16 inch.

St. Louis Ship is one of the largest builders of barges in the country.

# HOSE-McCANN SIGNAL AND ALARM PANELS



Highest quality and unexcelled dependability have been hallmarks of all Hose-McCann equipment for over 30 years. Hose-McCann Signal and Alarm Panels are available for every shipboard application. Built to specifications and conforming to AIEE and U. S. Coast Guard regulations, these panels are manufactured in any size in flush or surface mounting types. With both built-in and separately mounted audible alarms, all units are designed for fast, easy installation.

Send for complete illustrated literature on signal and alarm panels Navigation Light Panels — Engineers Signal and Alarm Panels — Diffuser Fan Alarm Panels — Dumbwaiter Communication Units — Single Circuit Alarms — Fuel Oil High Level Alarm — Wheelhouse Alarm — Burglar Alarms — Diesel-Lube Oil Pressure and High Water Temperature Indicators — Power Failure Alarms — Fire Alarms — Annunciators — Passenger Call Bell System



#### HOSE MCCANN TELEPHONE CO., INC.

524 WEST 23rd STREET NEW YORK, N. Y. 10011 (212) 989-7920 (Cable) CYBERNETIC NEWYORK ORIGINATORS AND PIONEERS OF SOUND POWERED TELEPHONES FOR MARINE USE Representatives in principal domestic and foreign seaports

#### **Executive Changes At United States Lines**



William J. Klauberg



James P. Rafter



Robert D. Grey

United States Lines made three major executive changes that relate to its domestic operations on the Pacific Coast as well as its international operations in Europe and the Far East, it was announced by E.J. Heine Jr., president of the

containership company.

William J. Klauberg, vice president in charge of European operations, will assume the position of vice president for the company's Pacific Coast operations. Succeeding him in the company's London office, on a temporary basis, is

James P. Rafter, who has been vice president for national sales in this country.

In addition, Mr. Heine has named Robert D. Grey as vice president for Far East Operations. Mr. Grey has been Far East sales manager. His headquarters will continue to be in Tokyo.

An alumnus of the United States Merchant Marine Academy and the Georgetown University School of Foreign Service, Mr. Klauberg joined United States Lines in 1949. In 1950, he was assigned to the company's San Francisco office and the same year was transferred to the Far East. He was subsequently named marine superintendent in Yokohama for two years and thereafter was assistant manager in that city for four years and manager for seven years.

Mr. Klauberg became Far East general manager seven years ago, with offices in Tokyo. In 1965, his post was expanded to include the direction of the company's freight and passenger traffic, ship operations and general administration throughout the Far East. In June 1966, he was named vice president of Far East operations. In September 1968, he was transferred from Tokyo to London as vice president of the company's European operations.

Mr. Rafter, who was named vice president for freight sales in April 1969, came to the United States Lines in July 1967, as general sales manager, freight. He became vice president, national sales, in 1970.

Previously, Mr. Rafter was with Grace Line, where he was general sales manager, freight, and also served as assistant vice president. He began his shipping career in 1945 with Grace Line but resigned after eight years to become freight traffic manager of the Panama Lines. When this company dissolved in 1961, he returned to Grace.

Mr. Rafter attended the Georgetown University School of Foreign Service and the New York University Graduate School.

In assuming the post of vice president for the company's Far East operations, Mr. Grey replaces John W. Griffith, who has resigned. Mr. Grey, who became Far East

sales manager for United States Lines last year, has had extensive experience in container operations and in sales. Prior to coming to United States Lines, he was with the Matson Navigation Company for several years, serving as that company's general manager for Japan and Korea. In that post, he was responsible for the operation of Matson's Far East container service in Japan and Korea, His other positions with Matson included planning coordinator, Far East Freight Division, and cargo booking supervisor and container operations supervisor for the Hawaii Freight Division.

Mr. Grey was educated at the Benson Polytechnic School in Portland, Ore., and received the bachelor's degree in mathematics from Reed College in that city. He took postgraduate studies at the University of Paris and the University of Montpelier in France, and the University of Granada in Spain.

R.F. Matzer Publishes Booklet Describing New Model Testing Facility

A full-color pamphlet describing their new 20-foot by 40-foot by 4-foot-deep model testing facility has just been completed by Rudolph F. Matzer & Associates, Inc.

The four-page booklet, which contains many photographs of the tank and model shop, describes the instrumentation and lists many of the tests which can be performed in the "mini basin."

Copies are available upon request from Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Boulevard, Jacksonville, Fla. 32225.

# Another 'Star' built towboat enters service

Shown running her trials is the new twin-screw towboat "Mercer Straits", built for RivTow Straits Limited, Vancouver, Canada, by "Star", the shipyard where quality construction is a continuing tradition. Named after the Mercer family, former owners of the yard, she is the second vessel to be built since the change of ownership in November 1970. The tug is 92'6" long by 24'6" moulded breadth by 11' draft, and is powered by twin General Motors, Series 149, V-16 diesel engines with a combined output of 1800 b.h.p. at 1800 r.p.m. She entered service in mid-July.



BUILDERS OF STEEL VESSELS:

• TUGS • SCOWS • FISHING VESSELS • WORK BOATS

SHIP REPAIRS & REBUILDING: ALL TYPES OF VESSELS

Facilities Include:

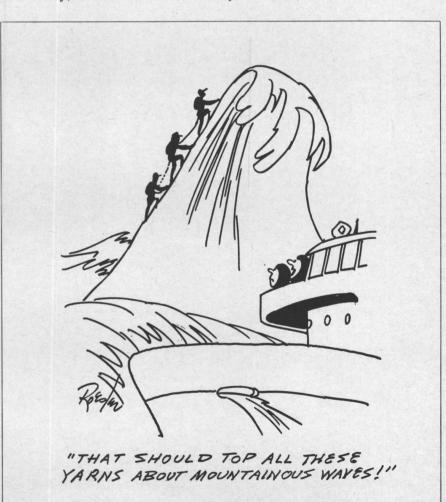
3 MARINE WAYS (2 COVERED) — MACHINE SHOP

Skilled staff with a background of 62 years' experience



Office & Yards: 61 Duncan Street, New Westminster, B.C., Canada Telephone: (604) 521-0731

THE YARD WHERE QUALITY IN STEEL VESSEL CONSTRUCTION IS A TRADITION





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



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

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

No demanding application techniques are necessary with Mobilzinc. It brushes or sprays on like ordinary

paint. Its eye-appealing green color provides an easy-to-see contrast to unpainted surfaces. Setting time is just twenty minutes.

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

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

# **Mobil Chemical**

Kankakee, III. Beaumont, Texas / Los Angeles, Calif. MARINE FUELS • MARINE LUBRICANTS • MARINE COATINGS WORLDWIDE MARINE SERVICE

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

#### Det Norske Veritas Researchers Awarded Gilbert Innes Prize

Three members of the research department of Det norske Veritas, J.W.E. Pettersen, Oyvind Sigvaldsen and Bjorn Vedeler, have been awarded The Gilbert Innes Prize by the North East Coast Institution of Engineers and Shipbuilders, Newcastle-on-Tyne, for their pa-

per "Vibration in the Afterbody of Ships"

The paper was read at the institution's meeting on March 8, and the award will be presented at the opening general meeting of the new session on Monday, October 11.

The Gilbert Innes Prize is awarded every three years for papers of merit concerning matters of the structure of ships and materials used in their construction.

# Bailey Systems To Automate Three New Container Vessels

A complete automation package permitting one-man watch for each of three new American Export Isbrandtsen Lines container vessels will be manufactured and supplied by Bailey Meter Company, Wickliffe, Ohio. This is the second group of three ships being built by Bath Iron

Works for American Export using Bailey systems. Trials for the first ship are scheduled for May 1972.

Each vessel will use two Babcock & Wilcox marine boilers with "Racer" wide-range operation burners. The boilers will operate at 870 psi and 955 F.

The contract includes MINI-LINE boiler and bridge turbine throttle controls, 660 Systems for closed-loop feedback burner monitoring and safety, and 750 Systems for data and bell loggers. The data and bell loggers will readout on separate printers.

Bailey Meter Company, a subsidiary of Babock & Wilcox, is a leading manufacturer and supplier of instrumentation, control and computer systems to the marine, power plant and industrial process industries.

#### Mooremac/NASSCO May Sign Agreement To Build Bulk Carriers

National Steel and Shipbuilding Co., San Diego, Calif., and Moore-McCormack Lines, Inc. may sign an agreement for the construction of two 80,000-dwt combination bulk carriers. The pact is valued at around \$57 million and is conditional upon the line's ability to sell its two passengers ships Argentina and Brasil, laid up in Baltimore. If Congress permits their sale to foreign owners, Holland America Cruises reportedly has submitted an offer of \$20.5 million for the two liners. The Maritime Administration has not received an application from the line concerning the construction of the bulk carriers.

# \$10.6 Million Contract To Electric Boat Div.

The Naval Ship Systems Command, Washington, D.C., has awarded General Dynamics Electric Boat Division, Groton, Conn., a contract in the amount of \$10,663,881 for overhaul, repairs and alterations on the nuclear-powered attack submarine Pargo (SSN-650).

#### World Shipping, Inc. Announce Office Move

World Shipping, Inc., Cleveland-based steamship agents, have moved their offices to 11740 Clifton Boulevard, the company has announced. The company represents Atlantic Container Line, Combi Line, Hellenic Lines, Japan Line and Transamerica Trailer Transport.

#### Sumitomo To Build Giant Mobil Tanker

A 267,000-ton giant tanker will be built for Mobil Shipping and Transportation Company under a contract signed recently in Bermuda.

The vessel, to be delivered in late 1974, will be built by Sumitomo Shipbuilding and Machinery Company at its new Oppama shipyard. It will be the first ship to be built by Sumitomo for Mobil.

The new ship will be 1,108 feet in length, with a beam of 178 feet and a depth of 88 feet. It will have a speed of 16.5 knots and will be powered by a 38,000-horsepower steam turbine.

This vessel will be the seventh giant tanker to be built for Mobil.



When your ship comes in for repair to Lockheed, stand aside, or get run over. Our crews move fast. We make a specialty of getting vessels up, out and turned around in short order — and well done. This reduces your repair cost and time lost.

Our people know their jobs, like their work, and take pride in doing it. They are efficient, and Lockheed provides the finest in facilities and equipment so they can be.

Write or phone Bob Forbell, manager of ship repair. He is in charge from quote to delivery.

#### LOCKHEED SHIPBUILDING AND CONSTRUCTION COMPANY

2929 16th AVE. S.W., SEATTLE, WASH. 98134 PHONE 206-623-2072 • CABLE LOCKSHIP NEW YORK REPRESENTATIVE: James R. Porter 17 Battery Place, New York, N.Y. 10004 • Phone 212-943-8795

3 floating drydocks • to 18,000 tons



### WHEN IT COMES TO HIGH QUALITY HAWSERS, TUBBS MAKES A FINE LINE.

Tubbs has been providing real value in marine hawsers for over a century. Among our products are Esterlene, Prodok, Polypropylene, Nylon and Dacron as well as plaited Esterlene.

And now Tubbs has even greater rope values with our new Esterlene "400" Series. This latest Tubbs innovation provides real economies and incorporates the exclusive Tubbs Loktite core yarns for higher strength and better holding and rendering qualities.

For the right rope at the right price, check with the expert. No one knows more about marine ropes than Tubbs

For details on real value in marine hawsers, just drop us a line.



P.O. BOX 709, ORANGE, CA 92666

Norsk Marconikompani Appoints D. Bowker

David Bowker has been appointed marine director of the Norsk Marconikompani, A/S, and has moved to Oslo to take up his new position. He was previously representative in North America of the Marconi International Marine Co., Ltd., a GEC-Marconi Elec-

tronics Company.

Mr. Bowker, who was born in Milford Haven, England, where his father was well-known as the manager of Marconi Marine's local depot until his retirement in 1968, was educated at Milford Haven Grammar School and began his career with Marconi Marine as a seagoing radio officer in 1960. He served at sea until 1964, when he transferred to the company's shore staff as a technical sales assistant in the export sales division, and later became assistant to the export sales manager. He was appointed Marconi Marine representative, North America, in 1969.

Midland Announces
Executive Appointments

At a meeting on August 11, the board of directors of Midland Insurance Company announced the following new executive appointments.

James P. Craig, formerly vice president, operations, has been named senior vice president and M. James Snead, assistant vice president, was appointed vice president.

Appointments to assistant vice president included Joseph G. Tapfar, Donald C. Verity, George F. Folkes and Cornelius J. Duffy.

Robert M. Bagby and Louis V. Liggio were both named assistant secretary and Richard T. Christen was appointed assistant treasurer.

Johnson Marine Names N.Y.-Philadelphia Rep

Charles B. Darcy of Marine Applications Company, Inc., Mineola, N.Y., has been appointed to represent the Johnson Marine Division's line of heavy duty water lubricated demountable rubber stave bearings, demountable outboard coolers, air seal stuffing boxes and torque journal hub propellers made by The Johnson Rubber Company, Middlefield, Ohio. He will service the New York and Philadelphia areas.

Costikyan And Gamble Named Coordinators At New England Petroleum

The appointments of Thomas W. Costikyan and Robert S. Gamble as coordinators in the head office of New England Petroleum Corporation in New York were announced by Edward M. Carey, president.

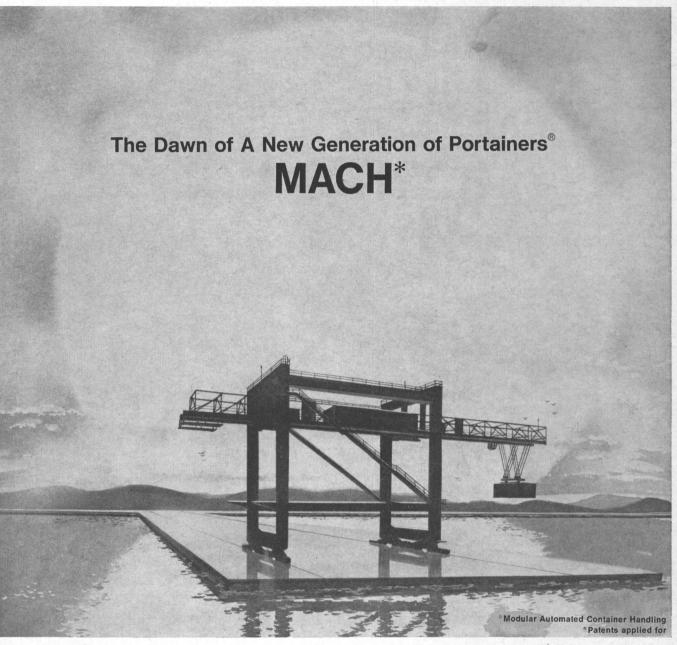
Mr. Costikyan was formerly general manager of Grand Bahama Petroleum Company Limited, New England's wholly-owned subsidiary at Freeport, Bahamas. He joined New England Petroleum Corporation in 1969, with extensive experience as manager of marine operations for the Esso Corporation in London and New York from 1964-69, and as a member of the Esso refinery start-up team.

Since May of this year, Mr. Gamble has been assistant to the vice president for planning and development of New England Petroleum. Mr. Gamble was with Commonwealth Oil Refining Com-

pany of Puerto Rico in various capacities from 1967 to 1971, including secretary of the management committee and manager of venture development.

Mr. Costikyan will be replaced by Thomas S. Morgan, formerly executive vice president of Nepco Petroleum Limited, New England's wholly-owned subsidiary in Canada. Mr. Morgan was employed in various managerial capacities with Gulf Oil Corporation in the U.S. and Canada from 1949 until joining Nepco Petroleum Limited in 1968 as executive vice president.

New England Petroleum Corporation is the largest independent importer of residual fuel oils to the U.S. East Coast and is majority partner in Bahamas Oil Refining Company, Freeport, Grand Bahama, the world's largest single source of low-sulfur fuel oil.



Meeting the needs created by the arrival of super containerships and increasing port congestion.

Take a step into the future. MACH (Modular Automated Container Handling) is a step-by-step approach toward increasing Portainer performance by approximately fifty percent now and one hundred percent in the foreseeable future. The basic MACH Portainer, with the Sway Stop and High Speed Module, has provision for additional modules leading to full automation.

The MACH Portainer Module series includes:

 Sway Stop and High Speed Module (Basic MACH Portainer)

- 2. Trim, List and Skew Module
- 3. Underdeck Module
- 4. Full Automation Module

#### MACH Portainers assure you of:

- Increased production and terminal throughput.
- Lower cost per container handled now and even lower costs in the future as volume increases.
- Capital equipment savings as volume increases.
- 4. Future automation at lowest cost with reduced risk of obsolescence.
- 5. Faster service for terminal customers.

When planning your next container crane, consider the new generation crane, don't buy a crane that is already obsolete.

Plan on a MACH Portainer. Write or telephone today for a new brochure.

Ask about the new full-color motion picture for group showings. Paceco is the only manufacturer offering a complete selection of container handling equipment, and worldwide manufacturing and service.



Telephone or write today. Contact PACECO or your nearest licensee.

Dept. 10-1 - Headquarters: Alameda, California 94501 - (415) 522-6100 - Telex 335-399 European Sales Office: Paceco International Limited, London.



Australia: VICKERS HOSKINS PTY, LIMITED, Bassendean. Canada: PACECO CANADA LIMITED, Vancouver. France: ATELIERS ET CHANTIERS DE BRETAGNE, Nantes. India: BRAITHWAITE & CO., LTD., Calcutta. Italy: REGGIANE O.M.I. S.p.A., Reggio Emilia. Japan: MITSUI SHIPBUILDING & ENGINEERING CO., LTD., Tokyo. South Africa: DORMAN LONG (AFRICA) LIMITED, Johannesburg. Spain: FRUEHAUF S.A., Madrid. United Kingdom: VICKERS LIMITED, London.

# Gulf Oil Appoints William C. Chandler

William C. Chandler has been appointed manager of Gulf Oil Company, Eastern Hemisphere, marine products department in London, according to R.B. Hoffman, president, Gulf Oil Trading Company.

Mr. Chandler was formerly manager of Lubricating Oil Trading, Gulf Oil Trading Company in Pittsburgh, and has held various positions with Gulf Oil Company,

U.S. marketing.

Mr. Chandler was graduated from Cornell University in 1939, with a bachelor of science degree in industrial engineering. He joined Gulf in 1946, following service in the U.S. Army Ordnance Corps during World War II.

#### Rechristening Of Getty Jumboized Tanker Held At Mitsubishi

A rechristening ceremony for Getty Oil Company's jumboized tanker S/S Alaska Getty was held at the Mitsubishi Heavy Industries shipyard in Kobe, Japan, August 18, 1971

The ship, built in France in 1960 as a 72,000-dwt tanker, has been enlarged to 117,800 dwt. The enlargement was the "cross" type in which the vessel was lengthened 161 feet 103/4 inches to 1,006 feet 23/4 inches and deepened 10 feet 103/4 inches to 72 feet 21/4 inches.

72 feet 2¼ inches.

Until the delivery this November of the S/S J. Paul Getty, a 222,000-dwt tanker now under construction at Nagasaki, Japan, the Alaska Getty will be the company's second largest vessel, behind the 129,000-dwt S/S

California Getty.

In its new configuration, the Alaska Getty will be capable of carrying 770,000 barrels of crude oil. Its initial loaded voyage will be from the company's Mina Saud terminal in the Partitioned Neutral Zone area of Saudi Arabia to the company's Delaware refinery.

Leigh R. Sanford

Leigh R. Sanford, former Shipbuilders Council of America president, died on Sunday, August 1 his 83rd birthday—in Winter Park, Fla., after a long illness. Following consecutive service as executive assistant and vice president starting in 1946, he became Council president in 1950 and retired in 1961.

His varied career with Government and industry spanned more than three decades of association with shipyard activities. With degrees in both naval architecture and law and a marine engineers license, he had important roles in shipbuilding programs of World Wars I and II, and was a prominent advocate of postwar measures to assure an adequate national shipyard mobilization base.

For the U.S. Maritime Commission, as Director of Gulf Coast Construction, with offices in New Orleans, La., and later as Director of Construction, headquartered in

Washington, D.C., Mr. Sanford coordinated construction of many merchant vessels which made up the "bridge of ships" that contributed so substantially to victory in World War II.

Throughout his career, Mr. Sanford was active in affairs of The Society of Naval Architects and Marine Engineers, and on his retirement from the Shipbuilders Council, was elected honorary vice president of SNAME. J. Ray McDermott Appoints R.J. McGuire

Roger W. Wilson, president of J. Ray McDermott & Co., Inc., New Orleans, La., has announced that R.V. (Dick) Evans has resigned as division manager of Dick Evans Divers, a division of the company's Harvey Group. He said that Mr. Evans plans to retire from active business life and commercial diving.

Mr. Wilson also said that R.J. (Bob) McGuire has been appointed division manager of Dick Evans Divers. Mr. McGuire, age 53, has been associated with the company since 1963, having been general manager since 1969, and manager of operations in Anchorage, Alaska, prior to that time. Before joining "Dick" Evans, Inc., Mr. McGuire had been associated with other diving firms and had operated his own diving business for 10 years.

The leading publication in the Maritime Industry ...

# ONLY MARITIME REPORTER/Engineering News GIVES YOUR MARINE ADVERTISING THESE SALES PRODUCING ADVANTAGES

#### HIGHEST READER INTEREST

The only marine magazine issued twice each month, MARITIME REPORTER/Engineering News is first with the news — stands first in reader interest — total worldwide circulation over 98% reader request in writing. No survey was ever more conclusive. Thousands more shoreside executives and key men have requested MARITIME REPORTER/Engineering News than any other marine publication.

# A PROFESSIONAL EDITORIAL STAFF

MARITIME REPORTER/ Engineering News has an experienced editorial staff of long standing headed by a man with a background of over thirty years in all phases of marine editing and publishing. In addition to the editor-in-chief and the assistant editors, all technical and engineering feature articles are edited by a registered, professional naval architect with over 25 years experience in practicing naval architecture, shipyard management and marine editing.

#### AMERICAN MARKET

MARITIME REPORTER/ Engineering News gives advertisers twice the circulation of the second leading magazine to shoreside buyers in the American market—every ad in MARITIME REPORTER/ Engineering News delivers twice as much sales power for you.

#### **INLAND WATERWAYS**

MARITIME REPORTER/ Engineering News gives advertisers a larger circulation to shoreside buyers on the inland waterways of the United States than any other marine magazine published in the United States.

#### LARGEST TOTAL BUYING POWER

MARITIME REPORTER/ Engineering News provides unequalled American market coverage plus bonus international circulation ... has a total circulation (U.S.A. & Foreign combined) to shoreside buyers thousands larger than the entire world-wide circulation of the second publication to this same class of reader.

Why settle for half...

MARITIME REPORTER/Engineering News DOUBLES THE SALES POWER OF YOUR AMERICAN ADVERTISING WITH FULL CIRCULATION TO SHORESIDE BUYERS...

Frigitemp Awarded Marine Contracts Totaling \$1.8 Million

Frigitemp Corporation has announced it has received marine contracts valued at approximately \$1,800,000 from American Ship Building Company, Inc., and Avondale Shipyards, Inc., division of Ogden Corporation.

Two American Ship Building contracts totaling in excess of one million

dollars are included. One calls for the design, engineering, outfitting and furnishing of all galley and commissary areas, officer and crew quarters and storerooms on two new ore carriers American is building. The second contract involves renovation and conversion of officer and crew facilities on the S/S Leon Falk, Jr., an ore carrier owned by Hanna Mining Company. Frigitemp said this project was planned to completely upgrade existing and new personnel quarters,

with Frigitemp providing all design concepts for the ultimate in habitability and comfort aboard ships. Work on the three ships is being done at the Toledo and Chicago yards of American Ship Building Co., respectively.

The Avondale contract involves the design, engineering and manufacture of 80 refrigerated and dry-stores containers to be used on a new series of LASH (lighter-aboard-ship) vessels Avondale is building. Frigitemp

said design of the refrigerated containers will follow the Cooltainer-design concept the firm has used successfully in over-the-road transportation containers. Value of the contract is in excess of \$500,000, the firm said.

Thomas C. Wilson Inc. Opens Houston Office

Charles E. Hanley, president and chairman of the board, Thomas C. Wilson, Inc., Long Island City, N.Y., has announced the opening of a branch office in Houston, Texas. The new office, located at 15426 West Barbara Circle has been established to service the petroleum, power and chemical industries in Texas, as well as the Gulf port marine industry.

Thomas C. Wilson, Inc. is a major U.S. manufacturer of expanders and cleaners for the repair, maintenance, and construction of tubular products such as condensers, boilers and evaporators. In addition, Wilson manufactures a wide range of pneumatic tools, including saws, drills, screwdrivers, needles and flux scalers, and grind-

ers.

According to Mr. Hanley: "Our Houston operation, which will be managed by J.M. Sweeney, will maintain an inventory of tools and supplies manufactured by Wilson. With a local branch, we will be able to provide special attention and service to the rapidly growing industries in the Houston area."

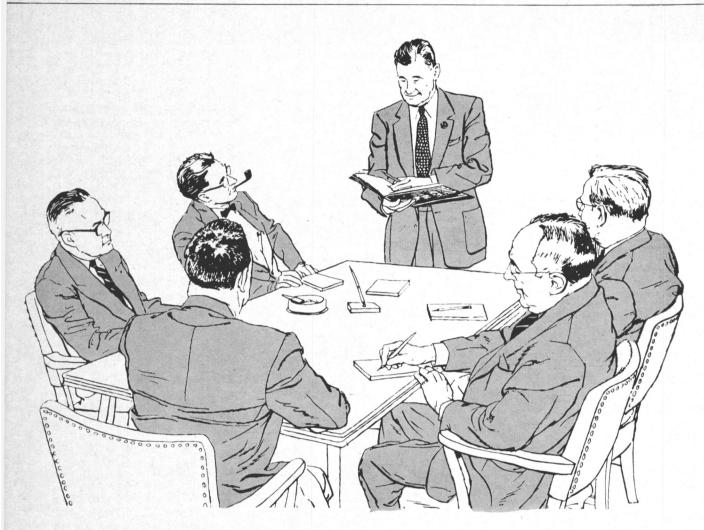
#### Mechanical Equipment Appoints Cecil Hughes Exec. Vice President

Continuing its plan to expand and strengthen its operations, Mechanical Equipment Company, Inc. (MECO), a leading supplier of desalination equipment, has appointed Cecil H. Hughes to the position of executive vice president. He will be located in the firm's corporate office in New Orleans, La., and will direct domestic and international activities of the company.

Mr. Hughes was a founder of Thermoflash Ltd. in England, later acquired by AMF-Maxim Division. For the past 10 years he has been associated with the International Maxim Division of AMF, directing their worldwide operation in the desalination field, and has been responsible for the activities of their British licensee, George Clark & Sons Ltd. Prior to this, Mr. Hughes was chief engineer of Buckley & Taylor, where he developed the Aquaflash evaporator, now standard equipment for the Royal Navy.

Mr. Hughes holds a B.S. degree from the University of London and is a member of the British Institute of Marine Engineering and Institution of Mechanical Engineering.

Also announced was the appointment of Lawrence C. Mayfield as export sales manager. Prior to joining MECO, Mr. Mayfield was associated with Baldwin-Lima-Hamilton as sales manager for the desalination equipment division. He holds a B.S. degree in engineering from P.M.C. Colleges.



#### LOWEST COST

Advertisers receive both largest U.S.A. — largest total coverage of buyers at one low cost—advertising rates at the lowest, cost per buying power reader, in the entire industry. In MARITIME REPORTER/Engineering News your budget buys more ads—more sales power for you.

# OVER 98% READER REQUEST CIRCULATION

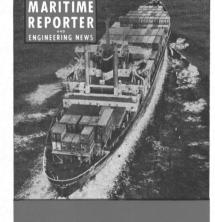
MARITIME REPORTER/ Engineering News gives advertisers proof the readers want the magazine ... Total Circulation — over 98% requested in writing.

# FIRST IN ADVERTISING SPACE

MARITIME REPORTER/ Engineering News carried more advertising space in 1970 than the second marine magazine ... including more advertising from a larger number of shipbuilding, ship repair and vessel operating companies ... the marine industry itself.

#### **NAVY COVERAGE**

MARITIME REPORTER/ Engineering News has always included U.S. Navy coverage in shipbuilding categories reaches key buying influences in all U.S. Navy departments engaged in ship design, procurement and construction ... as well as civilian designers and commercial shipyards engaged in naval work.



ADVERTISE TO THE

LARGEST NUMBER OF

THE RIGHT MARINE MEN

AT THE LOWEST COST...

IN THE REQUESTED

MARINE MAGAZINE.

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



dd a bin shinned and danny

#### Unique PPG Tanker Completes Sea Trials



N.Y. Chapter, NDTA Elects 1971-72 Officers



Outgoing procident Ria Con Edwin F

miah J. Sullivan; chairman, board of directors, Brig. Gen. Edwin B. Owen, USA, Commander, Eastern Area, MTMTS, Brooklyn, N.Y.

Area, MTMTS, Brooklyn, N.Y.

Members of the board of directors are: Frank T. Bartlett, vice president, Waterman Steamship Corporation; Donald Block, sales manager, Schuster's Express, Inc.; Edmund J. Camuti, vice president, marketing and sales, Atlantic Containerline, Inc.; O. Carey, president, New York Dock Railway; G. Blair Chiarello, Chiarello Stevedoring, Inc.; Manuel Diaz, vice chairman, board, American Export Isbrandtsen Lines; James J. Dickman, president, Universal Terminal



STAL-LAVALINC. 400 Executive Boulevard, Elmsford, New York 10523 Phone: (914) 592-4710



#### New Bureau Veritas Publication On Recommendations To Limit Effects Of Shipboard Vibrations

Bureau Veritas has placed at the disposal of shipyards and shipowners a Guidance Note defining recommendations intended to limit vi-

bration effects on board ships.

The ship classification society maintains that vibration problems are becoming more and more important on board new ships, large and small alike. This publication by Bureau Veritas analyzes the various excitation sources and defines a certain number of rules to be applied for limiting the importance of these sources. Also studied, are the conditions of response of the hull structure and its elements in order to determine the possibility of the appearance of a resonance due to a coupling of the natural frequencies of the considered elements with excitation frequencies.

Constructive dispositions aimed at reducing the vibrations are presented, particularly concerning the line shafting and propulsion machinery foundations, the structure of the engine room, the aft part of the hull and superstruc-

ture.

Maximum permissable acceleration values are defined for the structure, the machinery and its equipment, as well as for the crew.

The recomendations presented in this Guidance Note have been established on the basis of the experience Bureau Veritas has gained in the course of numerous experimental and theoretical investigations which it has been carrying out for many years. A list of the studies which can be executed in this field by Bureau Veritas is included in the publication.

The New York office of Bureau Veritas is located at 17 Battery Place, New York, N.Y.

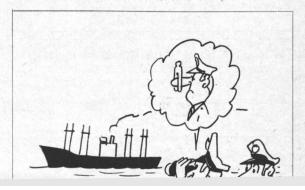
10004

Kearfott Marine Names Gulf Coast States Rep

Kearfott Marine Products Group, a leading manufacturer of marine windows and window wipers, has appointed Alexander Industries, Inc. of New Orleans and Houston as sales and service representatives for the Gulf Coast states. W.H. Russ III, vice president of Alexander Industries, announced that the New Orleans and Houston facilities will stock Kearfott products in the near future.

Kearfott Marine Products Group, located in Mount Vernon, N.Y., is a division of the Singer

Company.



#### Teffboat-Built M/V Bill Elmer Christened For American Commercial Barge Line Co.



Mrs. W.M. Elmer, wife of W.M. Elmer, chairman and chief executive officer of Texas Gas Transmission Corporation, for whom the M/V Bill Elmer was named, breaks the christening bottle of champagne over the starboard capstan on the bow of the craft at its christening. In the light suit immediately behind Mrs. Elmer is Floyd H. Blaske, president of American Commercial Barge Line Company, owner and operator of the M/V Bill Elmer, and also chairman of the Inland Waterways Services division of Texas Gas Transmission Corporation, parent company of ACBL. The three men immediately behind the christening scene are, from left, Capt. W.O. Watson, master of the M/VBill Elmer; Capt. Jack D. Wofford, vice president in charge of barging operations for ACBL, and Frank M. Norfleet, member of the board of directors of Texas Gas, who was master of ceremonies at the christening. The Coast Guard officer at left is Comdr. J.W. Howell, who presented to Mrs. Elmer the national colors flown on the M/V Bill Elmer when the vessel was launched at the shipyard of Jeffboat, Inc.

The M/V Bill Elmer, an 8,400hp towboat built for American Commercial Barge Line, was christened recently in ceremonies conducted in Memphis, Tenn.

ACBL and Jeffboat, Inc., Jeffersonville, Ind., in whose shipyard the vessel was constructed, are parts of the Inland Waterways Services division of Texas Gas Transmission Corporation, Owens-

boro, Ky. The new craft is named for W.M. (Bill) Elmer, chairman and chief executive officer of Texas Gas, who has been an official of the firm for the past 24 years. He was comptroller of the former Memphis Natural Gas Company, which was merged into Texas Gas in 1948. Mr. Elmer was named comptroller of Texas Gas when it became an operating company that year. He was elected president and chief executive officer in 1957, and chairman of the board in 1968.

Mrs. W.M. Elmer acted as the vessel's sponsor at the christening. Following the traditional smashing of a bottle of champagne against

the capstan, she was presented a silver tray by Capt. Floyd H. Blaske, president of ACBL. Frank M. Norfleet, president of Parts, Inc., and a member of the board of directors of Texas Gas, was master of ceremonies during the christening festivities.

Capt. Jack D. Wofford, vice president, barging operations, AC-BL, presented a house flag to Capt. W.O. Watson, master of the Bill Elmer, and Comdr. J.W. Howell, USCG, Memphis, presented to Mrs. Elmer the American flag that flew on the vessel when it was launched at the shipyard of Jeffboat, Inc.

Jeffboat's Hull 2400, the M/V Bill Elmer measures 180 by 52 by 11 feet with a normal operating draft of 8½ feet.

Propulsion power is supplied by three General Motors Electro-Motive Division model 16-645E5 diesel engines each rated 2,800 hp at 900 rpm. The engines turn three 5-bladed, stainless steel propellers measuring nine feet two inches in diameter. Each of the three pro-

The triple-screw Bill Elmer is the first of four identical vessels planned for addition to the American Commercial Barge Line fleet.

pellers operates in a stainless-clad Kort nozzle. Three steering rudders and six flanking rudders, all streamlined, are operated by independent hydraulic steering engines.

Navigation and communications equipment aboard includes a Sperry Mark XII radar; Kaar model CH25 SSB radio and two Kaar model DJ30 VHF radios; Lykes Brothers digital depth indicator; Bogen intercom; Hose McCann sound-powered telephone; Canadian Marconi teleprinter; National Marine Service Series W Tugmonitor engine monitoring system, and a Seatron rate-of-swing indicator. The new towboat is the 38th in

ACBL service and carries 1,800 hp more than the next largest boats in the fleet.

The Bill Elmer is capable of moving barge tows of 45,000 or more tons on the inland waterways system. Its principal area of operation is scheduled to be the lower Mississippi River between New Orleans and Cairo. It also will be available for use on other portions of the Mississippi River system.

#### Gunderson Launches Grain Barge For Shaver

Gunderson, Inc., Portland-based marine construction firm, has launched the first of two giant grain barges built at its Willamette River facility for Shaver Transpor-

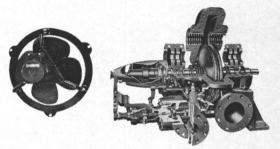
tation Company, also of Portland. The barge, ST-35, measuring 207 feet by 42 feet by 15 feet, has a grain-carrying capacity of 2,700 tons of wheat or 2,200 tons of barley. The ST-35 will be used on the upper and lower Columbia River, with North Pacific Grain Growers the primary user, according to George Shaver, executive vice president of the river transportation firm.

Don Hudson & Associates, naval architects in Portland, are the creators of the ST-35's modern, high-speed design. Doug Hendrix, of the Portland office of the American Bureau of Shipping, was the principal surveyor.

Gunderson, Inc. is a subsidiary of FMC Corporation, San Jose,

# Call MERRIN

### MARINE ELECTRICAL AND MECHANICAL PRODUCTS





MERRIN manufactures or distributes a wide range of equipment such as:

AIR MOVING EQUIPMENT

including all types of fans, blowers and accessories.

ELECTRICAL EQUIPMENT

Brakes, convertors, cable and wire, generating sets, heaters (electric and steam), switchgear, transformers and winch controls.

TURBINES • VALVES • WELDING MACHINES INSTRUMENTS • MOTORS & PARTS • PANELS & SWITCHBOARDS CONTROLLERS & STARTERS • RHEOSTATS & RESISTORS

Distributors for

WESTINGHOUSE ELECTRIC CORP. Marine Steam Turbine Renewal Parts, Electrical Equipment and Renewal Parts, Welders and Accessories.

DOVER CORPORATION/NORRIS-O'BANNON DIVISION Norriseal Butterfly Valves

UNIVERSAL ELECTRIC COMPANY Electric Motors

ILG INDUSTRIES, INC. Fans and Blowers

Hunter HUNTER DIVISION, ROBBINS & MEYER Fans and Heaters

SPECIALIZING DC EQUIPMENT

and many other companies.



For prompt and efficient service, call MERRIN

#### ERRIN ELECTRIC

DIVISION OF S.P.E.C. 162 Chambers Street, New York, N. Y. 10007 • 212/267-8166

### OCEANIC **ELECTRIC PRODUCTS**



"Over A Half Century of Service in the Marine Industry"

Oceanic products are manufactured to meet the requirements of U.S.C.G. Electrical Engineering Regulations



WATERTIGHT MARINE **SWITCHES** 

Call or Write for **Complete Catalog** 

OCEANIC ELECTRICAL MFG. CO., INC. Sole Manufacturers of Oceanic Electric Products 157-159 PERRY ST., NEW YORK, N.Y. 10014 • WA 9-3321

# HYDRAULIC **POWER UNITS DESIGNED & BUILT**

### **SPECIAL**

1 pr. Size 10 WATERBURY **PUMPS** 

**Built for Grand Basset Tankers** at Quincy, Mass.

**NEW and UNUSED** 

HYDRAULIC EQUIPT.

117 MONROE STREET, HOBOKEN, N.J. 07030

(201) 653 1759

#### MarAd Reports Development Of Computerized System To **Monitor Container Movements**

A system which employs computerized controls to monitor and record container move-ments at port terminals and staging areas has been developed for the Maritime Administration, A.E. Gibson, Assistant Secretary of Commerce for Maritime Affairs, has announced.

Developed by Computer Identics Corp., of Westwood, Mass., and Transocean Gateway Corp, of New York City, the system uses a computer and automatic container identification equipment to keep track of container movements into, out of, and within the termi-

The Automatic Container Identification method uses coded strips on each container passing through the terminal, which are "read" by optical scanning devices. The identification strips designate the container's type, serial number, and owner's name. The scanner transmits this information into a central computer, where it is combined with cargo and routing information on the container. The optical scanners in the control system would be located at strategic points around the terminal-entrances, exits, container cranes, and other control points within the storage areas in the ter-

minal.
"The central computer," Mr. Gibson explained, "can be programmed so that containers cannot leave the terminal or be moved around the complex without warnings being sounded, unless the actual routing conforms to the routing instructions in the computer. This system will not only provide an up-tothe-minute, accurate container inventory, but will help prevent thefts, as well as costly and time-consuming misroutings. Additionally, it will help increase the efficiency of terminal operations to meet the accelerated container activity we foresee in coming years," he said.

The container identification system is adapted from a similar system developed by the Association of American Railroads in 1967 and now used extensively by U.S. and Canadian railroads for controlling railcar movements.

"The adaptation of the railroad-developed method for container control represents an important advance in perfecting intermodal transport," Mr. Gibson stated. "The weakest links in our intermodal transportation system-the places where the system is most likely to break down-are the interfaces at which cargoes are transferred from mode to mode. The control method developed by Computer Identics and Transocean Gateway represents a major step forward in overcoming that situation, and improving our transportation system," he added.

The system is described in a technical report entitled "Design and Development of a Pilot Terminal Control System with Automatic Container Identification," which is available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Va. 22151. Priced at \$3 per copy, the report is numbered COM-71-00780.

#### Four New Distributors For Philadelphia Resins

Philadelphia Resins Corp. has announced the appointment of Sea Land Industries, Tacoma, Wash.; Delta Marine, New York, N.Y.; R.J. Taylor, Baltimore, Md., and Baker, Carver & Morrell, Philadelphia, Pa., as distributors of their complete line of marine repair compounds, adhesives, casting and laminating resins and coatings.

The company states that these new distributors will offer instantaneous service and stock Philadelphia Resins' well-known repair kits for same-day pick-up, and that these appointments add to Philadelphia Resins' famous all-ports customer service coast to coast.

# SHIP PARTS

MARINE PARTS

# BARGES

SALE OR LEASE

ALMOST ANY SIZE OR TYPE ALSO BARGE CRANES AVAILABLE

Various Whirley Cranes Available Washington / Americans

**Now Wrecking** 

Victories - Hospital - C-2, C-3, Cimavis Winches plus Booms, Engine Parts Surplus Ship Parts and Supplies Available

4012 N.W. FRONT . PORTLAND, OREGON PHONE: (503) 224-9900

Mailing Address: 3300 N.W. Yeon Ave.

W.U. Telex: 36-0144 PTL Cable Schnitzerbro, Portland



#### TECHNICAL PUBLICATIONS prepared to all MILITARY or COMMERCIAL SPECS

OILFIELD LIGHTING CO., INC.

- Handbooks
- · Parts Catalogs
- Training Manuals
- Provisioning Data

Complete operation, repair and main-tenance manuals written, illustrated and printed for all types marine ma-Our years of experience working with

516/826-4618

#### BENHOF INC.

2468 NORTH JERUSALEM ROAD N.BELLMORE, NEW YORK 11710

#### Ralph H. Bertz Appointed **Engineering Superintendent For** U.S. Steel's Great Lakes Fleet

Ralph H. Bertz has been named superintendent of engineering for U.S. Steel's Great Lakes fleet. The appointment was announced by William R. Ransom, general manager of the company's lake shipping operations. Mr. Bertz succeeds Ronald C. Doane, who is retiring.

Mr. Bertz joined U.S. Steel in 1949 in the en-

gineering training program of U.S. Steel's Minnesota Iron Operations. In 1963, he was made assistant superintendent-maintenance, for the Michigan Limestone Operations in Rogers City, and in this capacity, in 1964, he assumed responsibility for vessel repair work

at the Calcite plant's shipyard.

A native of Fond du Lac, Wis., Mr. Bertz attended schools there. From 1941 until 1946 he was a meteorologist in the Army Air Corps and then attended the University of Wisconsin, graduating with honors in 1949, with a bachelor of science degree in mechanical engineering. He was elected to membership in the engineering honorary societies Tau Beta Thi and Phi Tau Sigma.

Mr. Bertz is a registered engineer in both Minnesota and Michigan. He is a member of the American Society of Mechanical Engineers and is a past president of the Northeast Michigan Mechanical Engineering Society.

National River Academy Names Capt. DeLong

Floyd A. Mechling, chairman of the board of directors of the National River Academy of the United States of America, Helena, Ark., has named Capt. Louis H. DeLong, St. Louis, Mo., as the executive director of the academy, replacing Capt. Pierre R. Becker. Captain Becker has returned to his position with the U.S. Maritime Service and will serve as special assistant to the Gulf Coast Regional Director of the Maritime Administration in New Or-

Captain DeLong has had a long and illustrious career in river-related endeavors. He started his career as a deckhand on various barges which ply the inland waterways and rose to the rank of master pilot during his tenure. He was with Inland Oil and Transport Company, St. Louis, Mo., for 15 years after his stint on the river, having retired as president of that company in 1970. Not content with retirement. he started his own marine consultant firm in

Captain DeLong was elected to the academy's board of directors at its annual meeting held March 25, 1971.

De Laval Turbine To Supply U.S. Maritime Industry With Stal-Laval AP Equipment

In a recent simultaneous announcement by William J. Holcombe, president, De Laval Turbine Inc., and Carl Larsson, president, Stal-Laval Turbin AB of Sweden, interested marine parties were advised that Stal-Laval and De Laval have concluded an agreement whereby De Laval will now offer the American marine industry the well-known Stal-Laval line of AP equipment in addition to its own established line of DLT-M propulsion machinery.

Stal-Laval AP units are well known internationally and have been installed in, or are on order for, more than 200 foreign and two U.S.built ships. These Stal-Laval installations repapproximately 35-40 percen worldwide orders and are principally installed in tankers and containerships. A unique feature of this design is the application of epicyclic gears to the first of two gear reductions such that, in combination with an axial flow low-pressure turbine and forward mounting of the condenser, minimum vertical height is achieved. The low headroom characteristic of this type of unit offers advantages in certain types of ships, such as containerships and

barge carriers.

De Laval's DLT-M line was introduced to the marine industry about two years ago in response to the need for larger, more reliable and more economical equipment to propel the new giant cargo ships and tankers now under construction. Eleven DLT-M units have been furnished for the revolutionary LASH cargo ships currently being delivered by Avondale Shipyards to Pacific Far East Line and Prudential-Grace Lines and seven additional units are on order. Similar units will be installed in two containerships now being built at the Sparrows Point Shipyard of Bethlehem Steel Company for Pacific Far East Line. In addition, De Laval is constructing 50,000 shp

DLT-M units at 100 rpm, including condensers, that will power two 225,000-ton tankers under construction by Seatrain Shipbuilding Corporation, the largest tankers ever built in the United States.

Both companies were originally founded by Dr. Carl Gustaf Patrik De Laval in the 1890s, with each company subsequently going its own way in the design of propulsion steam turbines. Currently, the Stal-Laval company is owned by ASEA of Sweden, and De Laval is owned by the Transamerica Corporation of the U.S.A. Since both companies have highly qualified designers and modern workshops, the agreement will provide shipowners in Europe and the U.S.A. with the latest advances in marine steam turbine propulsion.

Inquiries should be addressed to any of De Laval's sales offices throughout the U.S.A. or to De Laval Turbine Inc., Trenton, N.J. 08602.

# FOR SALE — \$6,000,000 VALUE CHESAPEAKE BAY BRIDGE

# MARINE CONSTRUCTION EQUIPMENT

Standard and Special Units for pile driving and underwater construction consisting of:

Barge mounted draglines, clamshells, lift cranes, steam revolvers, jack-up and floating drivers, 500 ton/lift, derrick, deck barges, hopper barges, carfloats, floating batch plant, tugs (140 to 1000 HP), work boats, launches, pile hammers (vibro & steam), leads, hoists (steam, diesel electric, air), cranes (crawler, truck, hydro), compressors 150-1200 CF, pumps (jet-centr-diaph-air), diesel-elect. sets 3 KW-250 KW, concrete plants, concrete pumps—buckets (digging-conc.). Other misc. equipment, office trailers, survey instruments, etc.

Available as released August thru December OPPORTUNITY FOR INSPECTION DURING OPERATIONS

Call, wire or write Paul Titov or R.E.D. Hoyle (301) 974-0973

RAYMOND-DRAVO-LANGENFELDER Joint Venture

P.O. Box 86

Annapolis, Maryland 21404

#### SUPERINTENDENT ENGINEER

New York based independent shipowner operating large American and Foreign Flag bulk carrier fleets requires Superintendent Engineer to supervise Port Engineers in maintenance and repair. Chief Engineer's license and Port Engineer's experience required. Diesel experience desired. An equal opportunity employer

BOX 902 MARITIME REPORTER/ENGINEERING NEWS 107 EAST 31 STREET NEW YORK, N.Y. 10016

# **Marine Coatings Salesman**

Well known established international marine coatings company has a top sales position open in the New York City area. Marine sales experience New York essential. Salary open. Many company benefits. Regular review and opportunity for advancement. Send details of background and salary requirements to: Carboline Company, 328 Hanley Industrial Court, St. Louis, Missouri 63144. Attention: W. C. Rosenbaum

An equal opportunity employer

CAPTAIN REQUIRED-20 ton inland lilense min. Permanent pos. operate and manage 50' Diesel vessels at St. Croix VI and famous Buck Island underwater trail. Skipper needs pleasant, even personality and management ability. Ideal climate and working conditions year around. AIR MAIL with full details. Box 417 Christinsted St. Croix. U.S. V.I. 00820.

#### Oceangoing Tug-Barge Executive

of the only rigidly connected Tug-Barge in operation is now seeking a permanent position, or part time Consulting, in Feasibility, Chartering, all phases of practical Marine Operations including Multi-barge shutle concepts, Insurance, Manning, Purchasing, Title XI, Computer and Cash Flow. Willing to relocate. Complete resume, portfolio and highest references on request. An unique investment in the transportation mode of the future for a forward looking Corporation.

Box 815 Maritime Reporter/Engineering News 107 East 31 Street New York, N. Y. 10016

#### NAVAL ARCHITECT-SHIPYARD MANAGER

Seeks responsible position. Experienced in design, management, production, sales, new construction estimating, surveying and estimating repair work—tugs, towboats, barges, fishing boats, small vessels of all types.

Box 801 Maritime Reporter/Engineering News 107 East 31 Street New York, N.Y. 10016



CARGO OF GRAPES? HIG.

#### FOR SALE \$65,000.00



85' ex-S.T. Tug, 81/2' draft (min.) Excellent condition 800 H.P. Cooper-Bessemer J.S. 8 engine

2-20 K.W. G.M. 2-71 A. C. Generators 2-O.P. 10 CYL. D. 81/8 FAIRBANKS MORSE ENGINES

1 has new type liners, pistons and bearings

C. C. Northon, P.O. Box 24057 New Orleans, La. 70124 (504) 282-5983

# **BLACKBURN**

#### ROLLER BUTTON

UP TO 19 SQ. INCHES OF STEEL SHEAR AREA (TWICE THE AREA OF COMPETITIVE MODELS)



REFILLABLE
 LUBRICATION RESERVOIR

RESISTANT ARMOLOY WEAR SURFACES

HARDENED STEEL
 ROLLER BEARINGS

BLACKBURN MARINE EQUIPMENT CO. 6105 England Houston, Texas 77021 AC 713/747-8140

#### FOR SALE

150' Army Type LT Tug, 16-567 GM Diesel Engine with towing winch, ABS classed, Panamanian Flag, excellent condition. For information call 601-762-3172 or 205-478-3970.

#### MOTOR GENERATOR SETS

40 Hp, 230 DC

25 KW, 450 AC

W/ Control Panel J. MENDELSOHN & SONS

3493 Klickitat Ave. S.W., Seattle, Wash. 98134 (206) MA 3-3290

Steering Engine, steam or air, can be motorized, complete wheelhouse to quadrant; prop-8' 6" dia. x 10′ 6″ pitch; 1,000 hp boiler, CG certified 170″, pumps and blower, truckable; 7.5 KW alternator, Lister diesel; 40' work boat, 671 diesel. Gayle Gipson, 208 New Bridge Circle, Apt. B, Richmond, Virginia 23223. 703-737-7541.

#### FOR SALE (exclusive)

2 Oil Barges—208x39x12—built 1934. One has short coastwise load line—capacity 13,500 bbls. raked both ends—fixed skegs—U.S.C.G. certificates in force—Both in service and in good condition. Price \$37,500 and \$35,000. For further information, contact Bill Hall, at Maxwell Harris, 148 State Street, Boston, Massachusetts 02109. Telephone: (617) 227-1500.

#### WANTED

Steamship Models · Old Chronometers Private Collector

F. MILLER 11 CYPRESS DRIVE, WOODBURY, N.Y. 11797

WANTED: 50 ton at 25' radius and 100 ton at 25' radius Revolving GANTRY CRANE, track 20-40' apart, 20-40' off ground, electric preferred. EVEREADY: BOX 1780, BRIDGEPORT, CONN. (203) 334-9471-2.

# OCEAN TUG "EXPERT" FOR SALE OR CHARTER

Class Lloyds 100A1, 1,300 I.H.P. single screw, complete with full compliment of salvage gear, spare bronze propeller and numerous spare parts. Built in Holland in 1948, this tug is still in excellent condition with a fuel range of 45 days. Special Survey due December, 1973.

Selling price U.S. \$100,000/negotiable. Interested please apply to Straits Engineers (S) Pte. Ltd., Geylang, G.P.O. Box 2654 Singapore 14.

#### 400 KW TURBO-GENERATORS

G.E. DORV 618-440 PSI-457° Superheat

S 193 Form A-10059/1200 RPM

400 KW-120/240 V DC-Type MPC-1200 RPM

6 Available — Excellent Condition Suitable for Upgrading to 600 KW

#### NICOLAI JOFFE CORPORATION

San Francisco Branch 445 Littlefield Avenue (P.O. Box 2445) South San Francisco, Calif. 94080 TWX 910-371-7248 Phone (415) 761-0993

#### OS & D RUBBER HOSE

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

Contact: Ralph Ingram



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

#### GRAY MARINE ENGINES

Government reconditioned Gray Marine 64-HN9 (6-71)—rated 225 HP—with Twin Disc Gear—1.54:1. \$1950

GALVESTON ENGINE AND EQUIPMENT CO.

1615 Avenue A 765-9332

Galveston, Texas 77550 765-9333 (713)

# NEW & REBUILT EQUIPMENT FOR IMMEDIATE DELIVERY

#### **NEW MARINE PUMPS AVAILABLE** FOR IMMEDIATE DELIVERY



One (1) **Worthington**, 9500 GPM, 30' hd., driven by Westinghouse 100 HP, 230 V DC 800 RPM marine type drip proof motor, 20" suction, 18" discharge, all bronze—can also be furnished with AC motor.

One (1) Worthington Feed Pump, 150 GPM @ 600 PSI, driven by 115 HP, 400 PSI Worthington S2R Turbine

Ten (10) **Blackmer** fuel oil transfer pumps—capacity 100 GPM @ 100 lbs., driven by 15 HP, 440 V AC General Electric gear head motors

Ten (10) **Blackmer** fuel oil transfer pumps, 50 GPM @ 50#, driven by 5 HP, 440 V, 3 phase, General Electric AC motors

One (1) Warren Pump, 500 GPM @ 175#, driven by Terry Turbine, 88 HP, 400#, all bronze

One (1) Warren Pump, 26,000 GPM @ 10 PSI, driven by 275 HP Westinghouse 450/600# turbine

One (1) Main Feed Pump, **DeLaval**, 350 GPM @ 750 PSI, complete with turbine 585# steam pressure

New cost \$18,000.00 4,950,00 Our price

#### REBUILT AND GUARANTEED PUMPS

Six (6) **Coffin** Pumps—type F—capacity 200 GPM @ 650 PSI

\$2900.00 each, FOB Jersey City

One (1) Coffin Pump-type CG-280 GPM @ 650 PSI \$3950.00, FOB Jersey City

One (1) Ingersoll Rand low pressure cargo pump, 10", driven through reduction gear by Westinghouse 350 HP 175 PSI horizontal turbine—capacity of pump: 3500 GPM @ 300 ft head—reconditioned and guaranteed

\$5950.00 FOB Jersey City

Three (3) Waterous Pumps, type P 1118, capacity 700 GPM @ 100 PSI, complete with reduction gear to 3600 RPM—can either be driven by turbine or motor-bronze impellers.

\$1950.00 each, FOB Jersey City

#### **NEW HEAT EXCHANGERS**

We have a large quantity of new Heat Exchangers available at one third of the new price, or less.

One (1) 7900 sq. ft. Heat Transfer Products C3 Condenser, aluminum brass tubes, bronze tube sheets, steel shell

\$29,950.00-FOB Jersey City Twenty (20) Griscom-Russell 300 sq. ft. condensers, cupro nickle tubes, bronze shell, bronze tube sheets \$2950.00 each, FOB Jersey City

Four (4) C. H. Wheeler 1150 sq. ft. condensersbronze heads, cupro nickle tubes and tube sheets
\$5600.00 each, FOB Jersey City
Six (6) Griscom-Russell 75 sq. ft. condensate coolers
—bronze shell—cupro nickle tubes and bronze heads

\$950.00 each, FOB Jersey City Twenty-five (25) Taco Heaters—cast iron shell—copper tubes for heating fresh water—900 gallons per hour—original cost \$981.00—our price **\$299.00** each

We also have a large quantity of other types of heat exchangers in stock.

#### **NEW LOW PRESSURE EVAPORATORS**

Five (5) double effect, two shell, Griscom-Russell 20,-000 GPD Evaporators, all bronze and cupro nickle, complete with accessories \$18,750.00 each FOB Jersey City

Five (5) new Griscom-Russell, 12,000 GPD, all bronze evaporators—double effect—complete with accessories New \$13,950.00

Four (4) same as above, rebuilt

\$10,950.00

#### **MISCELLANEOUS**

Two (2) unused 12 ton air conditioning units, manufactured by **York**, type W, 3 cylinder, complete with 15 HP, 230 or 460 V AC motors and controllers. These units are complete.

Ten (10) used, in excellent condition, unit winches, complete with 50 HP, 230 V DC General Electric motors and controllers

\$1495.00 each, FOB Jersey City
One (1) American Engineering 13 x 14 Windlass for
2%" chain, used—in excellent condition

\$11,900.00 FOB Jersey City One (1) AP3 or C3 Propeller-rebuilt-with ABS Cer-

\$16,950.00 FOB Beaumont, Texas
One (1) reconditioned Westinghouse T2 Main Generator Stator—export boxed—equal to new

\$7850.00 FOB Jersey City Two (2) reconditioned T2 Tailshafts, complete with

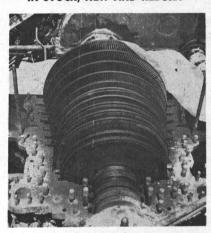
\$6950.00 each FOB Jersey City

#### **TURBINES**

Three (3) 200/400 HP, 1800/3600 RPM, General Electric Turbines, 440 lbs. steam pressure, 5 lbs. exhaust—rebuilt—in excellent condition \$2950.00 each FOB Jersey City

Two (2) 1000 HP General Electric Turbines, 3600 RPM, 900 lbs., 850 degrees for Cargo Pumps—5 lbs. exhaust—can be furnished with reduction gear to 1800 RPM \$5900.00 each FOB Jersey City Two (2) Worthington 400 HP maximum, 5000 RPM, 600 lbs., 15 lbs. back pressure—for cargo pumps \$3300.00 each FOB Jersey City

WE HAVE THE FOLLOWING TURBINE ROTORS IN STOCK, NEW AND REBUILT



One (1) new Turbine Rotor for **Westinghouse** E125 Cargo Pump Turbine

#### For C4 vessels:

One (1) new complete Westinghouse LP Rotor-8500

One (1) new complete General Electric HP Turbine

One (1) new complete General Electric LP Turbine

#### For C3 vessels:

One (1) new complete General Electric HP Rotor

One (1) new complete General Electric LP Rotor

One (1) new complete DeLaval HP & LP Turbine

One (1) rebuilt Allis Chalmers HP & LP Rotor

#### For C2 vessels:

One (1) new General Electric LP Rotor for Carolina C2

One (1) new General Electric LP Rotor for Moore C2

One (1) rebuilt Westinghouse 6000 HP, HP Rotor

One (1) new LP Rotor for Westinghouse 6000 HP

One (1) new HP Rotor for Allis Chalmers 6000 HP One (1) new LP Rotor for Allis Chalmers 6000 HP

One (1) new HP Rotor for General Electric 6000 HP

One (1) new LP Rotor for General Electric 6000 HP

#### TURBINE ROTORS—NAVY TYPE

For 1000 KW Turbo Generator

600 KW Turbine Rotors

525 KW T2 Rotors

400 KW Worthington

300 KW Worthington

300 KW Westinghouse 300 KW General Electric

We also have in stock rotors for cargo pump turbines, intermediate blading, diaphragms and bear-

All above equipment has been reconditioned or is new—our stock is located in our warehouses in Jersey City—General Electric equipment is reconditioned at the General Electric Service Shops and Westinghouse equipment at Westinghouse Service Shops.

WIRE



LARGE INVENTORY MANY OTHER TYPES OF EQUIPMENT AVAILABLE AT OUR JERSEY CITY WAREHOUSE—ALL EQUIPMENT GUARANTEED

### POWER CORPORATION

39 BROADWAY

NEW YORK, NEW YORK 10006

Telephone HAnover 2-3967

to the total the second of the

# BARGES ON THE SPOT



#### FOR CHARTER Steel Deck Barges

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

#### ALSO AVAILABLE:

Hopper—Offshore—Oil and Spud Barges

#### FOR SALE

195' x 35' x 11' Hopper Barge

# MCDONOUGH MARINE SERVICE

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

SOLD Through your CHANDLER

99.99+% For Cathodic Protection

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

Anodes • Bars • Circles • Rings • Rods IN STOCK

# SMITH and McCRORKEN, Inc.

153 Franklin St. Dept. MR New York 13, N. Y. Call WA 5-2171
FOR FAST DELIVERY

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

DIESEL GENERATOR SETS
20 KW—120/240 V.D.C. G.M. 2-71
GEN: 20 KW 120 VDC 1200 RPM. ENG: GM 2-71 diesel—
2 cycle—41/4x5—142 cu. in.—cl'kwise—24 V start. \$1750

GALVESTON ENGINE AND EQUIPMENT CO.

1615 Avenue A 765-9332

(713) Galveston, Texas 7/330

### TUG FOR SALE

Sealed bids, for opening in public, will be received until 9:30 A.M., Eastern Standard Time, September 24, 1971, in the office of Chief, Division of Storehouses, Drawer BB, Balboa, Canal Zone, for Tug U.S. TABOGA and spare parts. This tug was built in 1943 and has a steel welded hull 134'6", 33'95%" beam, 748 long tons normal displacement and 2 General Motor 1200 H.P. diesel engines. Bid must be submitted on form Invitation No. S-71-784 and accompanied by a 25% bid deposit. For further information and copy of Invitation No. S-71-784, contact Procurement Division, Panama Canal Company, 4400 Dauphine St., New Orleans, La. 70146, telephone (504) 947-0036.

#### TURBINES

ROTORS DIAPHRAGMS
GOVERNORS REDUCTION GEARS
MISC. PARTS

With A.B.S. Certificates

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

Complete Inventory List Free Upon Request

# NICOLAI JOFFE CORPORATION San Francisco Branch

P. O. Box 2445 445 Littlefield Ave. South San Francisco, California

Phone (415) 761-0993 TWX 910-371-7248

BARGES FOR LEASE ON GULF COAST OF FLORIDA



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

# WANT TO BUY DIESEL TWIN SCREW TUG

1200 to 1600 HP. in good condition. Suitable for harbor and some coastwise work. U.S. flag not required.

Box 901 Maritime Reporter/Engineering News 107 East 31 Street New York, N.Y. 10016



2½ VACREL VACUUM VALVES

THE BOSTON METALS COMPANY

313 E. Baltimore St. 539-1900

Baltimore, Md. 21202 (301) 355-5050

#### - FOR SALE -

(2) T2 MISSION TANKER HULLS FOR USE AS DRILL BARGE, DRILL RIG, OIL STORAGE, MOORING DEVICE OR OTHER NON-TRANSPORTATION SERVICE

MISSION SAN RAFAEL Located Baltimore, Md. Located Beaumont, Tex.

OAL 523'; Beam 68'0"; depth moulded 39'3"; deadweight tons 16,286; cargo tank capacity 141,286 barrels.

Contact: Harold B. Chait, Exec. V.P.

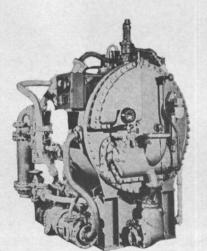
THE BOSTON METALS COMPANY

313 E. Baltimore St. 539-1900

(301) Baltimore, Md. 21202 355-5050

# EVAPORATOR PRICES

E - V - A - P - 0 - R - A - T - E



L.P. EVAPORATORS

### Lowest Price Ever Best Condition

JUST REMOVED FROM U.S. NAVY SHIPS
Mission "San Rafael" and Mission "Santa Cruz"

2 L.P. Bethlehem evaporators—bronze—with all pumps and controls. Automatic feed water control—salinity indicator cells. Always kept in top shape.

\$11,750.00

1 AQUA CHEM 8000 GAL/DAY FLASH EVAPORATOR All pumps—salinity indicator cells.

\$9850.00

ALL ARE OFFERED RECONDITIONED AND TESTED TO A.B.S.

# THE BOSTON METALS COMPANY

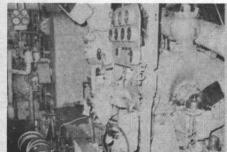
313 E. Baltimore St., Baltimore, Md. 21202 — Phone: (301) 539-1900 or 355-5050



#### **TURBINES**

**8-Turbines**, Main Propulsion, High Pressure, Westinghouse, Horizontal Impulse, single flow, 17,700 SHP, 525 PSI, 5524 RPM.

**8-Turbines**, Main Propulsion, Low Pressure, Astern, Westinghouse, Double Flow, Power Rating Ahead—17,800 SHP, Astern—12,000 SHP, Speed Ahead—4,300 RPM, Astern—3019.



TURBO GENERATOR

#### **TURBO-GENERATORS**

**6-Turbo-Generators**, Ship's Service, G.E., Type: ATB-2, 1563 KVA, 1250 KW, 450 volts, 3600 RPM, G.E. Turbine.

#### REDUCTION GEARS

**8-Reduction Gears**, Main Reduction, Westinghouse, Double Reduction, Locked Train, Rated 37,500 HP.

#### **ANCHORS**

-4-

30,000 Lb. Stockless

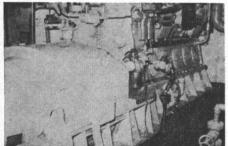
#### **ANCHOR CHAIN**

-Approx. 30 Shots-3%" Anchor Chain

Doors, Fans, Chocks and Cleats

#### **DIESEL GENERATOR SETS**

**8-Diesel Generator Sets,** Emergency Ship's Service, Cooper-Bessemer, Model FSN, 375 HP, 900 RPM, with G.E. Generator, 450 Volts AC, 250 KW, 900 RPM.



DIESEL GENERATOR SET

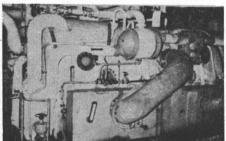
#### BOILERS

**16-Babcock & Wilcox**, Double Cased, Express Type, Single Uptake, 634 PSI, 5720 sq. ft. of Heating Surface, 770 cu. ft., 1547 tubes.

#### CONDENSERS

**8-Condensers**, Main Steam, Westinghouse, Single Pass, Straight Tube, Cooling Surface—1475 sq. ft., 7213 Tubes.

**8-Condensers**, Auxiliary Steam, Westinghouse, Cooling Surface—2000 sq. ft., 1578 Tubes.



DISTILLING PLANT

#### DISTILLING PLANTS

**4-Distilling Plants**, Main, Griscom Russell, 40,000 GPD, 1905 sq. ft., 1665 Tubes, 3 Stage.

2-Distilling Plants, Auxiliary, Griscom Russell, 12,000 GPD, 246 sq. ft., 302 Tubes, 2 Stage

#### **PUMPS**

For IMMEDIATE SALE!

**8-Centrifugal**, Auxiliary Condenser, Salt Water Circulating, Warren, Steam, 2500 GPM, 12 PSI, 875 RPM, Westinghouse Motor, 2-Speed, 440 Volts, 23.4/6 HP.

**8-Rotary**, Aircraft Handling Elevator, Vickers, 315 GPM, 985 PSI, 900 RPM, G.E. Motor, 150 HP, 440 Volts.

**4-Rotary**, Fuel Oil Transfer, Quimby Pump Co., 250 GPM, 150 PSI, 690 RPM, Electro Dynamic Motor, 4-Speed, 440 Volts, 48/32/24/16 HP.

**4-Steam Reciprocating,** Emergency Feed, Warren Steam Pump, Size VSDA 11" x 8" x 18", 180 GPM, 750 PSI.

2-Pump Units, Elevator, Vickers, With G.E. Motors, 440 Volts, 37.5 HP, 865 RPM.

**4-Feed Booster, Worthington, 5775** RPM, Type: VA-296.

2-Fuel Oil Transfer, DeLaval, 700 GPM, 1150 RPM, Continental Motors, 100 HP, 440 Volts, 60 Cycles, 3 Phase.

**8-Main Feed, Worthington, 642** GPM, 580 PSI, 5000 RPM, Sturtevant Turbine, 348 BPH, 5000 RPM.

**4-Main Condenser**, Condensate, Ingersoll-Rand, 385 GPM, 1180 RPM, Westinghouse Motors, 440 Volts AC.

**4-Auxiliary Circulating**, Warren Steam Pump, 2500 GPM, 875 RPM, Westinghouse Motors, 440 Volts.

4-Auxiliary Feed Booster, Worthington, 200 GPM, 750 RPM, Westinghouse Motors, 440 Volts AC.

4-Auxiliary Condensate, Ingersoll-Rand, 65 GPM, 75 PSI, 1765 RPM, Westinghouse Motors, 440 Volts AC, 9.1 HP, 1745 RPM.

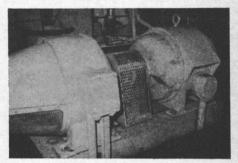
8-Lube Oil Pumps, Quimby, 650 GPM, 690 RPM.

2-Lube Oil Pumps, Northern Ord., 50/ 25 GPM, 485/243 RPM, 4.5/2.1 BHP, Westinghouse Motors, 440 Volts AC, 3 Phase, 60 Cycles, 1760/885 RPM.

#### **MOTOR-GENERATOR SETS**

**3-M.G. Sets, Westinghouse**, 75 KW, 120 Volts DC, 625 Amps, 1765 RPM, Motors, 115 HP, 3 Phase, 60 Cycles, 440 Volts A.C., 134 Amps., 1765 RPM.

3-M.G. Sets, Degausing, Hanson-Van Winkle-Munning Co., 36 KW, Motors, 60 HP, 440 Volts AC, 60 Cycle 1150 RPM.



GENERATOR SET

#### WINCHES & WINDLASSES

1-Winch, Electric, 1-Drum, 1-Gypsy, 7400 Lbs. @ 220 FPM.

4-Anchor Windlass, Hyde Windlass Co., Electro Hydraulic, 3%" Die Lock Chain, 70,400 Lbs. @ 36 FPM, General Electric Motors, 440 Volts AC, 337 Amps., 1175 RPM, 60 Cycles, 3 Phase, 68.8 HP.

#### COMPRESSOR

1-Compressor, Medium Air, Ingersoll-Rand, 200 CFH, Westinghouse Motors, 55 HP, 440 Volts.

#### MACHINE TOOLS

3-Reed and Prentice Engine Lathes.
1-Lodge and Shipley Engine Lathe.
1-Morris High Speed Radial Drill.
1-Racine Tool and Machine Motor Driven Hack Saw.

#### **EJECTOR ASSEMBLY**

1-Ejector Assembly, Westinghouse, Size C-1, 75 sq. ft.



THOUSANDS OF OTHER ITEMS TO BE REMOVED

ZIDELL Explorations, Inc.

401 ALEXANDER AVE., TACOMA, WASH. 98421 Phone 206/Fulton 3-2701

3121 S.W. MOODY AVENUE, PORTLAND, ORE. 97201
Phone 503/228-8691
TELEX 36-701 · CABLE "Zidell"

# PUMPS

**BOILER FEED - CIRCULATING** FIRE - OIL - GENERAL SERVICE, ETC.

BOILER FEED PUMP



\$1450.00

Pacific type JB — normal 150 GPM — 542 lbs — 1242'. Maximum 185 GPM—600 lbs—1418'. Steam turbine 440#—507°TT— 3740 RPM. Water rate 35 lbs BHP. Weight complete 3100#— OAL 8' 93%"—OAW 2'. Reconditioned ABS — equal to new. Spares available.

#### UNUSED CENTRIFUGAL TURBINE DRIVEN BOILER FEED PUMP



**Priced to Sell** 

Worthington pump—5" size—
type UFD—capacity 460 GPM
@ 750#—test 1000#—impellor
93/4"—4900 RPM—305 HP—
horizontal 3-stage—5" suction
—5" discharge. TURBINE: Sturdivant Div.—type 21—size OC22. Stem 575# normal—max.
615#— ex. pressure 15#—test
pressure 923#. Originally bullt
for cruisers—CL class—103,104,
105,106,107 vessels. New—unused.

#### NEW TURBINE DRIVEN FIRE & GENERAL SERVICE PUMP



Allis-Chalmers 6x5 pump type SKH — 1200 GPM — 125 PSI — 3500 RPM. Coppos turbine type TF-22-2\( y\_-3500 RPM. 273#— 50° superheat.

\$1650.00

#### FUEL OIL SERVICE PUMP



\$1250.00

Turbine driven rotary pump with reduction gear. Warren vertical rotary—size 31/4"—65 GPM @ 350 PSI discharge. Powered @ 350 PSI discharge. Powered @ 350 PSI worten was seen with the property of the property

#### FIRE & GENERAL SERVICE PUMP



Fairbanks-Morse centrifugal pump—300 GPM @ 275' dis-charge. 3460 RPM—3" suction— 2½" discharge. MOTOR: 30 HP — 220/440/3/60 — 3460 RPM. BASE: OAL 52" — OAW 24". UNIT: OAH 24½". Looks new.

\$975.00

#### UNUSED CIRCULATING PUMP



Allis-Chalmers—close-coupled—bronze—375 GPM—40' head—size 4x3—5 HP motor—115 VDC—40 amps—1750 RPM—compound wound—continuous.

\$877.77

#### **UNUSED REFRIGERATION** CONDENSER CIRCULATOR



\$397.66

Frederick Iron & Steel Co.—close coupled — bronze—high head—10 GPM—56' @ 3500 RPM—1"x11½"— test pressure 75#—48" submergance horizontal MOTOR: Barble-Card Electric—1 HP—440/3/60—1.7 amps—3500 RPM. Spraytite enclosure—continuous duty 50-125 degrees F—with magnetic controller—some spares. Motor is high shock non-magnetic.

#### HORIZONTAL DISTILLER



\$397.66

FRESH WATER PUMP Bronze Davidson pump-20 GPM bronze Davidson pump—20 GPM
51' head—submergance 4—
3500 RPM. MOTOR: Reliance 1
HP—220/440/3/60—3500 RPM
—162 lbs total weight—11/4"
suction—1" discharge. OAL
221/2"—OAW 97/8"—OAH 12".
Complete with Cutler-Hammer
controller.

#### **NEW BRONZE** FRESH WATER PUMP



Mfg by Allis-Chalmers, 35 GPM @ 43.3 lbs head. MOTOR: 3 HP -440/3/60—with spare parts and control.

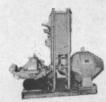
#### UNUSED HIGH HEAD CENTRIFUGAL PUMP



**Priced Right** 

For butane, fuel oil, hot solvents to 800° max. Ingersoll-Rand HFLA — serial 056-3136 — 600 GPM—580° head—6" inlet—4" outlet. Flange connection—steel base mounted. Westinghouse motor CS—125 HP—440/3/60—3530 RPM—4200 lbs total weight.

#### FIRE PUMP



Reconditioned Worthy fire pump
—3"—UBI—450 GPM—125 lbs
—1750 RPM. MOTOR: 50 HP—
230 VDC—178 amps—type SK
—frame 133—compound—1310
/1750—with magnetic starter.

\$1950.00

#### HIGH HEAD DIESEL FRESH WATER SERVICE PUMP



Fairbanks-Morse pump—75 GPM —56.1 ft head — test 110 lbs. MOTOR: Reliance 3 HP—frame 284 UCZ — 440/3/60 — 1750 RPM—with starter.

\$475.00

#### UNUSED BUFFALO PUMPS



\$1495.00

All bronze - model S.L. - 750 GPM - 50 PSI head - 28 BHP. MOTOR: Continental-30 HP-440/3/60—37 amps—1760RPM. 5" Suction—4" discharge. OAL 4' 81/2"-OAW 22"-OAH 30" -weight 1200 lbs.

#### A. C. FIRE PUMPS



\$887.00

250 GPM-160 PSI discharge. Suction 31/2"—discharge 21/2"— 3500 RPM. MOTOR: Reliance-25 HP-440/3/60-35.6 amps. 3 Weil pumps and 3 Aldrich pumps available. Reconditioned pumps and motors.

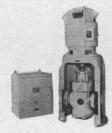
#### UNUSED AURORA PUMP



\$877.77

300 GPM—37' head—5 HP—
120 volts DC Centrifugal Pump.
Bronze — size 5 x 4 — flanged.
MOTOR: Reliance—super T.D.C.
Electric Motor—5HP—120 VDC
— 36.8 amps — 1750 RPM—
Frame L216A—with control by
Cutler-Hammer. Excellent condition. Latest USN surplus.

#### UNUSED DELAVAL IMO ROTARY PUMP



175 GPM-35 PSIG-10 HP-120 volts DC-1750 RPM-serial E-8619 — frame 324 VY — 76 amps-mfg by Electro Dynamics. With magnetic control. Excellent

\$1850.00

### BOSTON METALS COMPANY

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

### M.G. SETS

#### 5 KW — 120/1/60 A.C. — UNUSED 10 HP 115 VDC TO 5 KW 120 VOLTS SINGLE PHASE AC



INPUT: 10 HP—115 volts DC

— 78 amps — 1800 RPM.

OUTPUT: 5 KW—115 volts
single phase A.C. 4-bearing
—with 10 HP 115 volt D.C. magnetic starter

FIRST TIME IN A LONG TIME THAT 5 KW UNITS ARE ON THE MARKET

#### NEW 0.25 KVA M.G. SET BY SAFETY CAR HEATING & LIGHTING CO.

INPUT: 0.65 HP—115 volts D.C.—4.6 amps—1800 R.PM. OUTPUT: 2.5 KVA 115/1/60—1800 RPM—2.7 amps.

\$8950 F.O.B.

#### BURKE 71/2 KW 120/1/60/1800 RPM M.G. SET

INPUT: 9.4 HP-230 VDC-35.5 amps-1800 RPM. **OUTPUT:** 10 KVA—7½ KW—120/1/60. Total weight 1225 lbs. 49" long—22" wide. With all controls.

INQUIRE ABOUT MANY MORE SIZES NOT LISTED HERE

#### THE BOSTON METALS COMPANY

313 E. Baltimore St. 539-1900

Baltimore, Md. 21202 (301) 355-5050



#### **BRASS ENGINE ROOM TELEGRAPHS**

Can be put in actual operation or used for decorative purposes.

\$375 each

#### THE BOSTON METALS COMPANY

313 E. Baltimore St. 539-1900

Baltimore, Md. 21202 (301) 355-5050

### Link Belt Small Boat Winch



GEAR BOX: Link Belt—size
DM-30—68 RPM output—ratio
25.63:1. MOTOR: Westinghouse
type C5—style 7C4894—frame
225Y — class 1 — 2 HP—1720
RPM — 220/440/60/3—5.6/2.8
amps. With push button starter
@ 68 FPM.

#### THE BOSTON METALS COMPANY

313 E. Baltimore St.

Baltimore, Md. 21202 (301)



#### **New Watertight** Doors 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 355-5050 (301)

# ZIDELL Z

EXPLORATIONS, INC.





# MARINE EQUIPMENT

(503) 228-8691

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

# **VALUES**

#### **AXIAL FLOW FANS**



Rebuilt Guaranteed LaDel, STURTE-VANT etc.

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

**EXAMPLE LISTING:** 

Size	A1/4	Size	A3	Size	A8
Size	A1/2	Size	A4	Size	A10
Size	Al	Size	A5	Size	A12
Size	A2	Size	A6	Size	A16

### **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, and repeaters with mounts.

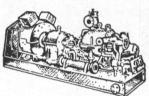
2-FAIRBANKS-MORSE Marine Diesel Engines. Model 38D8-1/8, 10 Cylinders, 1600HP, 720 RPM, 8-1/8" bore, 10" stroke, Air Start. Condition: Used, and Very Good. \$5000.00 each.

### MARINE DIESEL **ENGINES**

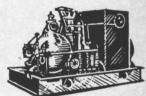
FAIRBANKS-MORSE, Md. 38D8-1/8

Matched Pair, Port & Starboard Used condition, 1800 HP, 800 RPM, 2 cycle, 8-1/8" bore, 10" stroke, Air Start. Complete with Westinghouse Reduction Gears, 2.216:1 ratio-with hydraulic

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



### TURBINE GENERATORS



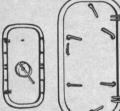
#### FIRE PUMPS AIR COMPRESSORS



2-BUDA, Model 6-LD-468, Diesel Engines, 6 cylinders, 100 BHP, Marine, Gardner-Denver. centrifugal Pumps, Bronze, horizontally split case, 100 GPM, 280' head, 6" suction and 5" discharge.

**Steel Watertight** DOORS

Used, Good Condition, Trimmed Frames.



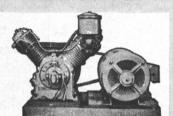
Many sizes available, priced reasonable. Some Typical Prices shown below. Please Inquire for other sizes.

26"x48"-4 Dogs-\$60.00 ea. 26"x57"-6 Dogs-\$80.00 ea. 26"x60"-4 Dogs, 6 Dogs-\$86.00 ea. 26"x66"-6 Dogs, 8 Dogs-\$100.00 ea. 26"x66"-Q.A. Type-\$175.00 ea.

#### **CARGO HOISTER BLOCKS**

5 ton rated, Steel, as removed from surplus ships. Manufactured by: Young, Draper, etc., 12" & 14"

39.50 each with \$34.50 ea. pull test certificates



INGERSOLL-RAND, 50 CFM, 150 PSI, 20 HP, 440/3/60.

SULLIVAN, 60 CFM, 110 PSI, 15 HP, 440/3/60.

WORTHINGTON, 60 CFM, 110 PSI, 15 HP, 230 DC.

INGERSOLL-RAND, 50 CFM, 600 PSI, 15 HP, 230 DC.

CHICAGO-PNEUMATIC, 161 CFM, 100 PSI, 40 HP, 230 DC.

WORTHINGTON, 175 CFM, 125 PSI, 50 HP, 440/3/60. JOY, 100 CFM, 300 PSI, 30 HP,

220/440/3/60. INGERSOLL-RAND, 150 CFM, 600 PSI, 75 HP, 230 DC.

INGERSOLL-RAND, 60 CFM, 125 PSI,

15 HP, 230 DC. WORTHINGTON, 142 CFM, 100 PSI,

20 HP, 230 DC. HARDIE-TYNES, 30 CFH, 3000 PSI, 75 HP, 230 DC.

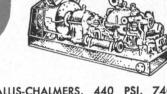
HARDIE-TYNES, 30 CFH, 3000 PSI, Steam Turbine Drive.

INGERSOLL-RAND, 30 CFH, 3000 PSI, Steam Turbine Drive.

WORTHINGTON, 30 CFH, 3000 PSI, Steam Turbine Drive.

WESTINGHOUSE AIR BRAKE, 246 CFM, 140 PSI, 50 HP, 440/3/60.

GARDNER-DENVER, 850 CFM, 100 PSI, 200 HP, 440/3/60.





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

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

TERRY, Type TM5, 440 PSI, 740°F, with Crocker-Wheeler Generators, 300 KW, 120/240 DC.

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

WORTHINGTON, Form \$4, 440 PSI, 740° F, with Crocker-Wheeler Gen., 300 KW, 120/240 DC.

JOSHUA HENDY, 300 PSI, 550°F, with Westinghouse Generator, 300 KW, 120/

WORTHINGTON, Form S4, 440 PSI, 740°F, coupled to two Westinghouse Gen., 250 KW, 440/3/60 and a 90 KW, 120 DC. GENERAL ELECTRIC, Type FN3-FN24, Steam 265#G, with G.E. Generator, 750 KW, 440/3/60. WORTHINGTON, 225 PSI, 397°F, with Westinghouse Generator, 300 KW, 120/

WESTINGHOUSE, 410 PSI, with Westinghouse Generators 200 KW, 450/3/60. WESTINGHOUSE, 440 PSI, 740°F, with Westinghouse Generators, 300 KW, 240

GENERAL ELECTRIC, 525/618 PSI, with G.E. Generators, 200 KW, 450/3/60. WESTINGHOUSE, 590 PSI, 487°F, with Westinghouse Generator, 540 KW, 120/ 240 DC.

GENERAL ELECTRIC, 410 PSI, with G.E. Generator, 200 KW, 450/3/60.

GENERAL ELECTRIC, 525 PSI, with G.E. Generator, 250 KW., 450/3/60. GENERAL ELECTRIC, 525/618 PSI, with

G.E. Generators, 438 KVA, 450/3/60. WORTHINGTON, 225 PSI, 397°F, with Westinghouse Generator, 150 KW, 120

WESTINGHOUSE, 200 PSI, with Westinghouse Generators, 60 KW, 120 DC.

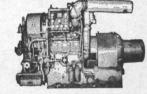
#### MARINE DIESEL GENERATORS

Used, Good - Will Overhaul

1-DeLavergne, 448 BHP, 400 RPM, 6 cylinders, with Westinghouse Generators, 300

—DeLavergne, 560 BHP, 514 RPM, 6 cylinder, with Electric Machinery Generators, 375 KW, 450/3/60.

HILL, Type C, 10 KW, 120/240 DC.
HILL, Type B, 12 KW, 120/240 DC.
HILL, 4 Cylinder, 15 KW, 120/240 DC.
SUPERIOR, GA2, 10 KW, 120 DC.
HERCULES, DOOC, 10 KW, 120 DC. CATERPILLAR, D3400, 15 KW, 120/240 DC. CATERPILLAR, D3400, 15 KW, 120/240 DC.
BUDA, 4 cylinder, 15 KW, 120/240 DC.
HERCULES, DJXC, 25 KW, 120 DC.
CUMMINS, WA255, 30 KW, 120 DC.
P & H, 387C-18, 45/56KVA, 120/208/3/60.
BUDA, 6DH909, 40 KW, 115 volts DC.
GM, 4-71, 50/60 KW, 120/208/3/60.
CUMMINS, HDG, 60 KW, 120 DC.
BUDA, 6DHG691, 60 KW, 120 DC. BUDA, 6DHG691, 60 KW, 120 DC. CUMMINS, 6 cylinder, 60 KW, 120/240 DC.



GM, 6067, 60 KW, 450/3/60. GM, 6067, 60 KW, 450/3/60.

BUDA, 6DC844, 75 KW, 125/250 DC.

CATERPILLAR, D17,000, 75 KW, 230 DC.

MURPHY, ME66, 75 KW, 240 DC.

LORIMER, F5SS, 75 KW, 240 DC.

CATERPILLAR, D17000, 85 KW, 220/3/60.

GM, 3-268A, 100 KW, 120/240 DC.

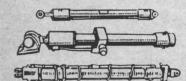
SUPERIOR, GBD8, 100 KW, 120/240 DC.

GM, 3-268A, 100 KW, 440/3/60. GM, 3-268A, 100 KW, 440/3/60. SUPERIOR, 100 KW, 440/3/60. LORIMER, F5SS, 100 KW, 440/3/60.

COOPER-BESSEMER FS6, 250 KW, 440/3/60. GM, 8-268, 300 KW, 345/260 DC. GM, 6-278A, 300 KW, 120/240 DC.

FAIRBANKS-MORSE 38E5-1/4, 300 KW, 345/260 DC.

#### **HYDRAULIC CYLINDERS**



	Ofcian	NOG	remucieu	
Bore	Stroke	Diameter	length	Action
10"	12"	3.75"	451/2"	double
10"	26"	3.75"	581/2"	single
2"	8"	11/2"	20"	double
2.5"	15"	1.12"	251/2"	double
3"	8"	1.37"	151/2"	double
6"	8''	4"	144"	double
13"	9'7"	51/2"	14'	double

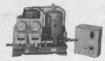
Overall Rod retracted



DON'T MISS ZIDELL'S 3-PAGE SPREAD ...in Alternate Issues of the Maritime Reporter!

Contact: Ralph Ingram...ZIDELL Explorations, Inc...Phone: 503 / 228-8691...Telex: 36-701

#### YORK 2-TON SEALED REFRIGERATION UNITS



Self - contained — hermetically sealed—sea-water cooled. 2 HP —440 / 3 / 60 with magnetic starter. Suitable for partable reefer boxes, small craft, etc.

\$489.50 EACH

#### THE BOSTON METALS COMPANY

313 E. Baltimore St. 539-1900

Baltimore, Md. 21202 (301)355-5050



#### STORES DAVIT

NEW - UNUSED

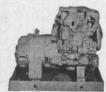
Mfg by Welin—with hand winch & rotary winch. Welin davit H-20 — hand winch 1750 lbs working load. Drum 7½" diameter — 1½" flange — 9" drum width. Equipped with hand brake. Height 15' 3" — radius 5' 6".

#### THE BOSTON METALS COMPANY

313 E. Baltimore St. 539-1900

Baltimore, Md. 21202 (301)355-5050

#### DIESEL GENERATOR SETS



20KW - 120 V.D.C. G.M. 2-71

GEN: 20 KW 120 VDC 1200 RPM. ENGINE: GM 2-71 diesel — 2-cycle — 41/4 x 5 — 142 cu inch - clockwise - 24 volt

#### THE BOSTON METALS COMPANY

313 E. Baltimore St. 539-1900

Baltimore, Md. 21202 (301)

355-5050

#### MATCHED PAIR DIESEL ENGINES



900 H.P. G.M. 12-567A with Falk reverse and reduction gear

ENGINE:  $12-567A-81/2\times10$ —VEE type—2-cycle—747 RPM—electric starting—serial Nos. 1041 & 1060. GEAR: Falk Air Flex—reverse & reduction—2.48:1 forward—2.52:1 reverse. Units just removed from Navy LST 551.

ALSO ROSS COOLERS

Oil-to-water—model 1460. Water-to-water—model 1496.

#### THE BOSTON METALS COMPANY

313 E. Baltimore St.

Baltimore, Md. 21202

539-1900

(301)

355-5050

#### PROPELLERS, TAILSHAFTS, RUDDERS



#### PROPELLERS

AP3-Victory-with ABSlocated Baltimore. C-1MAV-1 - with ABSlocated Beaumont, Texas

#### **TAILSHAFTS**

C-3—reconditioned—with ABS—located Baltimore C-1MAV-1—with ABS—located Beaumont, Texas

#### RUDDERS

C-1MAV-1-new-unused VICTORY—reconditioned

T-2 As removed from vessel. Good. Subject to

#### THE BOSTON METALS COMPANY

313 E. Baltimore St. 539-1900

Baltimore, Md. 21202 (301)

355-5050

# BUYERS DIRECTORY

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

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

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

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

BOW THRUSTERS
Bird Johnson Co., 883 Main St., Walpole, Mass. 02081
Murray & Tregurtha, Inc., 2 Hancock St., Quincy, Mass. 02171

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

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

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

CABLE ELECTRIC MARINE
Anixter-Harbor, Inc., 1050 Aladdin, San Leandro, Calif. 94577
Anixter-Netherands, Utrecht Gebouw, Coolsingel 75, Rotterdam
3002, Netherlands
Anixter-New York, 300 Executive Blvd., Elmsford, N.Y. 10523
Anixter-New Orleans, 315 Notre Dame, New Orleans, La. 70130
L. F. Gaubert & Co., 700 So. Broad St., New Orleans, La. 70150

CLUTCHES, GEARS & BRAKES
Amarillo Gear Co., 517 No. Polk St., Amarillo, Texas 79105
Eaton Corp., Industrial Drive Division, 9919 Clinton Rd., Cleveland,
Ohio 44111
Wichita Clutch Co., Inc., Wichita Falls, Texas 76307

COATINGS—Protective

Wichita Clutch Co., Inc., Wichita Falls, Texas 70307

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

CONTAINERS—CONTAINER HANDLING SYSTEMS Ameron Corrosion Control Div., Brea, Calif. 92621 Lighter Aboard Ship, Inc., 225 Baronne St., New Orleans, La. 70112 Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. Paceco, Div. Fruehaut Corp., 259 94501 Star Iron & Steel Co., 326 Alexander Ave., Tacoma, Wash. 98421

Star Iron & Steel Co., 326 Alexander Ave., Tacoma, Wash. 98421

CONTAINER LASHINGS & COMPONENTS

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

W. W. Patterson Co., 830 Brocket St., Pittsburgh, Pa. 15233

CONTROL SYSTEMS

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

General Electric Industry Control Dept., Salem, Virginia

Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913

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

Sperry Rand Corp.

CORROSION CONTROL

Ameron Corrosion Control Div., Brea, Calif. 92621

Carboline Co., 328 Hanley Industrial Court, St. Louis, Mo. 63144

Corrosion Dynamics, 1100 Walnut St., Roselle, N.J. 07203

Radiator Specialty Co., 1400 Independence Bivd., Charlotte, N.C.

28205

CRANES—HOISTS—DERRICKS—WHIRLEYS

ASEA Marine, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive

Bivd., Elmsford, N.Y. 10523

Conrad-Stork, Div. Stork-Werkspoor, P.O. Box 134, Haarlem, Holland

Hoffman Rigging & Crane Service, 560 Cortlandt St., Belleville

N.J. 07109

Kocks Pittsburgh Capp., Four Gateway Center, Pittsburgh, Pa. 15222

Kocks Pittsburgh Carp., Four Gateway Center, Pittsburgh, Pa. 15222 M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg. West Germany Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif.

Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
Stgr Iron & Steel Co., 326 Alexander Ave., Tacoma, Wash. 98401
DECK COVERS (METAL)
Lockstad Co., Inc., 179 W. 5th Street, Bayonne, New Jersey 07002
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
DECK MACHINERY—Cargo Handling Equipment
ASEA Marine, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive
Blvd., Elmsford, N.Y. 10523
Garrett Corp., 9851 Sepulveda Blvd., Los Angeles, Calif. 90009
Markey Machinery Co., Inc., 79 S. Horton St., Seattle, Wash. 98134
Nashville Bridge Co., P.O. Box 239, Nashville, Tenn. 37202
Pacific Pipe Co., 49 Fremont St., San Francisco, Calif. 94080
Pine Tree Engineering, Subsidiary Rice Barton Corp., P.O. Box 654,
Brunswick, Maine 04011
Red Fox Machine & Supply Co., P.O. Drawer 640, New Iberia, La.
70560
A. G. Weser, Seebeckwerft, 2850 Bremerhaven 1, Germany
Western Geor Corp., Heavy Machinery Div., Everett, Wash. 98201
DIESEL ACCESSORIES
Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231
Kiene Diesel Accessories, Inc., P.O. Box 216, Franklin Park, Ill. 60131
United Filtration Corp., 9600 John St., Santa Fe Springs, Calif. 90670
DIESEL ENGINES
Bruce GM Diesel, Inc., 180 Route #17 S. at Interstate 80, Lodi,
N.J. 07644
Caterpillar Tractor Co., Industrial Div., 100 N.E. Adams St., Peoria,
Ill. 61602
Colt Industries Inc., Power Systems Div., Beloit, Wisc. 53511

Caterpillar Tractor Co., Industrial Div., 100 N.E. Adams St., Peoria III. 61602
Colt Industries Inc., Power Systems Div., Beloit, Wisc. 53511
Electro-Motive Division General Motors, La Grange, Illinois 60525
Fiat, Turin, Italy, U.S.A. 375 Park Ave., New York, N.Y. 10022
Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231
M.A.N. Moschinenfobrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany.
H. O. Penn Machinery Co., 1561 Stewart Ave., Westbury, N.Y. 11590
DIESEL ENGINE MUFFLERS
Marine Products & Engrg. Co., 20 Vesey St., New York, N.Y. 10007
DOORS—Watertight—Bulkhead
Overbeke-Kain Co., 209 Aurora Rd., Bedford, Ohio 44014
Walz & Krenzer, Inc., 20 Vesey St., New York, N.Y. 10007
ELECTRICAL EQUIPMENT
Arnessen Electric Co., Inc., 335 Bond St., Brooklyn, N.Y.
Galbraith-Pilot Marine Corp., 600 4th Ave., Brooklyn, N.Y.
Galbraith-Pilot Marine Corp., 600 4th Ave., Brooklyn, N.Y. 11215
L. F. Gaubert & Co., 700 So. Brood St., New Orleans, La. 70150
Marine Industrial Products Co., 195 Paterson Ave., Little Falls

Marine Industrial Products Co., 195 Paterson Ave., Little Falls,

Marine Industrial Products Co., 195 Paterson Ave., Little Falls, N.J. 07424
Merrin Electric, 162 Chambers St., New York, N.Y. 10007
Oceanic Electrical Mfg. Co., Inc., 159 Perry Street, N.Y. 10014
Pauluhn Electric Mfg. Co. Inc., P.O. Box 12805, Houston, Tex. 77017
EVAPORATORS
Bethlehem Steel Corp., Shipbuilding, 25 B'way, N.Y., N.Y. 10004
Mechanical Equipment Co., Inc., 861 Carondelet St., New Orleans, La. 70130

FITTINGS & HARDWARE

Nashville Bridge Co., P.O. Box 239, Nashville, Tenn. 37202

Robvon Backing Ring Co., 675 Garden St., Elizabeth, N.J. 07207

FLOATING EQUIPMENT—Steel—Aluminum Pontoons

Dravo Corporation, Neville Island, Pittsburgh 25, Pa.

GALLEY RANGES

SPLICE PROPERTY OF THE PROPERTY AND Weshawkan N.J. 07097

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

HEATERS—Ship
Todd Products, Div. of Todd Shipyards Corp., Brooklyn, N.Y. 11231
HULL CLEANING & BLASTING
Key Engineering, 12502 Woodthorpe Lane, Houston, Texas 77024
HYDRAULICS

YÖRAULICS Bird Johnson Co., 883 Main St., Walpole, Mass. 02081 Bond Hydraulic Equip. Service, Inc., 117 Monroe St., Hoboken, N.J.

Bond Hydraulic Equip. Service, Inc., 117 Monroe St., Hoboken, N.J. 07030
Universal Hydraulics, Div. of Ohio Brass Co., 4500 Beidler Road, Willoughby, Ohio 44094
Vickers, M&O Div., Troy, Mich. 48084
INSULATION—Marine
Bailey Carpenter & Insulation Co., Inc., 74SullivanSt., Brklyn, N.Y.11231
LININGS
Ameron Corrosion Control Div., Brea, Calif. 92621
Carboline Co., 328 Hanley Industrial Court, St. Louis, Mo. 63144
MACHINERY MONITORS
IRD Mechanalysis, Inc., 6150 Huntley Rd., Columbus, Ohio 43229
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 NAVIGATION EQUIPMENT & AIDS
American Hydromath Co., 55 Brixton Rd., Garden City, N.Y. 11530
Edo Western Corp., 2645 So. 2nd St., W. Salt Lake City, Utah 84115
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
ITT Decca Marine, 193 Termingl Ave., Clark, N.J. 07066
Magnavox Navigation Systems, 2829 Maricopa St., Torrance, Calif. 90503
Marquardt Corp., 16555 Saticoy St., Van Nuys, Calif. 91406
National Marine Service. 1750 So. Brentwood Blvd., St. Louis, Mo.

90503
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.
Star Lifeline, Ltd., 1148 W. 15th St., No. Vancouver, B.C., Canada
Tracor, Inc., 6500 Tracor Lane, Austin, Texas 78721

Star Lifeline, Ltd., 1148 W. 15th St., No. Vancouver, B.C., Canada Tracor, Inc., 6500 Tracor Lane, Austin, Texas 78721

MARINE EQUIPMENT
Adsco Div., 34 Milburn St., Buffalo, N.Y. 14212
Nicolai Joffe Corp., P.O. Box 2445, 445 Littlefield Ave., So. San Francisco, Calif. 94080

Kearfott Marine (Div. of The Singer Co.) 21 West St., New York, N.Y. 10006

Merrin Electric, 162 Chambers St., New York, N.Y. 10007

Mefritape, Inc., 77 Commonwealth Ave., West Concord, Mass. 01742

Stow Mfg. Co., 225 Shear St., Binghamton, N.Y. 13902

Vokes Filter Div. (Cardwell Machine Co.), Cardwell and Castlewood Rd., Richmond, Va. 23221

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

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

MARINE PROPULSION

Buehler Corp., 9000 Precision Drive, Indianapolis, Ind. 46236

Combustion Engineering, Inc., Windsor, Connecticut 06095

General Electric Co., Marine Turbine & Gear Dept., Lynn, Mass. 01910

General Electric Co., Gas Turbine Dept., Schenectady, N.Y. 12305

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

Port Electric Turbine Div., 155-157 Perry St., New York 10014

Stol-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523

Western Gear Corp., Precision Products Div., P.O. Box 190, Lynwood, Calif. 90262

MARINE RADIO COMMUNICATIONS EQUIPMENT
Collins Radio Co., M/S 416-118, Dallas, Texas 75207

MARINE RADIO COMMUNICATIONS EQUIPMENT
Collins Radio Co., M/S 416-118, Dallas, Texas 75207
Communication Associates, Inc., 200 McKay Road, Huntington Station, N.Y. 11746
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
ITT Decca Marine, Inc., 386 Park Ave. South, New York, N.Y. 10016
Radiomarine Corp., 20 Bridge Avenue, Red Bank, N.J. 07701
Raytheon Co. Marine Products, 676 Island Pond Rd., Manchester, N.H. 03103
RCA Service Co., A Division of RCA, Marine Communications and Navigation Equipment Service, Bldg. CHIC-225, Camden, N.J. 08101
RF Communications, Inc., 1676 University Ave., Rochester, N.Y. 14610
NAYAL ARCHITECTS AND MARINE ENGINEERS

RF Communications, Inc., 1676 University Ave., Rochester, N.Y. 14610

NAVAL ARCHITECTS AND MARINE ENGINEERS

Best & Associates, 9870 S. W. 81 St., Miami, Florida 33143

J. L. Bludworth, 4030 Wynne St., Houston, Texas

Breit Engrg. Inc., 441 Gravier St., New Orleans, La. 70130

Coast Engineering Co., 711 W. 21st St., Norfolk, Va. 23517

Crandall Dry Dock Engrs., Inc., 238 Main St., Cambridge, Mass. 02142

Cushing & Nordstrom, 50 Trinity Place, New York, N.Y. 10006

Arthur D. Darden, Inc., 1040 International Trade Mart, New Orleans, La. 70130

Sharp DeLong, 29 Broadway, 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, 14 Vanderventer Ave., Port Washington, N.Y. 11050

Friede and Goldman, Inc., 225 Baronne St., New Orleans, La. 70112

Gibbs & Cox, Inc., 21 West St., New York, N.Y. 10006

John W. Gilbert Associates, Inc., 583 Market St., San Francisco, Calif. 94105

J. J. Henry Co., Inc., 90 West St., New York, N.Y. 10006

L. K. Homyer, Box 408, Corona Del Mar, California 92625

C. T. Ilariucci & Associates, Tourism Pier #3, San Juan, Porto Rico 00902

James S. Krogen, 1460 Brickell Ave., Miami, Fla. 33131

Littleton Research and Engrg. Corp., 95 Russell St., Littleton, Mass. 01460

Robert H. Macy, P.O. Box 758, Pascagaula, Miss. 39567

O1460
Robert H. Macy, P.O. Box 758, Pascagoula, Miss. 39567
Marine Consulfants & Designers, Inc., 308 Investment Insurance Bldg.,
Corner E. 6th St. & Rockwell Ave., Cleveland, Ohio 44114
Marine Design Inc., 1180 Ave. of Americas, N.Y., N.Y. 10036
Marine Design Associates, P.O. Box 2674, Palm Beach, Florida
Maritech, Inc., 38 Union Sq., Somerville, Mass. 02143
Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225
John J. McMullen Associates, Inc., 110 Wall St., N.Y., N.Y. 10005
George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
Metritape, Inc., 77 Commonwealth Ave., West Concord, Mass. 01742
Robert Moore Corp., 350 Main St., Port Washington, N.Y. 11050
Gunnar Nelson, 195 Paterson Ave., Little Falls, N.J. 07424
Nickum & Spaulding Associates, Inc., 71 Columbia St., Seattle,
Wash. 98104
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida

Wash. 98104
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florid 33156
Potter & McArthur, Inc., 253 Northern Ave., Boston, Mass.
M. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013
and 657 Mission St., San Francisco, Calif.
George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007
T. W. Spacetgens, 156 West 8th Ave., Vancouver 10, Canada
R. A. Stearn, Inc., 100 lowa St., Sturgeon Bay, Wisc. 54235
Richard R. Taubler, 44 Court St., Brooklyn, N.Y. 11201
H. M. Tiedemann & Co., Inc., 74 Trinity Pl., New York, N.Y. 10006

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

OILS—Marine—Additives
Esso International Inc., 15 West 51 St., New York, N.Y. 10019
Ethyl Corp. Marine Div. Perolin Co., New York, N.Y. 10001
Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019
Humble Oil & Refining Co., Humble Building, Houston, Texas 77002
Mobil Oil Corp., 26 Broadway, New York, N.Y. 10004
Refineria Panama, S. A., 277 Park Ave., New York, N.Y. 10017
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017

PAINT—Marine—Protective Coatings
Ameron Corrosion Control Div., Brea, Calif. 92621
Carboline Co., 328 Hanley Industrial Court, St. Louis, Mo. 63144
Devoe & Raynolds Co., Inc., Subsidiary Celanese Coatings Co., 414
Wilson Ave., Newark, N.J. 07105
Enlov Chemical Co., 60 West 49th St., New York, N.Y. 10020
Farboil Company, 90 West St., New York, N.Y. 10006
International Paint Co., 21 West St., New York, N.Y. 10006
Mobil Chemical Company, Metuchen, N.J. 08840
Patterson-Sargent, P.O. Box 494, New Brunswick, N. J.
Woolsey Marine Industries Inc., 201 E. 42nd St., New York, N.Y. 10017

PETROLEUM SUPPLIES
Independent Petroleum Supply Co., 1345 Ave. of Americas, New York,
N.Y. 10019 Refineria Panama, S. A. 277 Park Ave., New York, N.Y. 10017 Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002 Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017 The West Indies Oil Co., Ltd. St. John's, Antigua, W. I.

PLASTICS—Marine Applications
Ameron Corrosion Control Div., Brea, Calif. 92621
Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231
Philadelphia Resins Co., 20 Commerce Dr., Montgomeryville, Pa. 18936
Rotocast Plastic Products, Inc., 6700 N.W. 36th Ave., Miami,
Florida 33147

POLLUTION CONTROL Enjay Chemical Co., 60 West 49th St., New York, N.Y. 10020 Uniroyal, Inc., 10 Eagle St., Providence, R.I. 02901

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

PROPELLERS: NEW AND RECONDITIONED

Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150

Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004

Bird-Johnson Co., 883 Main Street, Walpole, Mass. 02081

Coolidge Propeller Co., 1608 Fairview Ave. E., Seattle, Wash. 98102

Federal Propellers, 1501 Buchanan Ave. S.W., Grand Rapids, Mich.

49502

Ferguson Propeller, 1132 Clinton St., Hoboken, N.J. 07030

PUMPS
Colt Industries, Inc., Fairbanks Morse Pump & Electric Div., 3601
Kansas Ave., Kansas City. Kansas 66110
Goulds Pumps, Seneca Fails, N.Y. 13148
Houttin-Pompen N. V. Sophialaan 4, Utrecht, Holland
Worthington Corporation, Harrison, New Jersey 07029

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

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

ROPE—Manila—Nylon—Hawsers—Wire
American Mfg. Co., Inc., Noble & West Sts., Brooklyn, N.Y. 11222
Cating Rope Co., 309 Genesee St., Auburn, N.Y. 13022
Columbian Rope Co., 309 Genesee St., Auburn, N.Y. 13022
Jackson Rope Corp., 9th & Oley, Reading, Pa. 19604
Samson Cordage Works, 470 Atlantic Ave., Boston, Mass. 02210
Tubbs Cordage Company, P.O. Box 709, Orange, Calif. 92669
Wall Rope Works, Inc., Beverly, N. J. 08010

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

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

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

SEALS Syntron, Div. FMC Corp., 398 Lexington Ave., Homer City, Pa. 15748 SEARCHLIGHTS
Snelson Oilfield Lighting Co., 1201 E. Doggett St., Fort Worth,
Texas 76104

SEWAGE DISPOSAL
Seopax, Inc., 3645 Warrensville Center Rd., Cleveland, Ohio 44122
SHAFT REVOLUTION INDICATOR EQUIP.
Electric Tachometer Corp., 68th & Upland Sts., Phila., Pa. 19142
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
SHIPBREAKING—Salvage
The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
National Metal & Steel Corp., 1251 New Dock St., Terminal Island,
Cal. 90731
Northern Metal Co., Minor & Bleigh Sts., Philadelphia, Pa. 19136
Zidell Explorations, Inc., 3121 S. W. Moody St., Portland, Ore. 97201
SHIP BROKERS

SHIP BROKERS

Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004

Mowbray's Tug and Barge Sales Corp., 21 West St., N.Y., N.Y.

Oaksmith Boat Sales, Inc., Fisherman's Terminal, Seattle,

Wash. 98119 N.Y. 10006

Wash. 98119

SHIPBUILDING STEEL

Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh, Pa. 15219

Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042

Bethlehem Steel Corp., 25 Broadway, New York, N.Y. 10004

Huntington Alloy Products, Div. International Nickel Co., Inc.,

Huntington, W. Va. 25720

International Nickel Co., 1 New York Plaza, New York, N.Y. 10004

United States Steel Corp., P.O. Box 86, Pittsburgh, Pa. 15230

SHIPBUILDING—Repairs, Maintenance, Drydocking

Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042

Astilleros Espanoles, S.A. Zurbano, 70, Madrid 10, Spain

Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150

Beliard Murdoch S. A., Kärtendijkdok Westkaai 21, Antwerp, Belgium

Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004 Beliard Murdoch S. A., Kättendijkdok Westkaai 21, Antwerp, Belgium Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004 Blount Marine Corp., P.O. Box 360, Warren, Rhode Island 02885 Brodogradiliste "SPLIT", P.O. Box 107, Split, Yugoslavia Conrad Industries, P.O. Box 790, Morgan City, La. 70380 Dillingham Corp., P.O. Box 3288, Honolulu, Hawaii 96801 Bravo Corporation, Neville Island, Pittsburgh 25, Pa. Equitable Equipment Co., Inc., P.O. Box 8001, New Orleans, La. 70122 General Dynamics, Electric Boat Division, 99M Eastern Point Road, Groton, Conn. 06340 Groton, Conn. 06340 General Dynamics, Quincy Division, Quincy, Mass. 02169

Gotaverken American Corp., 39 Broadway, New York, N.Y. 10006 Grafton Boat Co., Inc., Grafton, III. 62037 Groignard Shipyards, P.O. Box 829 Colbert, Marseilles, France. Gunderson Bros. Engrg. Corp., 4700 N.W. Front St., Portland, Oregon 97208

r Marine Services, Inc., Route 6, Box 287H, New Orleans, 70126

Havre de Grace, Havre de Grace, Md.
Hillman Barge & Construction Co., Grant Bldg., Pittsburgh 19, Pa.
Hongkong & Whampog Dock Co. Ltd., Kowloon Docks, Hong Kong
Industrial Steel & Mach. Works, Inc., P.O. Box 2217, Gulfport,
Mice 20501

Hongkong & Whampog Dock Co. Ltd., Kowloon Docks, Hong Kong Industrial Steel & Mach. Works, Inc., P.O. Box 2217, Gulfport, Miss. 39501

Shikawagiima-Harima Heavy Industries Co., Ltd., 15 William St., New York, N.Y. 10005

Jacksonville Shipvards, 644 E. Bay St., Jacksonville, Fla. 32203

Jeffboat, Inc., Jeffersonville, Ind. 47130

Kawasaki Dockyard Co., 8 Kaigan-dori, Ikuta-ku, Kobe, Japan Kelso Marine, Inc., P.O. Box 268, Galveston, Texas 77550

Kockums Malmo, Fack, Malmo, Sweden

Levingston Shipbuilding Co., P.O. Box 968, Orange, Texas 77630

LISMAVE, P.O. Box 2138, Lisbon, Portugual

Litton Industries, 9920 W. Jefferson Blvd., Culver City, Calif. 90230

Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134

Maryland Shipbuilding & Drydock, P.O. Box 537, Baltimore, Md. 21203

Matton Shipvard Co., Inc., P.O. Box 428 Cohoes, New York 12047

Mitsui Shipbuilding & Eng. Co., Ltd., Nihonbashi-Muromachi, Chuo-ku, Tokyo, Japan

Mitsubshi Heavy Industries, Ltd., 5-1 Marunouchi 2-chome, Chiyoda-ku, Tokyo, Japan

Mitsubshi Heavy Industries, Ltd., 5-1 Marunouchi 2-chome, Chiyoda-ku, Tokyo, Japan
Nashville Bridge Co., P.O. Box 239, Nashville, Tenn. 37202
National Steel & Shipbuilding Corp., San Diego, Calif. 92112
Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
Northwest Marine Iron Works., P.O. Box 3109, Swan Island, Portland, Oregon 97208
Nuclear Service & Construction Co., Inc., 9296 Warwick Blvd., Newport News, Va. 23607
O.A.R.N. (officine Allestimento e Riparazioni Navi) Genoa, Italy
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif.
94501
Perth Amboy Dry Dock Co. Perth Amboy, N. L. 08862

94501
Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862
St. Louis Shipbullding—Federal Barge, Inc.
611 East Marceau, St. Louis, Mo. 63111
Sasebo Heavy Industries Co., Ltd., New Ohtemachi Bldg., Chiyodaku, Tokyo, Japan
Sembawang Shipyard (Pte) Ltd., P.O. Box 3, Sembawang, P.O. Singapore, 27
Star Shipyards, Ltd., 61 Duncan St., New Westminster, Vancouver, B.C., Canada
Sumitomo Shipbuilding & Machy. Co., Ltd. 2-1 Ohtemachi 2-chome, Chiyoda-ku, Tokyo, Japan
Teledyne Sewart Seacraft, P.O. Box 108, Berwick, La. 70342
Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004

SHIP MODEL BASIN
Hydronautics, Incorporated, Laurel, Maryland 20810

SHIP ROUTING
Weather Routing, Inc., 90 Broad Street, New York, N.Y. 10004

Maritech, Inc., 38 Union Sq., Somerville, Mass. 02143
John J. McMullen Associates, Inc., 110 Wall St., N.Y., N.Y. 10005
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of
Sperry Rand Corp.

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

STEVEDORING
Luckenbach Steamship Co., 120 Wall Street, New York, N.Y. 10004
M. J. Rudolph Corp., 8 Sackett St., Brooklyn, N Y. 11231 SWITCHBOARDS
Hose McCann Telephone Co., Inc., 524 West 23 St., N.Y., N.Y. 10011

TOWING—Lighterage, Transportations, Barge Chartering American Waterways, 1250 Connecticut Ave., Washington, D.C.

American Waterways, 1250 Connecticut Ave., Washington, D.C. 20036
Bay-Houston Towing Co., 805 World Trade Bldg., Houston,
Texas 77002
Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202
Henry Gillen's Sons Lighterage, West End Ave., Oyster Bay, N.Y. 11771
James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004
Jackson Marine Corp., P.O. Box 1087, Aransas Pass, Texas 78336
McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
McDonough Marine Service, P.O. Box 26206, New Orleans, La.
Moran Towing & Transportation Co., Inc., 17 Baftery Place,
New York, N.Y. 10004
L Smit & Co., 11 Broadway, New York, N.Y. 10004
Suderman & Young Towing Co., 329 World Trade Center, Houston,
Texas 77002
M. & J. Tracy, Inc., 1 Broadway, New York, N.Y. 10004
Turecamo Caastal and Harbor Towing Corp., 1752 Shore Parkway,
Brooklyn, N.Y. 11214

/ALVES AND FITTINGS—Hydraulic—Safety Flanges

VALVES AND FITTINGS—Hydraulic—Safety Flanges
Bettis Corp., 3100 Fall at Grand Blvd., Houston, Texas 77021
Hubeva Marine Plastics-Lining, 435 Hamilton Ave., Brooklyn, N.Y.

Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696 Mechanical Marine Co., Inc., 900 Fairmount Ave., Elizabeth, N.J. 07207 WIRE ROPE

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

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

#### ALMON JOHNSON CONSTANT TENSION LST STERN ANCHOR WINCHES



Drum capacity—900 ft. of 15%" wire. Gypsy performance—12,000 lbs. at 125 FPM. OAL 12'—OAW 10'1" Driven by 50 HP—230 VDC -181 amps motor, 2 available with controls.

#### PERFORMANCE

Max. Control | Auto. Tension Control 100,000 lbs. 26,000 lbs. 3000 lbs. Line Speed 10 FPM Stall Line Tension 400 FPM

#### THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202 539-1900 (301)355-5050 AXIAL FLOW FANS 115 & 230 VDC—440 AC—ALL

#### THE BOSTON METALS COMPANY

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

#### ROSS COOLERS

LST — 12-567A DIESEL TYPES



3 Model 1596 3 Model 1566 3 Model 860

VERY GOOD CONDITION--TESTED 1 UNUSED MODEL 1060

#### THE BOSTON METALS COMPANY

313 E. Baltimore St. 539-1900

Baltimore, Md. 21202

(301)

#### **NEW 7" RADIUS** PANAMA CHOCKS

(Meet Panama Regulations)

With Extended Legs for Welding to Deck IMMEDIATE DELIVERY FROM STOCK



Clear opening 10" x 14"-7" radius. Use as double or single bow chock. OAL 28" on base - OAW 143/4" cast steel.

#### THE BOSTON METALS COMPANY

313 E. Baltimore St. 539-1900

Baltimore, Md. 21202 (301) 355-5050

#### UNUSED BITTS



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

\$1995 EACH

#### THE BOSTON METALS COMPANY

313 E. Baltimore St. 539-1900

Baltimore, Md. 21202 355-5050 (301)

#### NEW BERGER SELF-ALIGNING MARINE FAIRLEADS



Model 620 — 15/8—sheave diameter 20"-shank opening 8" — weight 2680 lbs.

\$1250

#### THE BOSTON METALS COMPANY

313 E. Baltimore St. 539-1900

Baltimore, Md. 21202 (301)



#### GRAY MARINE **ENGINES**

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

#### THE BOSTON METALS COMPANY

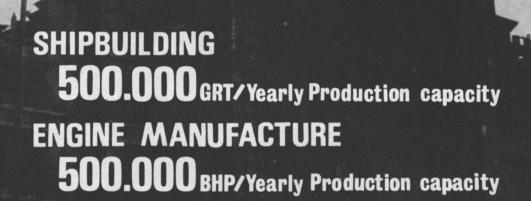
313 E. Baltimore St. 539-1900

Baltimore, Md. 21202

(301) 355-5050



# ASTILLEROS ESPAÑOLES, S.A.



STEEL MANUFACTURE

200.000 Tons/Yearly Production capacity

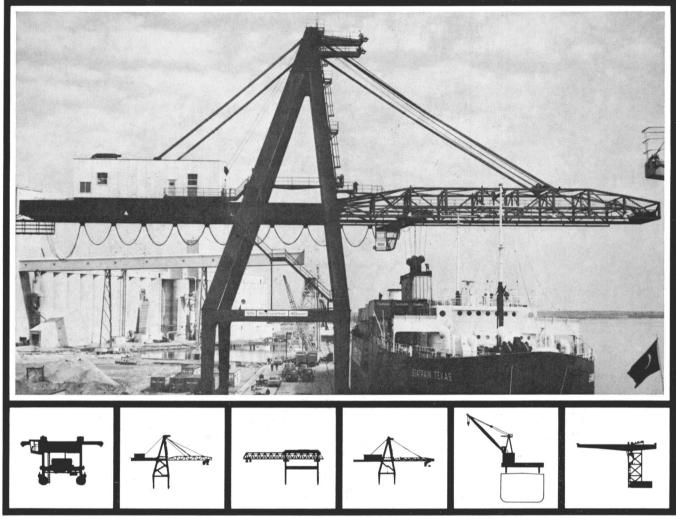
of special alloys, forgings and moulding work

### **HEADOFFICE:**

### **SPAIN**

1. Covarrubias. Madrid-10 Spain. - P. O. Box n.º 815. Phones: 223 28 27; 223 51 57; 223 49 41; 419 95 50; 419 19 0 Telex: 27690 - Astil-E. and 27648 - Astil-E. Cable address: ASTILLEROS-MADRID.

# Starporter's DELIVER



30-Ton, High Speed Star 45-Ton Container and Karricon Straddle Carrier General Cargo Crane with with Telescopic Adjust-hols on Trolley—Hallifax, able Spreader—Will Clear Nova Scotia.

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

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

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

However and General Cargo Crane and Handling System for Feeder Port Facility.

Three Starporter container cranes were recently completed and erected for Ports in Vancouver, British Columbia; Charlston, South Carolina; and Halifax, Nova Scotia. Each crane was delivered on time and began full operation the day of turnover with little or no down time. We think you'll agree that's quite a record. But

that's what our customers have a right to expect and get. If you need specialized cargo handling equipment for container terminals, feeder ports, mini ship, Lash or Seabee lighter cargo facilities, call SIS. We deliver. Always have. Always will.

For immediate action call or write.



#### STAR IRON & STEEL CO.

326 Alexander Avenue/Tacoma, Washington 98421 Telephone (Area Code 206) 627-9131 Telex No. 327 453 East Coast Representative: Robert Moore Corporation/350 Main Street, Port Washington, N.Y. (zip code 11050) (Area Code 516) 883-7660 Southeastern Representative: John Blake Engineering & Sales Co./P.O. Box 99, Picayune, Miss. (zip code 39466) (Area Code 601) 798-7895

> STARPORTER Container Cranes are also built by the following licensees: Canada: Canron, Limited, Western Bridge Division. Japan: Kawasaki Electric & Machine Co., Ltd.

# THE SUN SHINE



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

**NASSCO** 

NATIONAL STEEL AND SHIPBUILDING COMPANY

owned by Kaiser Industries Corporation and Morrison-Knudsen Company Inc San Diego, California 92112 (714) 232-4011