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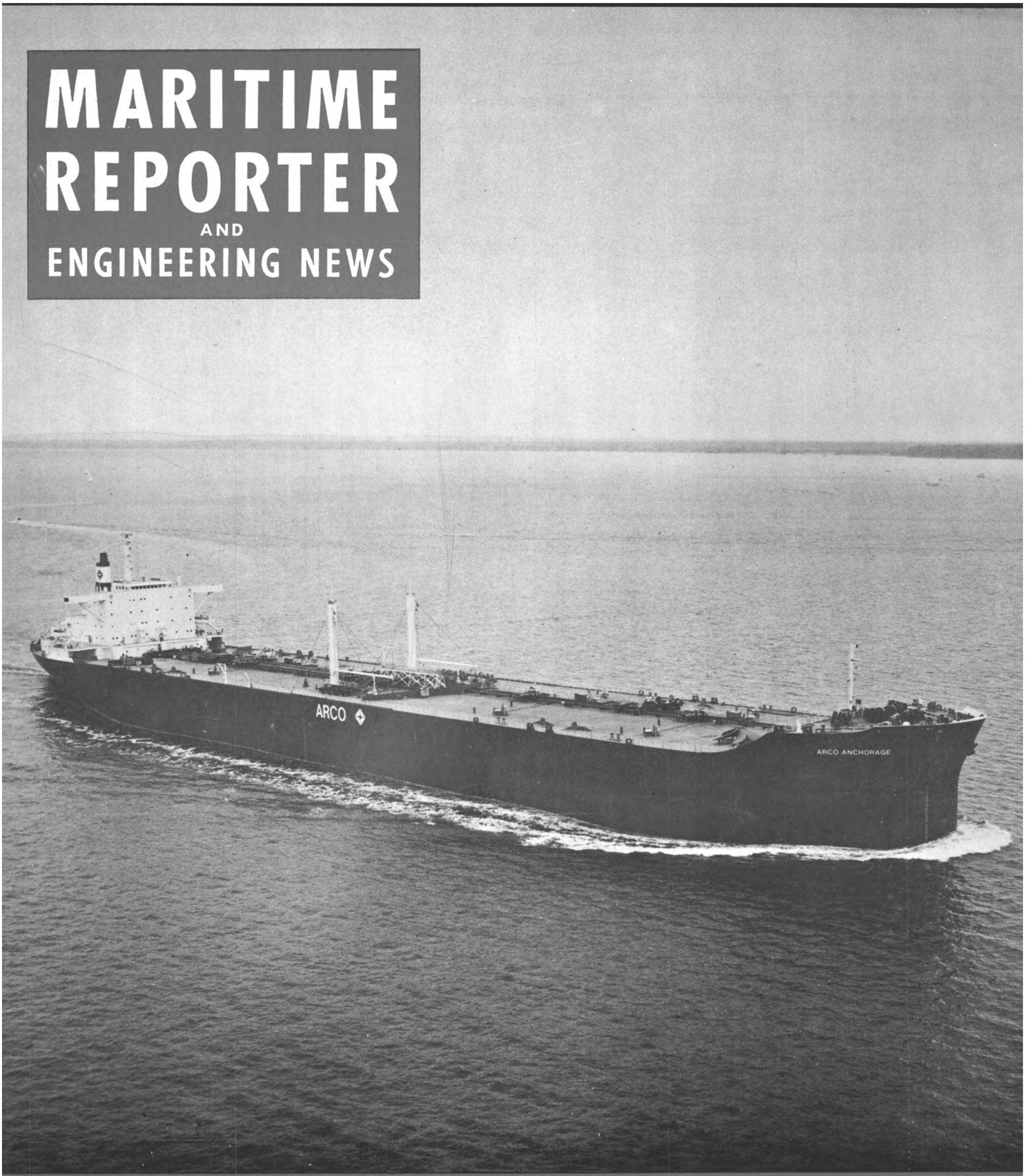
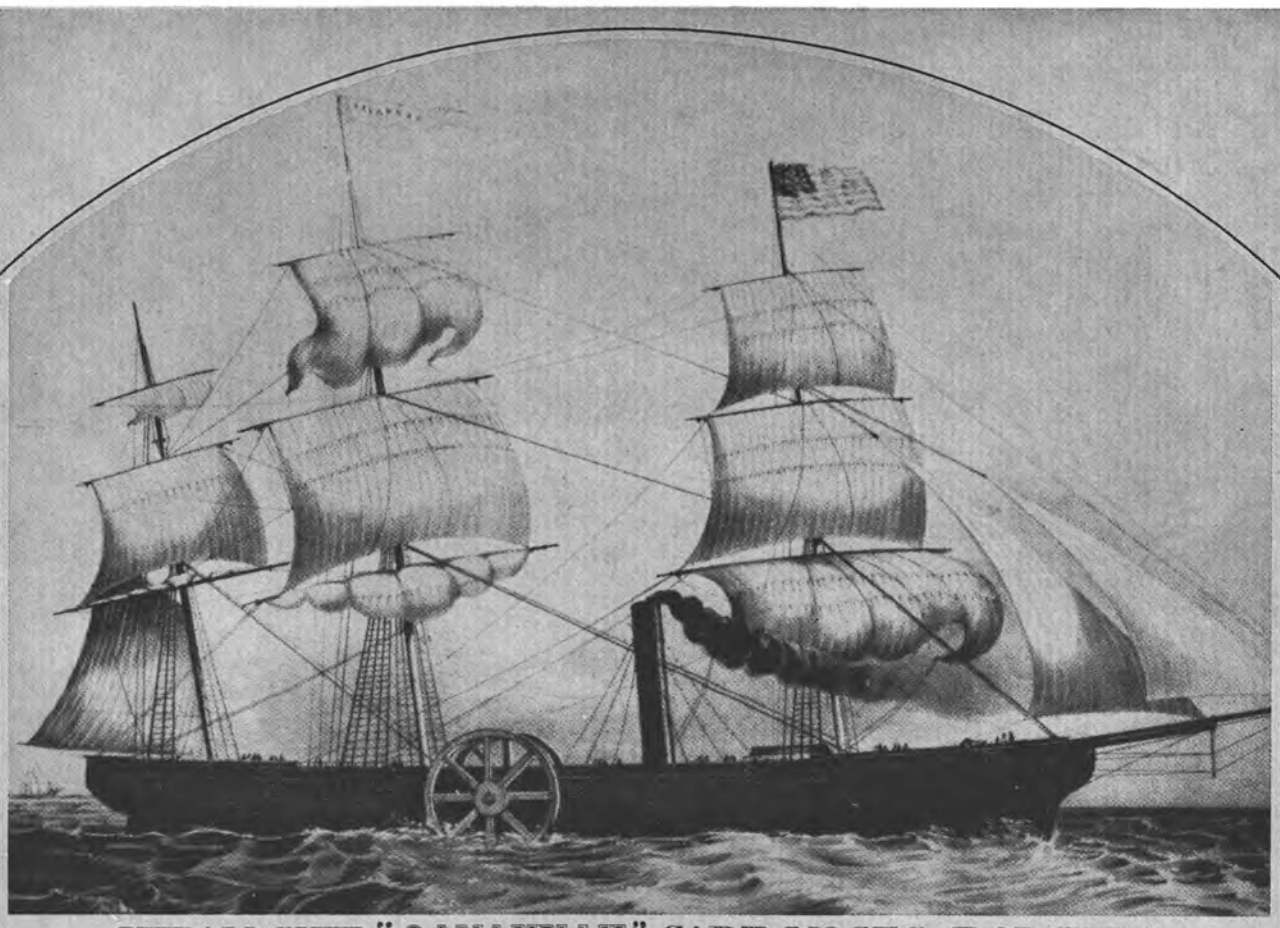


Second Largest U.S.-Built Commercial Vessel Delivered To Atlantic Richfield Company By Bethlehem's Sparrows Point Shipyard

(SEE PAGE 6)

JULY 1, 1973



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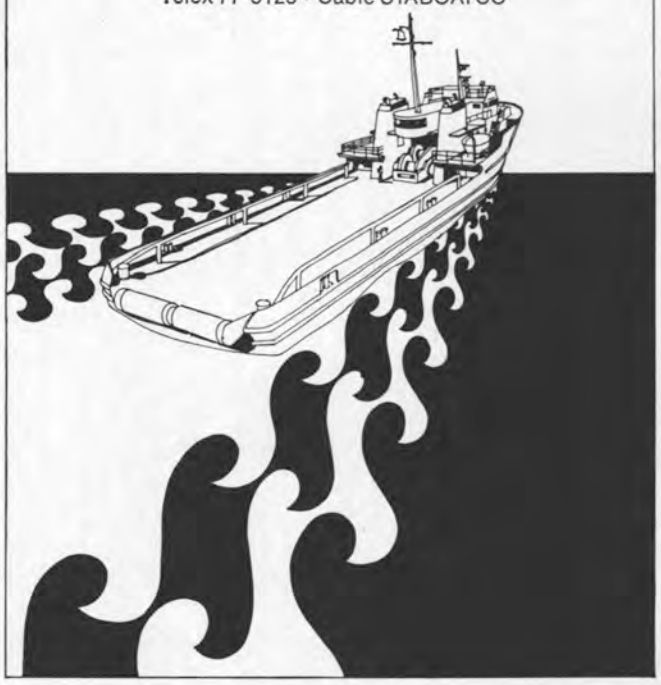

Niarchos Orders Third 380,000-Dwt Tanker From AG 'Weser' Yard

The A.G. "Weser" shipyard, Bremen, West Germany, has received a contract to build a third 380,000-dwt Europa-Tanker for the Niarchos group.

The giant-size tanker, which A.G. "Weser" refers to as Europa-Tanker, is also the seventh of the series ordered by various shipowners. The keel for the first new building will be laid in June next year, and it is expected that the last of the vessels will be delivered early in 1977.

The new tanker, measuring approximately 1,214 feet in overall length, 210 feet in breadth, and 94 feet in depth, will be driven by an A.G. "Weser"/General Electric geared steam turbine with an output of 45,000 shp, which will give the vessel a speed of about 16 knots.

100-Barge Orders Result In Largest Backlog For Hillman

Hillman Barge & Construction Company, Pittsburgh, Pa., has announced two contracts which contribute to the largest backlog in the company's history.

Hillman will build 70 semi-integrated hopper barges for American River Transportation Co., St. Louis, Mo. Each barge will be 195 feet long, 35 feet wide, and 12 feet deep. Designed for carrying dry and bulk commodities, the barges will have a cargo capacity of 71,000 cubic feet or 1,500 tons.

Hillman will also build 30 open hopper barges for Crounse Corporation of Paducah, Ky. These heavy duty barges are 195 feet long, 35 feet wide, and 11 feet deep. Designed for carrying coal, each barge has a cargo capacity of over 1,500 tons at normal operating draft.

Safmarine Orders 20,000-HP Tugs

South African Marine Corporation has placed an order for what is claimed will be the world's biggest tug with Robb Caledon Shipbuilders of Scotland.

The new 20,000-hp 20-knot tug will be built at a cost of approximately $7.5 million.

South African Marine has also ordered a second similar vessel to be built in Durban to the Scottish firm's design.

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No. 13 Volume 35

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ESTABLISHED 1939

Maritime Reporter/Engineering News is published the 1st and 15th of each month by Maritime Activity Reports, Inc. Controlled Circulation postage paid at Hoboken, N.J. 07030.

Postmaster send notification (Form 3579) regarding undeliverable magazines to Maritime Reporter/Engineering News, 107 East 31st Street, New York, N.Y. 10016.

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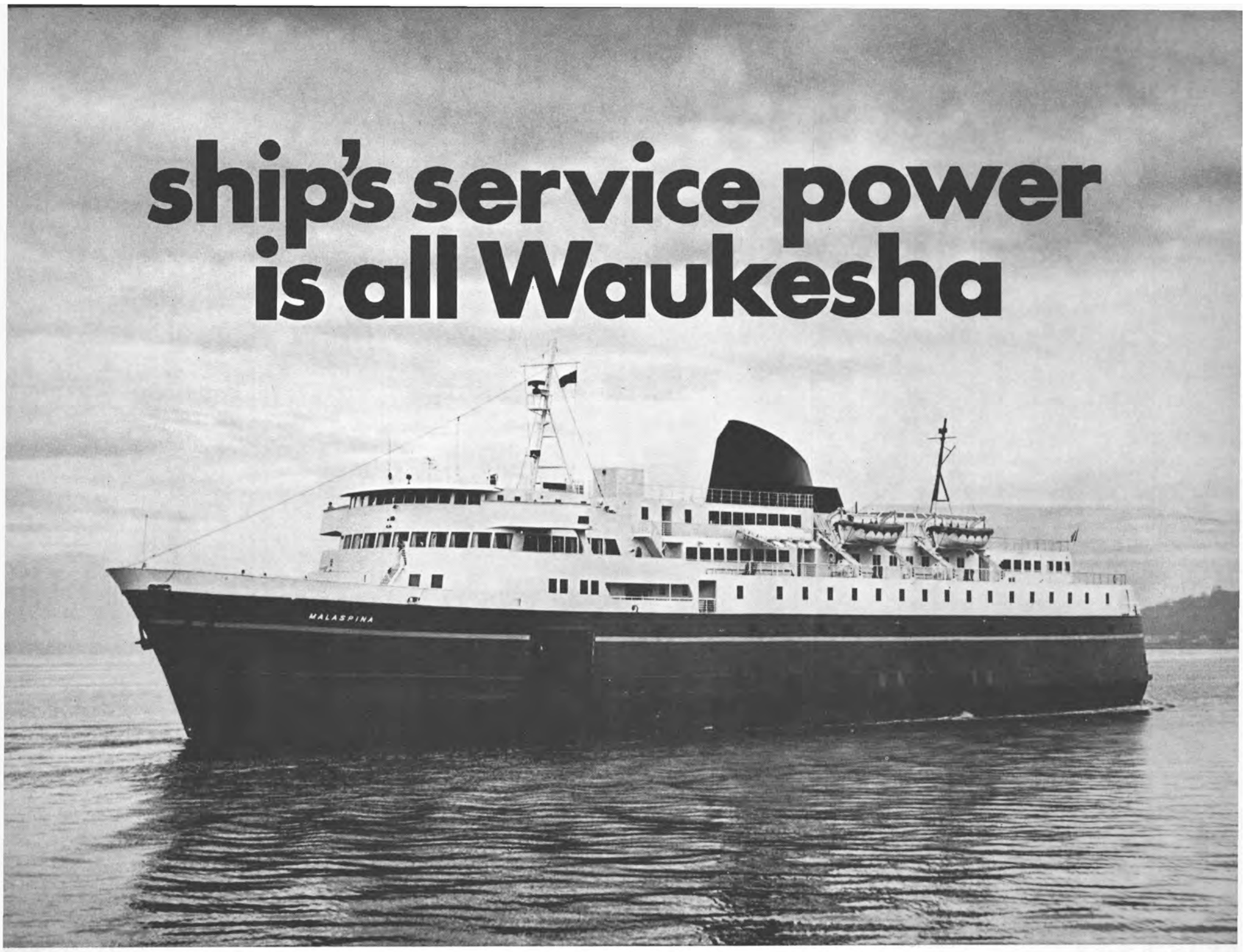


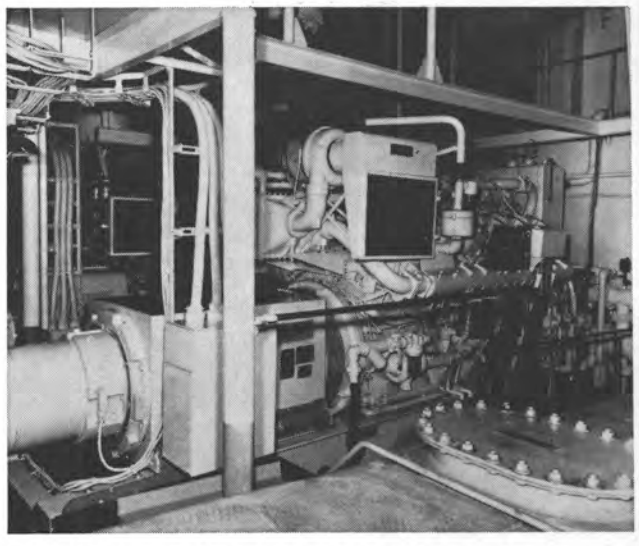
Third diesel Enginator® is added to jumbo-ized ferry to provide total of 1500 kw

The "Malaspina," owned by State of Alaska, Dept. of Public Works, Division of Marine Transportation, provides service between southeastern Alaska ports and Seattle. To fill increasing demand for deluxe service, she has had 58 feet added to her length and another 500 kw in reserve ship's service power.

The "Malaspina" was originally equipped with two Waukesha V12 diesel Enginators, each rated 500 kw at 900 rpm. When the vessel was jumbo-ized, the owners made the decision to rely again on proved Waukesha power. They added a new, updated VHP V12 diesel Enginator of the same 500 kw rating of the first two units.

The choice of Waukesha for the reserve ship's service power was a natural. In addition to complete parts interchangeability, the performance record of the two original units was exceptional.

Waukesha's marine specialists have a wide range of propulsion and engine-generator sets to offer — all with Waukesha's traditional reliability and long life. For complete information, contact your authorized Waukesha distributor.



One of three VHP V12 L5790 DSIM Enginators on the "Malaspina." For ship's service power, Waukesha offers units from 47 to 1110 kw.

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The S/S Arco Anchorage cruises down Chesapeake Bay on her trials before her christening at Bethlehem Steel's Sparrows Point shipyard. She will sail in overseas service pending completion of the Trans Alaska pipeline.

Second Largest U.S.-Built Commercial Vessel Delivered To Atlantic Richfield Company

Mrs. Robert O. Anderson, wife of the chairman of Atlantic Richfield Company, smashes a bottle of champagne to christen the S/S Arco Anchorage, the second largest vessel under the American flag. At the left looking on are **William H. Collins,** general manager of Bethlehem Steel's Sparrows Point shipyard, and Mr. **Anderson.**

The 120,000-deadweight-ton tanker S/S Arco Anchorage, the second largest commercial vessel ever built in the United States, was christened at the Sparrows Point, Md., shipyard of Bethlehem Steel Corporation on June 2 by **Mrs. Robert O. Anderson,** wife of the chairman of Atlantic Richfield Company.

Named after Alaska's largest population center—the city and borough of Anchorage—the 883-foot-long vessel features the latest safety, navigational, communications and anti-pollution equipment available. The ship has a cruising range of 15,000 miles, with a nominal sea speed of 16 knots developed from 26,000-horsepower steam turbines. She is the third of five tankers totaling 500,000 tons to be built by Bethlehem Steel for Atlantic Richfield.

Mrs. Anderson of Roswell, N.M., christened the eighth and largest U.S.-flag vessel in Atlantic Richfield's tanker fleet by breaking a bottle of champagne on the foremast. Her daughter-in-law, **Mrs. Robert B. Anderson** of Albuquerque, N.M., was matron of honor for the ceremony. The ship was "floated out" of a new 1,200-foot building basin last March 1.

Among prominent Alaskans on hand for the christening were Mayor **George Sullivan** of the City of Anchorage and Mayor **John Roderick** of Greater Anchorage Area Borough. Following the event, **William H. Collins,** general manager of the shipyard, was host at an onboard luncheon in honor of the sponsor, **Mrs. Anderson.**

In remarks prepared for delivery to the guest luncheon audience, Mr. **Anderson** said that a predicted rise of U.S. oil imports to more than 50 percent of domestic demand will make the use of even larger crude carriers "imperative to avoid the potential hazards associated with congestion of ports from large numbers of small ships."

He called for construction of domestic deepwater ports, noting that of 50 ports in the world "capable of handling tankers of 200,000 deadweight tons, not one of them is in the United States."

Stressing the need for the United States "to do the things that will assure an uninterrupted flow of energy," Mr. **Anderson** said "it is urgent that the nation retain a large measure of control over the shipping that will bring" increasing imports of energy resources "to our shores."

The new tanker, Mr. **Anderson** said, "symbolizes our confidence in a Trans Alaska pipeline, which we believe will be the safest and environmentally soundest first leg in the great journey of crude oil from an Arctic reservoir to the homes, industries and autos of the lower 48 states.

The S/S Arco Anchorage has a length overall of 883 feet, length between perpendiculars of 850 feet, molded breadth of 138 feet, molded depth of 68 feet, and a draft of 51 feet 9 inches.

Her power plant comprises General Electric double-reduction gear steam turbines producing 26,000 shaft horsepower from Foster Wheeler twin boilers, each providing 92,700 pounds of steam per hour.

Her 27-foot 6-inch-diameter five-bladed right-handed manganese bronze Ferguson propeller weighs 65 tons.

The unitized, double opposed Jered ram steering gear, with a capacity of 25 million inch pounds torque, consists of power unit, ram group, crosshead, differential control and emergency steering, all mounted on a common bedplate.

Among the other features of the new vessel, which has a liquid cargo capacity of nearly 950,000 barrels, are:

- For safer maneuvering, Bethlehem centralized pilothouse engine control, which maximizes speed of transmission of orders to the engine room.
- Rucker central cargo control station for push-button operation and constant monitoring of all cargo valves, pumps and tanks.
- Optimum navigational guidance using large screen Raytheon radar systems with two separate frequencies for the advantage of maximum storm penetration and clarity of resolution in harbor areas. An "Omega" system supplied by Micro Instruments for continuously determining the vessel's position worldwide (with accuracy of one-half mile or better at 5,000 miles), and an automatic tracking loran (Benmar type 747 automatic AC) system for short and medium offshore navigation.
- High seas voice communication via 1,000-watt C.A.I. (Communication Assoc. Inc.) single sideband radio system operating on 40 pretuned channels, and a 55 channel VHF bridge to bridge transceiver for maximum port and short-range related communications.
- Mooring system provided with automatic tensioning winches which further facilitate safe service of the vessel during cargo transfer at docks.

All officer and crew quarters are air-conditioned.

Two additional 120,000-ton sister ships of the Arco Anchorage are under construction in the shipyard and are scheduled for delivery to Atlantic Richfield in April and August 1974, respectively. Previously, two 70,000-ton tankers—the S/S Arco Prudhoe Bay and the S/S Arco Sag River—were delivered in 1971 and 1972 and are now in service for the company between Alaska's Cook Inlet and the West Coast of the United States.

The Arco Anchorage will not go into Alaskan service immediately. The ship will initially be used principally in overseas service, pending construction of the Trans Alaska pipeline, a spokesman said.

In addition to the Arco Anchorage and its two sister ships for delivery to Atlantic Richfield, the yard has under construction, or on order, five 265,000-deadweight-ton tankers, one 120,000-deadweight-ton tanker, one 70,000-deadweight-ton tanker and two containerships.

The port of registry of the Arco Anchorage is Philadelphia, Pa.

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Gotaas-Larsen Orders Two LNGs And One ULCC From Kawasaki

Gotaas-Larsen Shipping Corp., a subsidiary of IU International, has ordered two 128,600-cubic-meter liquefied natural gas (LNG) carriers and one 410,000-deadweight-ton ultra large crude carrier (ULCC) from Kawasaki Heavy Industries, Tokyo, Japan.

The orders, which are subject to issuance of export licenses by the Japanese Government, were disclosed by **H. Irgens Larsen,** vice chairman of IU International, and chairman of Gotaas-Larsen.

Mr. **Larsen** also announced that the ULCC which Gotaas-Larsen ordered in February 1973 will be built to a capacity of 410,000 dwt, rather than 357,000 dwt as originally planned. He said the four contracts have a total value of about $320 million.

The new LNG carriers are scheduled for delivery in 1977. They will utilize the Moss Rosenberg Verft spherical tank design under license to Kawasaki Heavy Industries. Gotaas-Larsen has previously ordered three LNG carriers from the Moss Rosenberg yard in Stavanger, Norway, and one from Howaldtwerke Deutsche Werft, Kiel, West Germany.

The Kawasaki-built LNG carriers will be 902 feet in length, with a beam of 146 feet and a draft of 37 feet. They will have a speed of about 21 knots, and each will be operated by a crew of 33.

Gotaas-Larsen announced on April 2 what is believed to be the largest single charter, in terms of revenue, ever concluded by an independent shipping company. The charter provides for use of three Gotaas-Larsen LNG carriers over a period of 20 years, beginning in 1976, to transport LNG from Abu Dhabi to Japan.

The chartering group includes British Petroleum Co., Ltd., London; Compagnie Francaise des Petroles, Paris; Mitsui & Co., Ltd., Tokyo, and Bridgestone Liquefied Gas Co., Ltd., Tokyo. Financial terms of the charter have not been disclosed, but published estimates by industry sources have cited revenues in the range of $800 million to $1 billion over the life of the charter.

The new ULCC is scheduled for delivery in 1977. It will have an overall length of 1,237 feet, a beam of 226 feet, and a 74-foot draft. Allowing for fuel consumption en route, the ship will have an arrival draft of 72 feet, enabling it, at the time of delivery, to serve ports in the Persian Gulf, Europe, Japan, Newfoundland, and Nova Scotia.

Mr. **Larsen** noted that the increase in tonnage of the new class of ULCCs since February was a result of computerized hull-design studies by Kawasaki, which will produce the maximum capacity for a given draft.

Gotaas-Larsen operates one of the world's leading independent fleets—54 bulk cargoships totaling 4.3 million deadweight tons. Including the new vessels, the company now has on order 11 ships totaling 1.5 million dwt, plus two semisubmersible drilling rigs for offshore oil and gas exploration.

IU provides products and services to worldwide energy, transportation / distribution, and environmental markets. Revenues in 1972 were $1.2 billion, with net earnings of $59.4 million.

Marconi To Supply Navigation Aids For Six New Cargoships

The Marconi International Marine Co. Ltd., announced it has received an order from the Kuwait Shipping Co. for the supply of communications equipment, radar, navigational aids, and television equipment for each of six 14,000-ton cargo vessels. The ships are being built at the Glasgow yard of Govan Shipbuilders Ltd.

Northeast Petroleum Names Stesney VP

Northeast Petroleum Corporation, 295 Eastern Avenue, Chelsea, Mass. 02150, has announced that **Bernard L. Stesney,** manager of transportation, has been named vice president of the corporation and will continue to direct marine transportation and chartering operations.

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A fish-eye view tells you why JacuzziJet cuts operating costs

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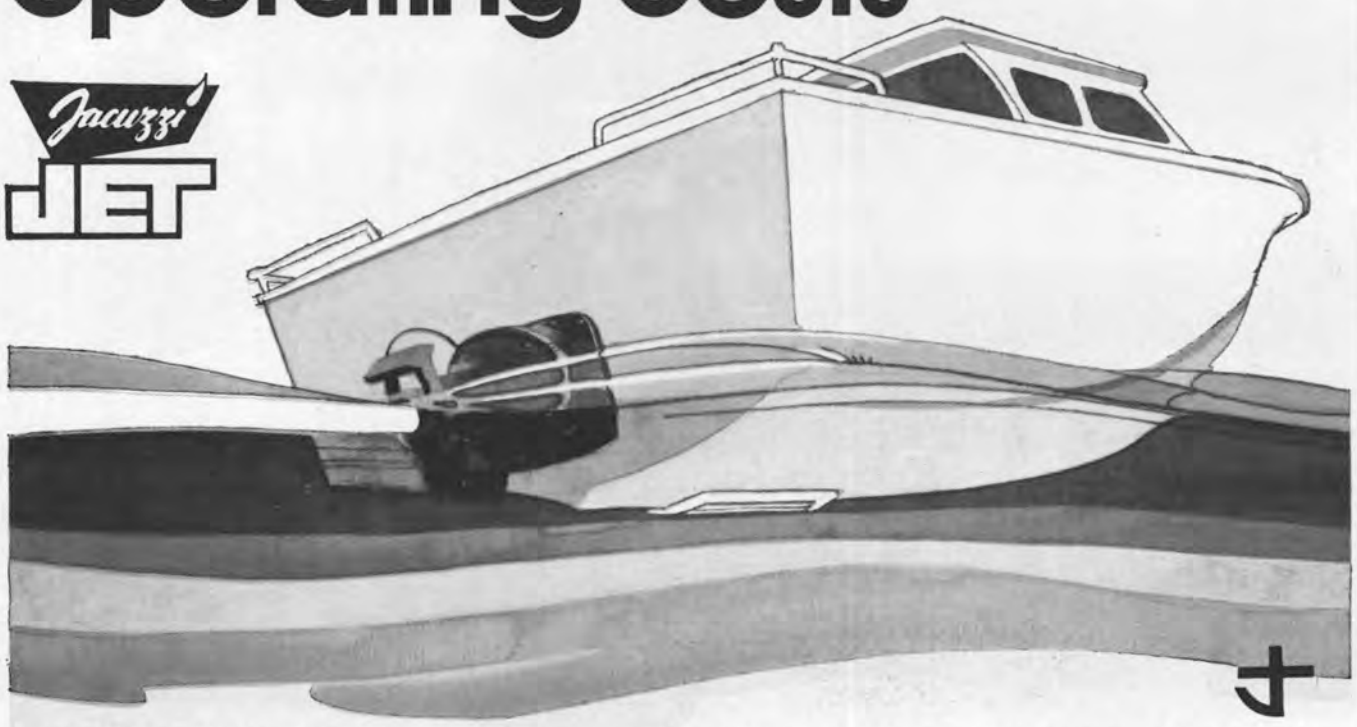

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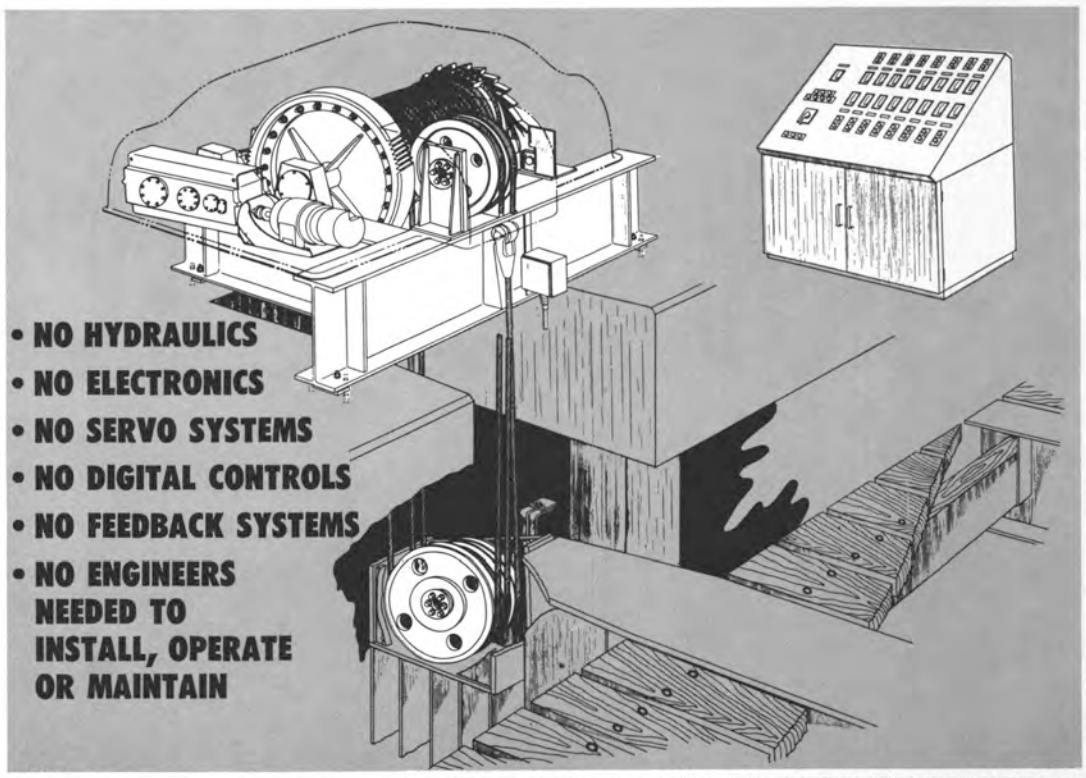

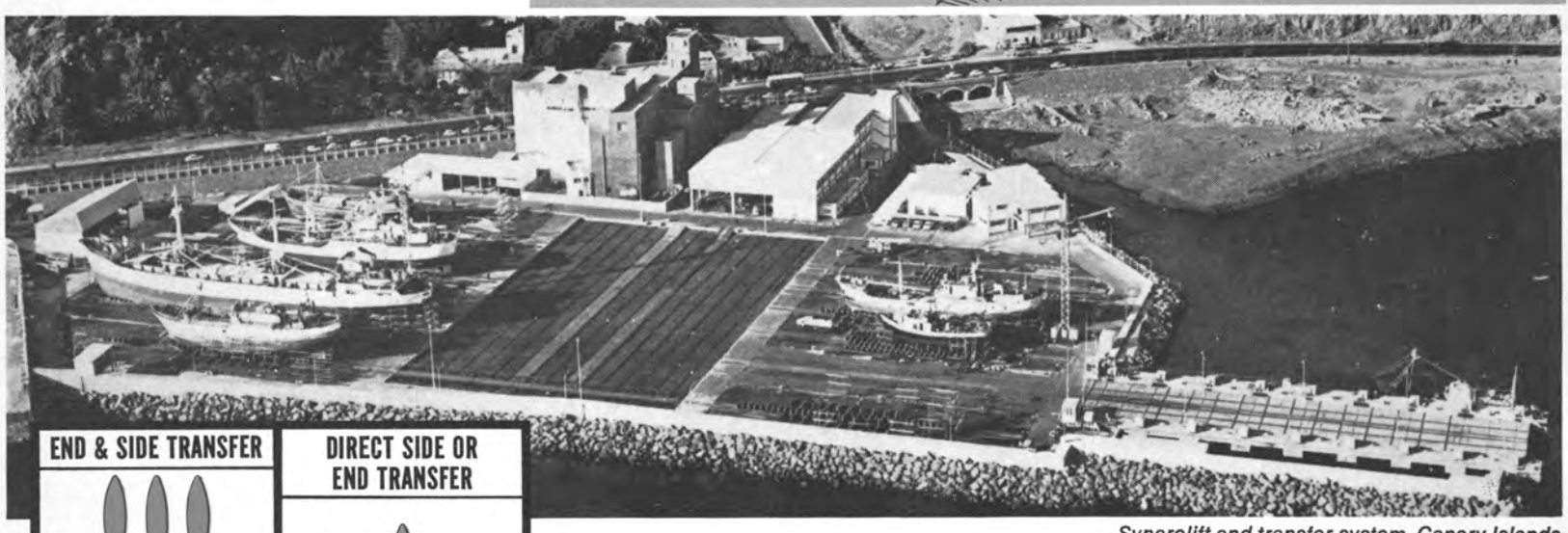

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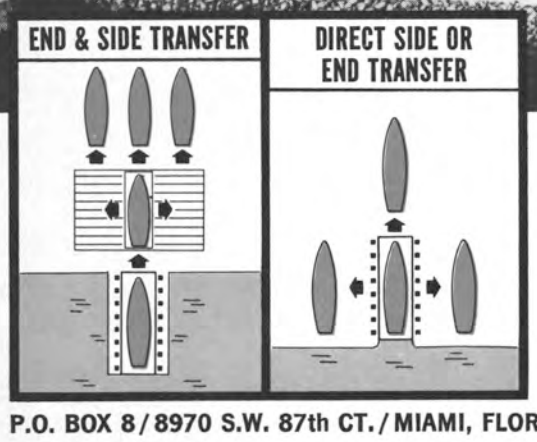

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Gladding Corporation Names Tourtellot VP Of Cordage Div.

J. Gerald Mayer, president of Gladding Corporation, Syracuse, N.Y., has announced the appointment of **Carl T. Tourtellot Jr.** as divisional vice president and general manager of Gladding Corporation's Pawtucket Works Cordage Division.

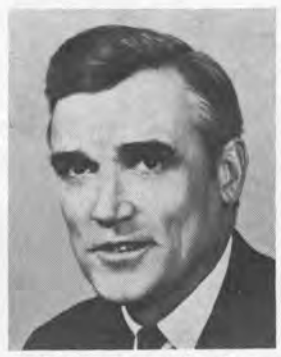
Mr. **Tourtellot,** Columbian Rope Co. marketing vice president for the past three years, will report to **Nicholas J. Christakos,** Gladding corporate vice president, Mr. **Mayer** said.

Mr. **Tourtellot's** experience includes positions as a management consultant, a national sales manager, a new products development-marketing executive, and a foreign marketing coordinator with various companies since 1947, the year he graduated from Dartmouth College with an economics degree. He earned his master's degree in 1954 from Harvard Business School, where he specialized in marketing and sales management studies.

His new responsibilities will headquarter him at Gladding's Pawtucket Rope Works, 420 Pine Street, Pawtucket, R.I., where facilities have been expanded to manufacture ropes and lines up to 10 inches in circumference.

Gladding's Rope variety now includes hawsers of nylon, polypropylene, polyester, and line made with a combination of polyester and polypropylene yarns.

"We now manufacture the most complete line of synthetic cordage in conventional twisted ropes, double spliceable braids, solid braids, Catalinas, hollow braids, and nylon-covered shock cord," Mr. **Mayer** said.



Carl T. Tourtellot Jr.

For the individual consumer market, Gladding manufactures shrink-packaged dock lines in twisted and braid for sale in sporting goods and marina stores.

The 10-inch lines are for the steamship, towing and barge business. Gladding also makes numerous Government braids and ropes to conform to Federal specifications for use by the Navy and Coast Guard.

Gladding's other cordage plant at South Otselic, N.Y., also manufactures fishing lines and Gladding-South Bend Tackle Division lures.

America's oldest recreational products company, Gladding began as a cordage manufacturer in 1816 at South Otselic, but soon expanded into fishing lines for which it became famous. Now a public corporation and widely diversified within the leisure field, it also manufactures full lines of Gladding-South Bend, Glen L. Evans and Horrocks-Ibbotson fishing tackle; Gladding - Del - Rey recreational vehicles; Aqua-Float water safety products and water skis; Gladding inflatable boats, sleds and toboggans, sleeping, tennis and bowling bags, camping equipment, Gladding - Claricon home stereos; Pearce-Simpson marine VHF radios and citizens band radios, H.W. Carter ski and hunting clothing and men's outerwear, and Gladding-Vitro marbles.

St. Philip Towing Asks Title XI Aid For 2 Tugs, 2 Barges

The Maritime Administration has announced that St. Philip Towing & Transportation Co. of Tampa, Fla., has applied for a Title XI mortgage guarantee to aid in financing the construction of two 5,000-hp oceangoing tugs and two 22,500-dwt dry bulk cargo self-unloading oceangoing barges.

According to the applicant, each tug will cost about $2.5 million and each barge $5.6 million—a total of $16.2 million. The units, when completed, will be used in transporting phosphate rock west from a terminal in Tampa Bay to facilities on the Mississippi River. No contracts for construction of the vessels have as yet been given.

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Bethlehem Steel Shipbuilding Division Promotes D.H. Green

The promotion of **David H. Green** to manager of contract administration in Bethlehem Steel Corporation's shipbuilding department has been announced by **Walter F. Williams,** vice president.

Mr. **Green** succeeds **William J. Scott,** who retired June 30 following 44 years in the shipbuilding and ship repair field.

A native of New Orleans, La., Mr. **Green** is a graduate of the Fort Trumbull Maritime School in Connecticut. He successfully passed the marine engineering course at Johns Hopkins University, subsequently became a licensed chief engineer, and sailed in this capacity on various types of vessels. He resigned his commission as lieutenant commander and was then employed as an estimator and negotiator in the marine industry.

Later, he was a United States Salvage Association surveyor, arbitrator, marine superintendent, and classification surveyor, and he also operated his own consultant firm which did business internationally.

Mr. **Green** first joined Bethlehem Steel Corporation at its Baltimore Yards in 1940 and worked there about three years. He rejoined the yards in 1964 as a technical assistant to the general manager.

David H. Green

On January 1, 1970, he was appointed assistant manager of contracts for the Baltimore area, the position he held until this promotion.

Mr. **Green** is a member of The Society of Naval Architects and Marine Engineers, Society of Marine Port Engineers, National Contract Management Association, Navy League of the United States, The Propeller Club of Baltimore and the Maryland Marine Club.

Marcona Corp. Names Fred Graham To Post In Marine Development

Fred B. Graham

Fred B. Graham has been appointed assistant to **Hugh C. Downer,** senior vice president-marine development of Marcona Corporation, San Francisco, Calif.-based international shipping, mining and resource development firm. His initial responsibility will be to provide staff coordination for the long-range marketing program associated with Marcona Ocean Industries, Ltd., the company's recently acquired aragonite operation in the Bahamas.

Prior to joining Marcona, Mr. **Graham** operated a consulting and research firm specializing in logistics and planning for large-scale transportation systems. His professional career also includes management positions with Consolidated Freightways, Inc., Matson son Navigation Company, and Arthur D. Little, Inc.

Mr. **Graham** is a graduate of the U.S. Naval Academy and did graduate work in mathematics and statistics at Stanford University. He served as a bomber pilot with the Strategic Air Command during the period 1951-54, and is a retired Captain, USAF.

"The time has come," said R. B. Jones,
"to talk of many things...
of ships and shoes and sealing wax,
of cabbages and kings."

As the man from R.B. Jones gazes out of his seventeenth story window, he looks down into the New York Seaport Museum on the shore of the East River, where vintage ships are being collected for permanent display. His attention is drawn to a large tow slipping silently by, and he reflects with satisfaction that the tugboat and its barge were the subject of intensive discussions a fortnight before when he was working on the renewal of their insurance in London.

This man from R.B. Jones, and all his co-workers, place much of the insurance on the commercial watercraft in the New York area. He is involved with hulls and cargoes going to and coming from every port in the world, and with as many inland river shipments. He writes insurance on ships, shipyards, and other shore facilities among which is one of the world's largest drydocks.

R.B. Jones offices, which handle every kind of insurance written, span the United States.

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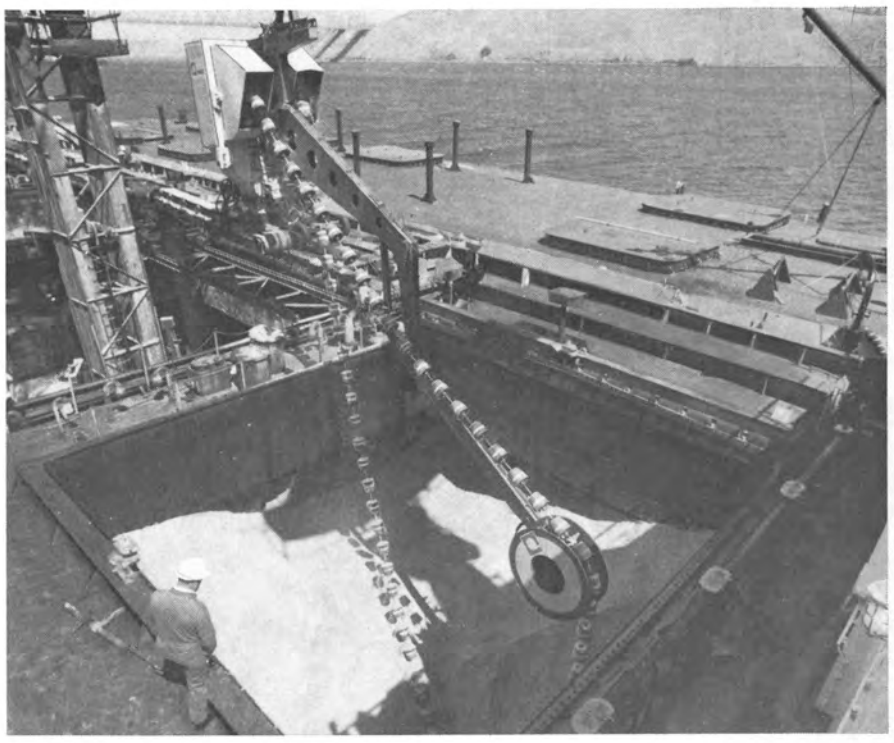

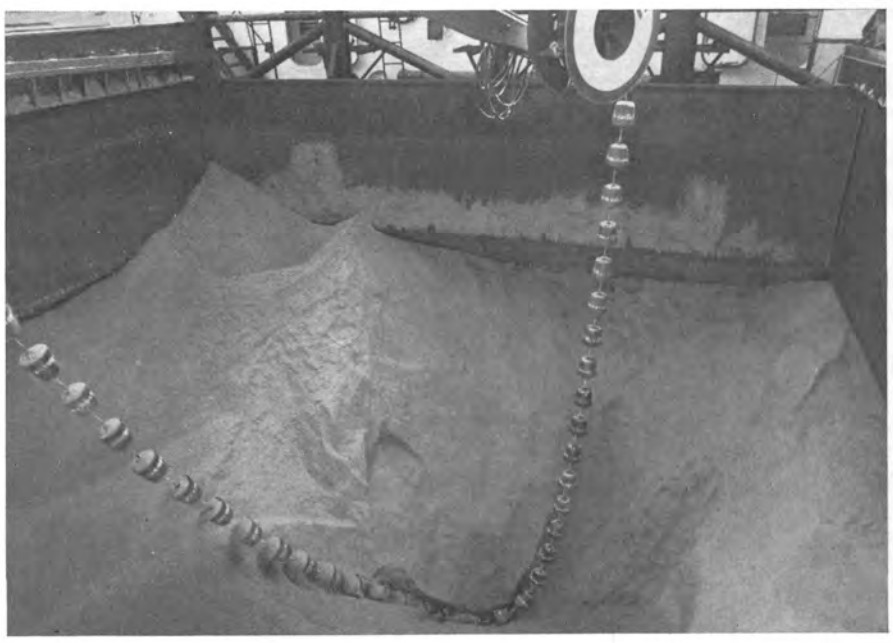

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TOTAL TRANSPORTATION A DIVISION OF FRUEHAUF CORPORATION

Pollution Is Uppermost Concern

While Forecasts Of Tanker Requirements, Deep-Water Ports, Offshore Unloading Islands And Law-Of-The-Sea Were Discussed, Ecology Is The Underlying Consideration In All Future Planning.

Energy demands of the future, the law of the sea, and offshore tanker "islands" were among the topics discussed by over 300 marine experts gathered for the American Petroleum Institute's 18th Annual Tanker Conference. The conference this year was held at Hilton Head Island, S.C.

Henry J. Luck Jr.

The conference was called to order by **H.J. Luck Jr.**, president, Mobil Shipping and Transportation Company, and chairman of the sponsoring Central Committee on Transportation by Water.

Before the technical sessions started, **C.J. Waidelich,** president, Cities Service Company, and API vice president for transportation, presented a Certificate of Appreciation to **R.E. Howe,** formerly of Exxon Corporation and past chairman of the API's Central Committee on Transportation by Water. The certificate is for "meritorious service to the petroleum industry through participation in the work of the Institute."

W.M. Kluss, president of World Wide Transportation, Inc., spoke at the first session on "Future Energy Demands and the Tanker Industry." He predicted that the free-world demand for oil is expected to more than double by 1985 and the United States and most other industrialized nations will have to rely more heavily on imported oil and natural gas. As a result, he estimated that the demand for tanker capacity in the free world will increase from the 1970 level of 147 million deadweight tons to 385 million dwt by 1985. The construction of that much oil-tanker capacity could require expenditures of up to $36 billion, he said. Additionally, he forecast that some $16 billion will be needed to be spent to create a fleet of cryogenic tankers to transport liquefied natural gas.

Mr. **Kluss** summed up his paper by stating that the most significant factor in the world demand/supply outlook for tankers between now and 1985 is the volume of oil and liquefied natural gas which the United States will import. To date, he added, there is great uncertainty over the level of these imports, their sources, whether adequate U.S. East Coast port facilities will be available, when and where new refineries will be constructed, whether the U.S. can increase domestic oil production, and whether the U.S. balance of payments problem will lead the U.S.-flag preference requirement for imports.

The second session of the conference was chaired by **J.A. Cole Jr.,** general manager, Marine Department, Texaco, Inc., and vice chairman of the Central Committee on Transportation by Water.

Adm. **Chester R. Bender,** commandant, U.S. Coast Guard, spoke on "Ports and Waterways Safety Act." His theme was broken down into the two major parts of this Act, which became law in October, 1972. Title I gives the Coast Guard new authorities for ports and waterways safety and for protection of the marine environment. Title II requires that the Coast Guard take a new approach to the standards for tank vessels because of the threat they pose to the environment.

Speaking on Title II, Adm. **Bender** said: "Congress recognized the advantages of seeking multi-lateral agreement by requiring that proposed U.S. regulations be submitted to 'appropriate international forums' such as the 1973 IMCO Conference. If the principles forwarded for consideration are not earlier adopted internationally, then we are required to effect them unilaterally not later than 1 January 1976.

"It is our express desire," continued the speaker, "to avoid hasty or unilateral action on the part of the United States which could be harmful to U.S. commerce. Lacking international agreement, however, unilateral action prohibiting the entry of certain vessels into U.S. waters, on a formula yet to be determined, appears to be a possible solution. But oil movement projections show large and increasing dependence upon foreign-product import in the near future. It is very expedient to say that vessels not incorporating our unilateral anti-pollution requirements will be denied entry, but it may well not be consistent with our demand for oil.

"The Law of the Sea" was discussed by **John R. Stevenson** of Sullivan and Cromwell. He discussed basically coastal rights of independent nations, saying: "International tanker operations would be drastically affected by any reordering of the international legal regime for the oceans that would subject tankers passing through straits used for international navigation or ocean space in which coastal states exercise resource-management jurisdiction to a coastal state veto on their right of passage. The most effective means of preventing such a disastrous end result if escalating unilateral claims by coastal states to broader and broader jurisdiction are not effectively countered, is through a general international agreement on an international regime for the oceans that will guarantee a right of unimpeded navigation to oil tankers yet will satisfy coastal states' understandable concerns with respect to maritime safety and the pollution of the oceans in the areas adjacent to their coasts."

Mr. **Stevenson** expressed the opinion that he feels "the prospects of achieving international agreement on a 12-mile territorial sea are excellent providing there is concurrent agreement on broad coastal state resource management jurisdiction beyond the 12 miles as well as on free transit for straits used for international navigation."

During the same session **John Mascenik,** engineering associate, Esso Research and Engineering Company, discussed "Single Point Moorings for Deepwater Petroleum Terminals" and **E.H. Harlow,** executive vice president, Frederic R. Harris, Inc., presented a paper entitled "The Offshore Tanker Island."

Mr. **Harlow** described the various types of offshore islands to be used by tankers and the pros and cons of each with respect to the various coasts. He indicated that: "Government efforts would seem to be directed toward sorting out various agency commitments relative to a single or multi-purpose offshore tanker terminal. The Maritime Administration solution would emphasize trans-shipment by vessel, as might be expected of an agency dedicated to stimulating the U.S. merchant marine, while the Corps of Engineers has recommended SBM's directly connected by pipeline to existing refineries, eliminating the major dredging obligations it has hitherto had to meet. Implementation of either plan will require strong support from several sources that has yet to be shown. State agreement and assistance has been negative, nor has industry approval been universal. With the Administration lacking a strong and active policy, the time likely to be needed for government and the oil industry to arrive at a common plan, obtain the funds, political support, permits and organization to build such a terminal will probably be a matter of ten years." He went on to say that "Industry schedules permit no such delay."

The third session of the conference was presided over by **G.H. Blohm,** president, Cities Service Tankers Corporation, and vice chairman of the Central Committee on Transportation by Water.

Maj. General **R.H. Groves,** USA, division engineer, North Atlantic Division, Corps of Engineers, reported on "The North Atlantic Deepwater Port Study." After describing the studies that the Corps of Engineers have conducted on this subject at the request of Congress and listing the problems attendant with these from Eastport, Me., to Hampton Roads, Va., General **Groves** summed up his paper as follows:

"Where does that leave us? It leaves us essentially with the 'do nothing' alternative. But as I indicated earlier, to do nothing is not to perpetuate the present situation, for in all probability trade patterns will begin to shift. I would expect that unless a deep port in the North Atlantic region of the United States can be made available to the international oil companies soon, we will see their refineries begin to move. I would expect them to displace through time to locations quite possibly lying outside of the United States, where the large tankers can supply them with crude, and from which the refined products can be hauled in smaller vessels capable of negotiating our existing channels. Such dislocations, while satisfying some elements of our population, will surely create other pressures— unemployment, adverse gold flow, defense and even environmental con-

siderations, to name but four—which will keep the problem of the North Atlantic region's deep-draft port, and its attendant controversy, alive and with us for many years to come."

William O. Gray, manager, Research and Development, Tanker Department, Esso International Company, spoke on "Large Tanker Maneuvering." He said that many statements in the press recently on tanker maneuverability "border on the ridiculous, mentioning excessive stopping and turning distances, problems of dynamic instability, and other phenomena alleged to make Very Large Crude Carriers (VLCC's) nearly unmanageable."

He went on, "ship collisions generally show a much higher correlation with dense traffic areas than any other single factor—such as ship size or type. In this regard, it is worth emphasizing that although larger tankers obviously require more maneuvering space than smaller tankers, there are more important benefits from the use of larger tankers." These benefits, Mr. **Gray** said, include the fact that a small number of vessels for given volume reduces traffic density, and very large tankers by virtue of their size are increasingly being removed from the more congested areas.

A report on "Hull Survey of VLCC's " was given by **F.N. Boylan,** deputy chief ship surveyor, and **F.H. Atkinson,** principal ship surveyor, Lloyd's Register of Shipping. These authors described the survey procedures currently being used and closed with a forecast for the future. They said: "Thinking of the future, perhaps most efforts should be directed towards extending the periods between routine drydockings, and with this in mind, and as already shown in the paper, considerable attention is presently being paid by the Society to the quickly developing technology of in-water surveys. This method of survey is still relatively new and untried but may well become most important to classification. Another advance which may occupy surveyors in the future could well be the survey of repairs done at sea. This will depend primarily on the nature of the defect but in many ways would be a rational extension of the service whereby ships are surveyed at sea.

"As more experience is gained in this work, and as VLCC's become larger and older, it is confidently expected that this service will be extended beyond the present age limit of five years and could well be extended to and beyond the second special survey. It should be particularly attractive to owners that surveys prior to docking or drilling may be held at sea enabling the necessary preparations to be made before the vessel is taken out of service."

Mr. **Luck** served as presiding officer at the fourth and final session of the conference.

The first paper presented at this session was prepared by **P.H. Monaghan,** research advisor, Esso Production Research Company; **J. H. Seelinger,** program manager, Maritime Administration, and **R.A. Brown,** senior research associate in the Analytical and Information Division of Esso Research and Engineering Company. This paper, entitled "The Persistent Hydrocarbon Content of the Sea Along Certain Tanker Routes—A Preliminary Report," reported on a program, jointly conducted by the Maritime Administration and the Exxon Corporation, involving the sampling and analysis of waters between Gulf of Mexico ports and New York, between Caribbean ports and New York and from portions of the Mediterranean Sea off the coast of Italy.

According to the findings reported were: (1) The hydrocarbon content of the ocean waters studied decreases with depth below the surface. As a result "One cannot multiply a value obtained on surface water by the total volume of the ocean. The number that is thus obtained will be unrealistically high."

(2) Water at a depth of 10 meters shows a somewhat lower proportion of petroleum derived hydrocarbons. "This suggests that petroleum-derived hydrocarbons degrade by processes similar to those which have been controlling levels of natural hydrocarbons throughout geologic time."

Capt. **Eugene B. Mitchell,** USN, supervisor of salvage, Naval Ship Systems Command, spoke on the "Status and Future Plans of the Supervisor of Salvage." Describing his office's function, Captain **Mitchell** said: "The Office of the Supervisor of Salvage is basically a services activity. We respond just as a fireman responds when the bell rings. However, certain facts of life must be apparent to all concerned with combating oil pollution. First and foremost, equipment, specially designed ships and craft and experienced personnel cost a great deal of money. The Navy requires the use of this equipment only a small percentage of time, yet the capital investment is great.

"In order to realize an adequate long-term return on the initial and future investments and to utilize the resources and expertise available, the Supervisor of Salvage offers his services to any government agency. This concept represents a benefit to all concerned. The Coast Guard, the Environmental Protection Agency, and any other agency can use our assets simply by requesting assistance. The oil industry may, through our Salvage Contractor, lease both men and equipment on an as required basis. In summary, those activities with a responsibility to combat oil spills and the spiller can utilize our response capability at a tremendous cost savings."

The final paper given at the conference was prepared by **L.C. Ford,** president, Chevron Shipping Company, and was entitled "Training of Masters in Navigation and Bridge Control." In 1972, after more than a year of research, advised the speaker, Chevron Shipping Company completely revised its fleet operating policy and introduced a new concept in training ships' masters ashore.

Chevron's revised operating policy, Mr. **Ford** said, titled Marine Regulation-9, Masters and Watch Officers Manual — Deck Department, emulates an approach pioneered by the commerical airline industry and focuses on standardized watchstanding and bridge procedures for all ships in the company's U.S. and international fleets. The program brings together masters and selected first officers from all over the world for a week of intensive training in watch organization and bridge control.

In conclusion, the author stated: "Chevron is convinced that a desperate need exists for training and upgrading the professional qualifications of the officers at sea. We would urge that all shipowners give this subject objective consideration and begin working to build a reputation for our industry as being the safest mode of commercial transportation in the world."

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The problem has been eliminated and, in turn, gears and bearings are lasting longer. This economy is being accomplished by imaginative owners who have been specifying MMC's Gear Case Dehydrator.

Oil is hydroscopic in nature. Which means that its water absorbing capabilities will vary with changes in relative humidity. MMC's Gear Case Dehydrator circulates extremely dry air throughout the reduction gear case and lube oil system. This permits the oil to give up any water it is holding, thus reducing any chance of sludge formation and condensation, which inevitably results in destructive rust and corrosion.

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L.R. Bennett Named Senior VP At Seatrain

Leonard R. Bennett

Leonard R. Bennett, formerly president of L.R. Bennett & Company of New York, has been named Seatrain Lines Container Division senior vice president of port and terminal operations worldwide, according to a statement issued by division president **Arthur C. Novacek.**

In his new position, Mr. **Bennett** will be responsible for the development of new programs in operations specifically designed to further enhance Seatrain's well-recognized service for customers in international trade.

Prior to his present appointment, Mr. **Bennett** was well-known in the transportation field through his association with many leading firms in both senior management and consultant positions. He is an active member of AMA, AIIE, the Operations Council for Trucking, the Foreign Trade Club, NCPDM, and many other industry organizations.

ARCTEC, Inc. Names L.A. Schultz Sr. Consulting Engineer

Lawrence A. Schultz

Jack W. Lewis, president of ARCTEC, Incorporated, announced that **Lawrence A. Schultz** has joined the firm as a senior consulting engineer. Mr. **Schultz's** initial assignment is to manage the design, construction, start-up, and marketing of ARCTEC's new ice model basin, which is to be built in conjunction with the firm's new office building in Columbia, Md.

ARCTEC, Incorporated was organized in 1970 to provide consulting engineering services of research, design, construction, and operations in the fields of cold region marine engineering, ice technology, and naval architecture. ARCTEC, Incorporated currently has in operation the only commercial model testing facility in the country in which models of marine vehicles, offshore structures, port facilities, and pollution control devices may be tested in a properly scaled ice environment. ARCTEC's new ice model basin will extend and refine the capabilities of the facility currently in use, based upon the knowledge gained through three years of operating the present basin.

Prior to joining ARCTEC, Incorporated, Mr. **Schultz** was a senior engineer with Deepsea Ventures, Inc., where he conducted engineering and economic studies of ocean related business ventures, and participated in the design and development of deep ocean mining equipment.

Mr. **Schultz** is a graduate of the State University of New York Maritime College, Rensselaer Polytechnic Institute, and the College of William and Mary, which have awarded him degrees of bachelor of marine engineering, master of science in mechanical engineering, and master of business administration, respectively. He holds a United States Coast Guard license as third assistant engineer and is a registered professional engineer in the states of Ohio and Virginia. He is a member of The Society of Naval Architects and Marine Engineers, and the American Society of Mechanical Engineers.

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First of seven 465,000 bbl LNG

Gibbs & Cox Moves To Larger Quarters In New York City

Gibbs & Cox, Inc., naval architects and marine engineers, have announced that the firm is now conducting business at their new offices at 40 Rector Street, New York, N.Y. For the greater part of its more than 50 years in business, the firm's base of technical operations was at 21 West Street, New York.

All company operations will be performed in larger, newly decorated and modernized offices, under the direction of **Thomas M. Buermann,** executive vice president. **James J. Convy** is senior vice president-finance and administration, and **Walter Malmstrom** is vice president and treasurer. Technical operations are controlled by **Malcolm Dick,** vice president-naval architecture; **James P. Doyle,** vice president and chief engineer; **Richard M. Ehrlich,** vice president and chief electronics engineer, and **Frederick W. Haltenhoff,** chief electrical engineer. **Matthew G. Forrest** has been retained as senior consultant. The relocation was spurred by the company's steadily increasing workload and staff build-up.

Gibbs & Cox, Inc. also has an office with a sizable work force in Hyattsville, Md.

One of the innovations in the new quarters will be a Centrex telephone system installation, featuring direct calls to, and dialing from, all telephone stations. Notices have been sent to clients and other firms in the industry giving information on new telephone numbers. Gibbs & Cox, Inc. can be reached on (Area 212) 487-2800 for information on staff telephone numbers.

The firm has a large staff consisting of naval architects, marine engineers, electrical engineers, and electronics and weapons engineers well-versed in the new design techniques and experienced in the traditional methods.

Gibbs & Cox, Inc. has a long unbroken record of achievement in the design of United States and foreign naval ships of all types, including destroyers, patrol frigates, sea control ships, missile ships and conversion. It is also well-known for its achievements in commercial ships, including the design of the S/S United States and various passenger ships, cargoships, containerships, tankers, cable ships, and offshore drilling rigs.

For Japan.
Tankers. All with nickel-alloy tanks.

The LNG tanker Gadinia. Built by Les Chartier de L'Atlantique at St. Nazaire, France. She went into service December, 1972. She has the low silhouette characteristic of membrane tankers.

The Gadinia, now in service between Malaysia and Japan, is the first of her class. Chartered by Coldgas Trading, the Gadinia and six new nickel stainless tankers will deliver 1,300,000,000 bbls. of LNG in 20 years. From the Shell Petroleum Company gas fields of Brunei, Malaysia, to Japan, 2500 miles away.

The other six will be in service by 1975. Four with flexible membrane tanks of 304L nickel stainless based on Gazocean design. The other two LNG tankers, based on Gaz-Transport's flat-membrane design, will be made with Invar*36% nickel-iron alloy.

*A Registered trademark of Société Creusot-Loire (IMPHY)

Cold facts on 304L nickel stainless.

304L has outstanding ductility at room temperature and at −160C (−256F). Plus the toughness essential for the flexible waffle membrane design. 304L provides demonstrated safety and service. 304L nickel stainless has proven itself in corrosive marine atmosphere, aboard ship, and in shipyards. It is readily available, produced by a large number of companies.

High tightness welds.

304L is easy to weld. And the critical high tightness of the Gadinia's primary barrier demonstrates this excellent weldability. No gas concentrations in the inner barrier space could be detected by highly sensitive monitoring devices after trials.

Not just the tanks are nickel alloy.

Like many of today's mammoth LNG tankers, the Gadinia has cryogenic piping, pumps, and valves of nickel-containing alloys. Alloys designed and proved to be tough and ductile at cryogenic temperatures. Like the inner tanks, they are highly resistant to corrosion, easily fabricated and welded.

Nickel alloys, right for cryogenics. For your own LNG tanker, of course, you also could choose 9% nickel steel. It all depends on your design requirements. INCO will be happy to supply you with more information on nickel-containing alloys for cryogenic service. Simply write Department #14-73, The International Nickel Company, Inc., One New York Plaza, New York, New York 10004.

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Upper Mississippi Towing Corporation Names New President

Henry M. Baskerville Jr.

Henry M. (Marty) Baskerville Jr. has been named president of Upper Mississippi Towing Corporation.

Mr. **Baskerville** succeeds **Neville Stone,** who resigned to take a position with American River Transportation Company, a subsidiary of Archer Daniels Midland Grain Co.

Mr. **Baskerville** has been associated with UMTC and its affiliated companies for 31 years, except for a period of 12 years when he was associated with Continental Oil Company. Most recently, he was president of Action Capital Corporation, a petroleum exploration and production company also in the equipment leasing business.

At the same time, UMTC also announced the promotion of **Les Sutton** to executive vice president. In addition to his present duties, Mr. **Sutton** will direct the operations of the barge line. Formerly, he was vice president in charge of finance.

Gale H. Chapman was named senior vice president and special assistant to the president. Mr. **Chapman** was vice president in charge of operations.

Port Everglades Firm Changes Its Name To Tracor Marine

John C. Ploegert, president and board chairman of TRACOR/MAS, Port Everglades, Fla.-based oceanographic research and ship repair facility, has announced the firm is being renamed Tracor Marine, "to describe more accurately current and future activity.

"The board of directors has established goals for significant growth in a variety of marine-oriented activities. A portion of this will encompass underwater acoustics for which we are perhaps best known. However, it is felt the Tracor Marine name will help the industry more readily associate us with our expanded capabilities," Mr. **Ploegert** said.

In 1960, the firm was formed to provide vessel and engineering services to the emerging oceanographic research industry. Underwater sound —then the researcher's basic tool— suggested the original Marine Acoustical Services name.

Acquired by TRACOR, Inc., Austin, Texas in 1968, the Florida operation was, and is still, widely known as "MAS." Under the MAS banner, the firm worked almost exclusively on projects for the U.S. Navy. In 1971, the firm's scope of operations had extended far beyond activities in underwater acoustics when it established shipyard operations at Port Everglades and restructured into two divisions.

The Ocean Technology Division, headed by **Charles W. Gattas,** has enabled the firm to continue to address itself to growing demands for research vessel services, ocean engineering, marine research and support worldwide. Today, it provides survey and core drilling services, conducts pollution studies, submarine cable installation and repair, and sponsored research and engineering programs for a variety of commercial clients, in addition to the U.S. Navy.

John C. Ploegert

The Shipyard Division, managed by **A.A. (Skip) Walker,** provides seven-day round-the-clock ship repair and overhaul services. Plans are completed for a 110 by 600-foot floating drydock, and a recently acquired 1,000-ton floating drydock already augments the firm's Syncrolift marine elevator drydock, the largest of its kind in the United States.

The parent company, TRACOR, Inc., is involved in sponsored research and development projects in a wide range of scientific disciplines.

TRACOR, Inc., headquartered in Austin, Texas, is primarily a manufacturer of electronic and electromechanical systems, scientific instruments and components. With principal operations in 11 states and six foreign locations, TRACOR also conducts sponsored research and development projects in fields of scientific endeavors in which solutions to environmental problems are of significant importance.

Prop repair costs hitting you below the waterline? Try our stainless steel.

Haulouts cost money.
Downtime costs money.
If your boat business takes you where there's often trouble below, you need a prop that can take it.
You need a Coolidge stainless steel prop.
Because there's stainless — and there's Coolidge stainless. We use all electric furnaces to get a cleaner, stronger alloy. A steel that can really take it under water. Plus our 60-some years of know-how in the business, to make you a better prop in every way. Custom-designed for your boat, your engine, your horsepower, the job you've got to do.
We make our stainless steel props in diameters up to 14-ft. In 3-, 4- and 5-blade models. (Cast steel or bronze also available through 13-ft. diameter.)
And we make them to last. No matter what kind of trouble you get them into.
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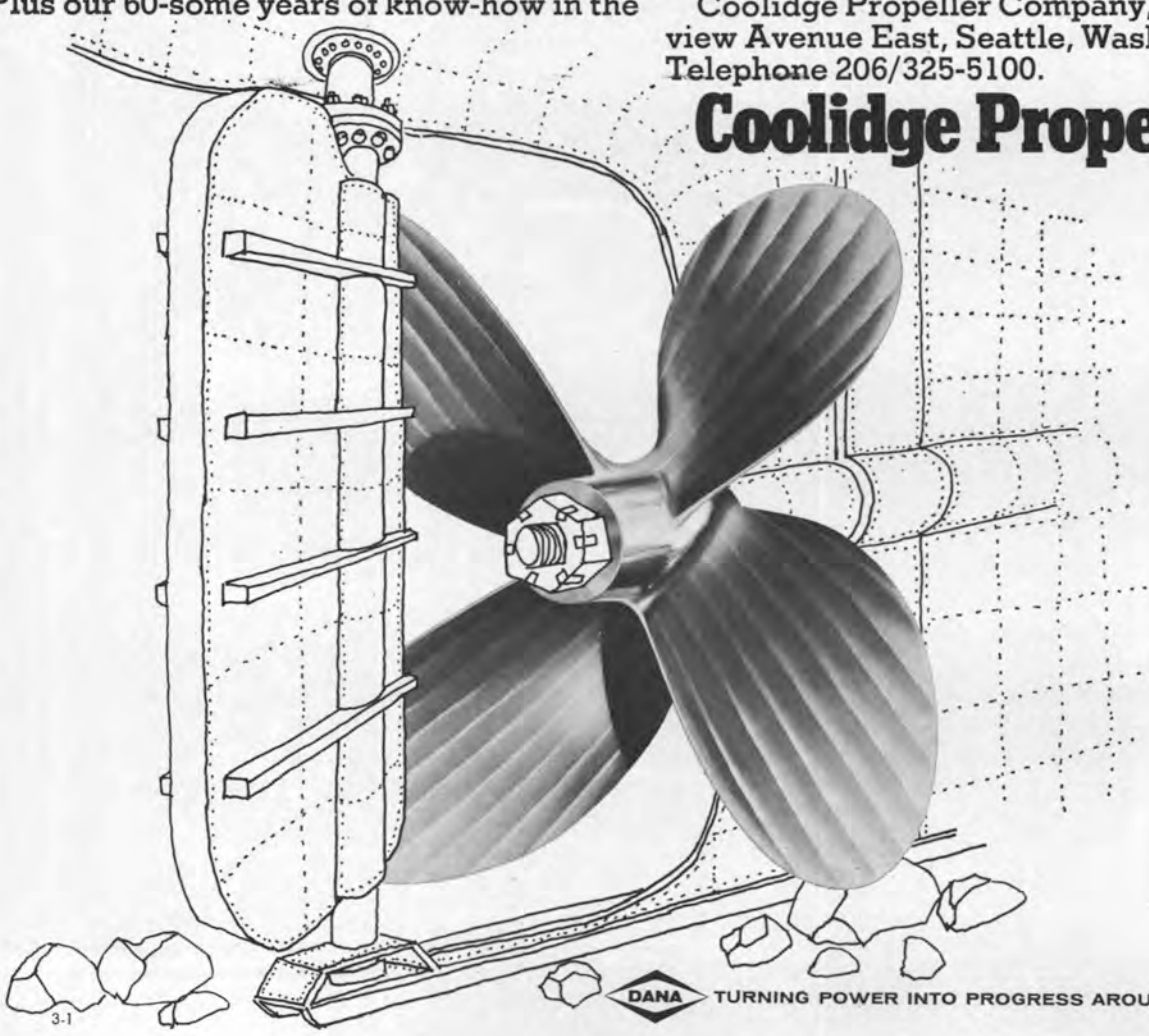

Coolidge Propellers

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3-1

Albina Engine Names Fitzwater Asst. Mgr. Ship Repair Division

Bruce D. Hobbs, president, and **John L. Sutherland,** vice president, Ship Repair Division of Albina Engine & Machine Works, have announced the appointment of **D. Scott Fitzwater** as assistant manager, Ship Repair Division.

Albina Engine & Machine Works, actively engaged in ship repair at their facility on Swan Island, Portland, Ore., is a wholly owned company of the Dillingham Corporation of Hawaii.

Mr. **Fitzwater** joined Albina's Ship Repair Division on July 1, 1972. He is a 1969 graduate of the United States Merchant Marine Academy, and obtained his M.S. degree in industrial engineering from Oregon State University in 1972.

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pressure vessels	cryogenic	Armco Super-Lo-Temp
cargo tanks	formability	Armco LTM-N and LTM-QT
pipeline		Armco 9% Nickel
structures		Armco CT

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The point is, Armco is a supplier of marine steels for marine construction and has been for many years. There are, of course, more steels available than those listed—more than 40 in all—that cover virtually every type of marine construction.

For temperatures ranging down to −320 F, Armco has either a carbon, high strength low-alloy or alloy plate steel with the right combination of properties to provide you the most economical steel available for your application. For more information, just mail the coupon.

Armco Steel Corporation, Dept. H-83, Box 723, Houston, TX 77001

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ARMCO STEEL

FMC Renames Gunderson, Inc. Marine & Rail Equipment Div.

Robert H. Malott, president of FMC Corporation, has announced that the wholly owned Gunderson subsidiary in Portland, Ore., will be elevated to divisional status in FMC and will operate as the Marine and Rail Equipment Division of FMC. "Since becoming a part of FMC in 1965," Mr. **Malott** stated, "Gunderson has steadily expanded its production and marketing capabilities, and in 1972 was the second largest box car manufacturer in the United States. In addition, recently announced contracts for the construction of 35,000-dwt tankers in their Portland yard have put Gunderson and FMC in the forefront nationally in the movement to revitalize the American shipbuilding industry. In recognition of this increasingly important part that Gunderson is playing in FMC's growth, we feel it appropriate that this operation be given divisional status that will more closely align and identify it with FMC."

Bruce Ward, Gunderson president, said the change-over will not materially affect the operations of the railcar and marine manufacturer. "We're pleased to be accorded this kind of recognition in FMC," Mr. **Ward** stated, "and, of course, we will miss the Gunderson name that we've carried for so many years and which has served us so well. Since becoming a part of FMC in 1965, we've made significant changes in our operation and have invested substantial amounts of money in expanding our capabilities. Over $4 million was invested in new facilities in 1972 alone to prepare for our new ship construction program which is now well under way. I'm sure that this kind of growth will continue in the Marine and Rail Equipment Division of FMC here in Portland, and perhaps in other areas of the country as well."

Mr. **Ward** indicated that the current level of employment at FMC in Portland is 1,100 people, and that they expect to reach a level of close to 1,400 workers by mid-year, with a total Portland payroll of about $13,000,000 in 1973.

"Our present backlog extends almost to year-end in our railcar operation," Mr. **Ward** said, "and the shipbuilding backlog carries well into 1975."

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ORIGINATORS AND PIONEERS OF SOUND POWERED TELEPHONES FOR MARINE USE
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Sun Shipbuilding Launches Huge, Fast Matson Trailership For West Coast-Hawaii Service

William B. Maling, vice president of Sun Ship, looks on as **Maryanna Gerbode Shaw** smashes the bottle of champagne on the bow of the S/S Lurline.

The S/S Lurline, first roll-on/roll-off trailership for the West Coast-Hawaii trade, was christened on June 7 by the great-granddaughter of the co-founder of one of Hawaii's pioneer companies.

The 25,000-ton 25-knot cargo vessel, under construction at Sun Shipbuilding and Dry Dock Company shipyard in Chester, Pa., will enter service for Matson Navigation Company next month.

Breaking the traditional bottle of champagne on the bow was **Maryanna Gerbode Shaw** of San Francisco, whose great-grandfather **Samuel T. Alexander** was one of the founders of Alexander & Baldwin, Inc., which now owns Matson.

Mrs. Shaw is the daughter of Dr. **Frank Gerbode,** renowned San Francisco heart surgeon. Her mother, the late **Martha Gerbode,** a granddaughter of Mr. **Alexander,** was a leading philanthropist in the San Francisco area for many years.

The new Lurline has an overall length of 700 feet, a breadth (main deck) of 105 feet, a depth of 60 feet, and a draft of 28 feet. She will be the fifth vessel under the Matson flag to bear the name. A sister ship will follow in the Hawaii freight service at the end of the year.

The Lurline's propulsion plant is comprised of two Babcock & Wilcox boilers with a specific fuel rate of .491 lbs./shp-hr., and a General Electric Cross Compound Turbine, producing 30,000 shp on a single screw. Centralized control will allow regulation of the speed and direction of the propeller from the bridge. Living quarters for the ship's crew will be fully air-conditioned.

The vessel will have the capacity to carry a combination of different sized trailers equivalent to 278 forty-foot trailers, including 100 refrigerated units, plus 207 automobiles and 1,600 long tons of molasses.

Matson will integrate the new ro/ro service into its regular intermodal "lift-on, lift-off" container system between the West Coast and Hawaii, Matson's president **R.J. Pfeiffer** said.

"The ro/ro trailerships will provide the additional flexibility needed in the Hawaii trade," Mr. **Pfeiffer** said. "The big advantage of these vessels is their ability to carry cargo of virtually any size and weight that can be moved on wheels."

Marathon Le Tourneau To Build $11-Million Rig In Singapore For Santa Fe International

Santa Fe International Corp., Orange, Calif., has plans to build a second jackup drilling rig in Singapore.

Edfred L. Shannon Jr., president, said the decision was made after a Royal Dutch Shell subsidiary signed a long-term contract for the Santa Fe unit now under construction in the same shipyard. Shell International Petroleum MIJ. N.V. will charter this drilling barge for use in the Arabian Gulf following its completion in June 1974.

Mr **Shannon** said the new construction contract awarded to Marathon Le Tourneau Offshore Co. provides for delivery of the second jackup on May 15, 1975. Cost of this unit fully equipped is estimated at $11,000,000.

Both barges will be self-elevating tripod-type units with 357-foot legs, making them capable of operating in water depths to 250 feet. Each will be 203 feet long, 168 feet wide, and will have a hull depth of 22 feet. They are designed for propulsion assistance and will have cantilevered decks to permit drilling over fixed platforms.

Largest Ship Repair Contract For Malta Drydocks Corp.

Malta Drydocks Corporation has been awarded a contract to repair the Italian tanker Agip Genova, owned by SNAM S.p.A., Milan.

The 52,580-deadweight-ton tanker, which was built in 1963 by Cantieri Navale Riuniti, Ancona, caught fire after two explosions in its forward cargo tanks while proceeding from Sicily to Libya to pick up a cargo earlier in the month.

The tanker arrived in Malta under its own power and was taken in hand by Malta Drydocks Corporation for survey inspection and gas freeing.

The damage sustained by the Agip Genova involves the renewal of approximately 800 tons of steel, apart from additional work, which includes deck machinery repairs, renewals of pipework in way and electrical repairs.

The vessel was secured by Malta Drydocks Corporation in the face of competition from other Mediterranean shipyards, and the contract, which represents an order of approximately $1,350,000, is the largest ship repair contract yet awarded to the yard.

Rotterdam Group Forms New Company In U.S.

J. van Baarle, president of Nedlloyd Inc., and general representative for Nederlandsche Scheepvaart Unie in North America, has announced that Ruys Transport Groep bv of Rotterdam are establishing a new company in the United States with headquarters in the World Trade Center, New York, N.Y. The new corporation, Ruys Transport Group Inc., will be responsible for all marketing and sales functions in North America for the parent company. R.T.G., a renowned distribution complex in Europe with stevedoring, warehousing, trucking, surface and air forwarding, chartering and Rhine barging fleets, have also established transportation companies in the Far East, Australia and Africa.

James J. Garity has been appointed president of the new corporation, which will also consider offers to provide New York representation and sales activities for U.S. transportation and distribution organizations whose requirements and markets in these activities would be similar to those of R.T.G.

Both Nedlloyd and the Ruys Transport Groep are divisions of the giant Netherlands Shipping Union (Nederlandsche Scheepvaart Unie), one of the largest transportation chains in the world.

ZIDELL'S 140TH BARGE: Zidell Explorations, Inc., Portland, Ore., has launched its 140th barge since going into production in 1961. The latest is Tidewater Barge 1, shown above, built for Tidewater Barge Lines, largest barge operator on the Upper Columbia River. Tidewater 1 measures 242 feet by 42 feet by 16 feet 6 inches, and is designed to haul up to 25,000 barrels of petroleum from Portland to the Upper Columbia. Separate piping and pumping for each cargo compartment will permit carrying as many as eight different petroleum products simultaneously, with no problem of contamination in loading or unloading. According to a Tidewater spokesman, who placed the cost of the barge at $500,000, this is a unique feature on the Columbia. Tidewater 1 is the ninth barge built by Zidell for Tidewater since 1970. The previous eight were all grain barges. In addition to its Upper Columbia operations, Tidewater also operates between the Columbia and California. Its headquarters are at Vancouver, Wash. Barges previously constructed by Zidell at its Portland yard have ranged from a 122-foot deck cargo barge to a 300-foot derrick barge packing a deck crane with a 500-ton lift capacity and certified for unlimited ocean service.

Matson Announces Personnel Changes

James L. Reid, president of Brewer Chemical Corporation, will join Matson Navigation Company in Honolulu August 1 as vice president and area manager for Hawaii, it was announced by **R.J. Pfeiffer,** Matson's president.

Dudley W. Burchard, who has served as vice president, Hawaii, will return to San Francisco headquarters to assume the newly created position of vice president-market development, in connection with Matson's new roll-on/roll-off trailership service which will be introduced in August.

At the same time, **Dan Rayacich** is being promoted to vice president and assistant general manager of Matson Terminals Inc., in San Francisco. He has been Matson's area manager in Hawaii since May 1971. Before that, he was regional manager for Matson Terminals, Inc., in Honolulu.

Mr. **Reid**, a native of Hilo, Hawaii, sailed as a merchant mariner for the old Dollar Line and Matson before going ashore to work in 1940. He was a Navy officer in World War II, joining Hilo Transportation and Terminal Co. in 1946, and later becoming president.

In 1962, Mr. **Reid** was assigned additional duties with Ultramar Chemical Company, now called Brewer Chemical Corporation, also a subsidiary of C. Brewer & Co., Ltd. He became president in 1972.

Motorships Of Puerto Rico Appoints New Officers

Nils O. Seim, chairman of the board of Motorships of Puerto Rico, Inc., San Juan, has announced, effective June 15, the appointments of **Udo Reif** as president and **H. Remsen Whitehouse** as executive vice president, following the retirement of **Charles Meyer** as president.

As resident officer of the company in Puerto Rico, Mr. **Whitehouse** will be responsible for all operations in Puerto Rico.

Management Changes At Dover/Norris Div.

The Norris Division of Dover Corporation has announced three management changes.

G.W. Davidson, president of the Tulsa-based Norris Division, announced that **J.A. (Jack) Getty** has been assiged the duties of vice president for international operations; **Brad Bertrem** has been promoted to general manager of value operations, and **Jon Young** has been named general manager of controls operations.

Norris, a division of Dover Corporation, is a manufacturer and marketer of sucker rods, butterfly and control values, pumps and fittings for oil, gas and industrial applications.

Norris employs 700 people in Tulsa and has plants in Houston, Texas, Edmonton, Canada, and licensees in Europe and Australia.

Mr. **Getty** will be responsible for Norris's sales activities in Europe, Asia and Africa. He has been with Norris for 26 years and was previously vice president, Norriseal Products.

Mr. **Bertrem** was previously sales manager for the butterfly valve line. He joined Norris in 1956.

Mr. **Young,** who has been with Norris for eight years, was previously product manager for Norriseal Controls. He will remain in Houston, where a new Norriseal Controls plant and office is being completed.

"These three organizational changes will result in improved service to our customers, and are consistent with our long-range objectives," Mr. **Davidson** said in making the announcement.

Equitable Equipment To Build 450 Lighters For Waterman

The Maritime Administration has given Title XI approval to an application submitted by Waterman Steamship Co., 120 Wall Street, New York City. The request is for 450 single-skin lighters costing $19 million. Equitable Equipment Co., Inc., New Orleans, La., will build the lighters.

Coppus Adds FMV Inert Gas Systems To Marine Products

Coppus Engineering Corporation, Worcester, Mass., has signed a licensing agreement with Fredriksstad Mek, Fredriksstad, Norway, for the exclusive sale and manufacture of FMV Inert Gas Systems in the United States, Canada and Central America.

FMV Inert Gas Systems are designed to prevent fire and explosion in cargo tanks of crude oil and ore/oil carriers. FMV Systems make it possible to prevent an explosive gas mixture from forming at any time during the operations of the vessel by using inert flue gas from ship stacks, or separate Inert Gas Generators, to lower the oxygen content in cargo tanks to a point where the tank atmosphere is below the explosive limit.

Coppus Turbine Fan Packages draw the flue gas from the ship stack through a scrubber, where it is cleaned and cooled before being supplied to the cargo tanks. The system contains extensive control and alarm devices to assure safe, reliable operation.

Coppus Engineering has long been a manufacturer and supplier of products for marine applications: horizontal and vertical turbines, pump and engine room ventilators, portable gas freeing ventilators, turbine fan packages for central system gas freeing of tankers through cargo lines, Saxlund Incinerator Systems and Golar Stripping Ejectors.

Fredriksstad Mek, founded in 1870, is one of the leading shipbuilders in Norway. They build a variety of ships up to 140,000-ton capacity in their fully equipped yard, which employs 2,000 people. Fredriksstad Mek pioneered in the development and introduction of the FMV Inert Gas System, delivering their first plants in 1963. Since then, some 300 plants have been completed or are on order, leaving Fredriksstad Mek as the world's most prominent supplier of Inert Gas Plants.

This new alliance between Coppus and Fredriksstad Mek will permit Coppus to offer more complete systems to shipyards and shipowners for the protection of tankers and the safety of crews by combining the FMV Inert Gas Systems with Coppus cargo tank ventilation systems.

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805 World Trade Building Houston, Texas

United States Lines Names Captain Kolbe Marine Superintendent

Capt. Wm. F. Kolbe Jr.

Capt. **William F. Kolbe Jr.** has been appointed marine superintendent at United States Lines, according to **K.W. Gundling,** vice president-marine operations.

Prior to his new post, Captain **Kolbe** was assistant marine superintendent at U.S. Lines, which he first joined in 1941 as a third officer. A graduate of the State University of New York Maritime College, he has served as master of cargo vessels, and was also chief officer and executive officer of the passenger liners America and United States. He is a lieutenant, retired, in the United States Naval Reserve.

United States Lines operates a fully containerized Tri-Continent service between Europe, the United States, Hawaii, Guam and the Far East, utilizing an all-modern fleet of 16 high-speed high-capacity containerships.

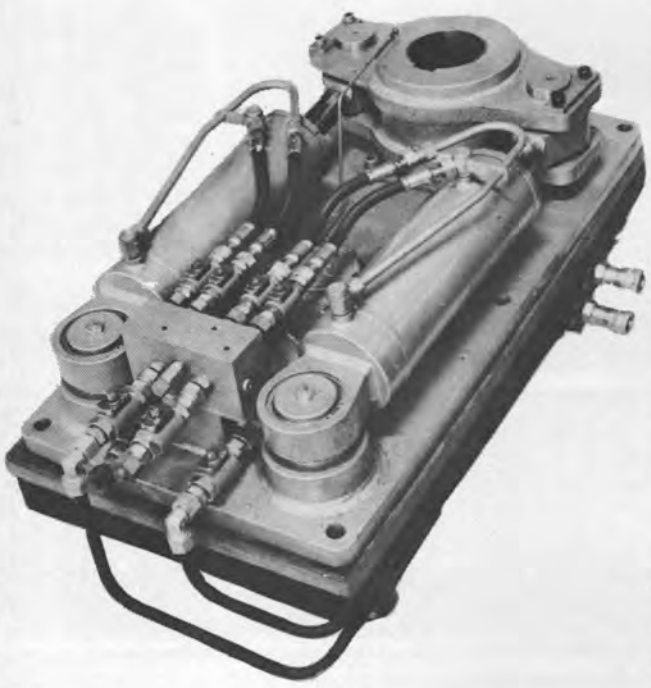
Esso Orders Four Tankers From IHI

Contracts have been signed between Esso Tankers Inc., an affiliate of Exxon Corporation, and Ishikawajima-Harima Heavy Industries Co., Ltd., Japan, for the construction of four 34,000-dwt fuel oil product carriers.

The diesel engine powered tankers, which are scheduled to be constructed by IHI at its Tokyo shipyard, will be delivered in 1975. They will be used in international tanker service.

Servi HYDRAULICS

STEERING GEARS



SERVI steering gears fit boats from 8 to 80 meters—rudder stock diameters up to 300 mm.—rudder torque up to 20 tm.

The actuators are one- or two ram types—also twin rudder actuators in the same sizes are available.

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Marathon Elects Croy To Board

Clifford B. Croy

Clifford B. Croy, a senior vice president of Marathon Manufacturing Company of Houston, Texas, has been elected a member of Marathon's board of directors.

Marathon Manufacturing is primarily engaged in the manufacture of industrial metal products. The firm is a major builder of mobile offshore drilling rigs.

Mr. **Croy** was elected to the post by Marathon stockholders during the regular annual meeting held in Houston. His election brings Marathon's board membership to 10.

Announcement of Mr. **Croy's** election was made by **Wayne D. Harbin,** president and chairman of the board of Marathon Manufacturing Company.

Alfred C. Bruggemann Appointed President Perth Amboy Dry Dock

Alfred C. Bruggemann

The board of directors of Perth Amboy Dry Dock Company, Perth Amboy, N.J., have announced the appointment of **Alfred C. Bruggemann** as president, succeeding the late **Martin A. Ansbro.**

Mr. **Bruggemann** was previously vice president, and he brings more than 30 years of shipyard experience to his new position. His career dates back to the early 1940s, when he started with the old Atlantic Basin Iron Works.

Subsequently, he served several years in the South Pacific with the U.S. Air Force and, after World War II, a number of years with the Ben Lockett Ship Repair Yard, participating in all forms of ship maintenance, repair and overhaul.

Prior to his service with Perth Amboy, Mr. **Bruggemann** spent eight years with Hudson Engineering Company as the Government work and contract supervisor and estimator.

Perth Amboy Dry Dock Company was founded in 1887 and, over the decades since its inception, has been an important entity in the ship repair capabilities of the New York harbor area. The yard specializes in all types of ship repair, overhaul and maintenance and is presently undergoing a major conversion, adding a new 1,000-foot pier and dredging the basin area to permit maximum utilization of its drydock facilities.

Seaboard Shipping Appoints Capt. McVay

Capt. **Russell George McVay** has been appointed manager of the Seaboard Shipping Company, a Moran oil barge transportation subsidiary in New York, it was announced by **Thomas E. Moran,** president of the Moran Towing Corporation.

A graduate of the U.S. Merchant Marine Academy at Kings Point, N.Y., where he specialized in nautical sciences, Captain **McVay** has devoted his career to tug/oil barge operations since 1964.

Beginning at the helm of Moran's offshore tugs in 1964, Captain **McVay** was eventually assigned managerial duties with Moran's operations in Baltimore, Md., in 1969. He will be headquartered at One World Trade Center, New York, N.Y.

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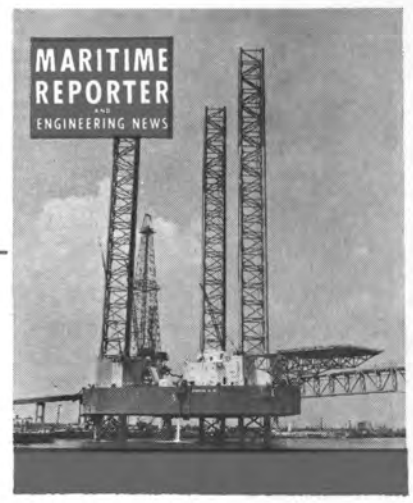

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DIESEL GENERATOR SETS

1

350 KW DIESEL GENERATOR SET

350 KW—120/240 volts DC—600 RPM—compound wound G.E. generator with switchgear. ENGINE: Ingersoll-Rand—heavy-duty type S—505 HP—10½x12—reconditioned to ABS.

2

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.

3

EMERGENCY GENERATOR SUPERIOR 75KW 120/240 VOLT D.C. DIESEL GENERATOR SET

With switchgear. ENGINE: Radiator cooled Superior GBD-8—6 cylinder—1200 RPM GENERATOR: Electric Machinery Co.—120/240 volts DC—316 amps—1200 RPM—stab. shunt.

4

UNUSED 10 KW SUPERIOR DIESEL GENERATOR SET

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

5

500 KW—120/240 VOLT DC DIESEL GENERATOR SET EQUAL TO NEW

GENERATOR: Allis Chalmers—Compound wound. Has Class "A" insulation. Output 500 KW—120/240 volts DC—2080 amperes—720 RPM—drip-proof—self-cooling. Ambient 50°C—temperature rise 40°C. ENGINE: Model GM 8-278—2-cycle—Vee type—8½"x10½"—air starting—720 RPM. Complete with switchgear. Condition very good. Stilll aboard naval vessel. Has Ross shell & tube type lube oil & raw coolers—temp. control valve—shock mounts.

6

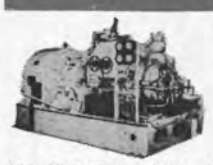
300 KW DIESEL GENERATOR SET

ENGINE: G.M. 6-278—6-cylinder—2 cycle—8¾"x10½"—750 RPM—with oil and water Ross Shell and Tube Heat Exchangers, instrument panel, pyrometer, etc. Vibro Isolators.

GENERATOR: G.E. 300 KW—120/240 volts DC—1250 amps—shunt wound—continuous overload rating 375 KW—2 hours—55° Weight of unit approximately 26,000 pounds. Complete with shock mounts. Unit 13' 2" long, 64" wide, 8' high.

TURBO GENERATOR SETS

7



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400 KW (500 KVA)—80% PF—1200 RPM—450/3/60. TURBINE: 585 lbs—840°TT—28½" vacuum—9018 RPM—serial 10A4462-3 & 10A4462-4. GEAR: 9018/1200 RPM. A.C. GENERATOR: 500 KVA—400 KW—450 volts—641 amps—80%PF—3 phase 60 cycle—1200 RPM—CR 40°—excitation amps 41—excitation voltage 120. Instruction book 5442. Switchgear available.

8

UNUSED 300 KW—240 VOLT DC WESTINGHOUSE LOW-PRESSURE TURBO-GENERATOR SET

GENERATOR: 300 KW—240 VDC—1250 amps—1200 RPM. GEAR: 5286/1200—frame 6x15—serial 10A-2612-4. TURBINE: Frame C-325—225 PSI—397° TF—5286 RPM—Serial 10-A-2611-4. Wt. 16,700 lbs.—complete in original factory crate.

9

LOW-PRESSURE UNUSED 300 KW G.E. 120/240 VOLT DC TURBO-GENERATOR SET

GENERATOR: 300 KW—120/240 VDC—1250 amps—1200 RPM. REDUCTION GEAR: 8.344:1—10012/1200 RPM—type S-182. TURBINE: DOR418N—449 H.P.—10012 RPM—working pressure 180/220 PSIG.

10

WESTINGHOUSE 440/3/60 200 KW UNIT

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

11

1250 KW G.E. 10-STAGE TURBO GENERATOR SET

TURBINE: 525—615 PSI—850°TT—7938 RPM—10-stage—type FSN. GEAR: Single helix—7938/3600. GENERATOR: 1250 KW—450/3/60/3600—.80 PF—type ATB with surface air cooler. Overload 25%—2 hours—1563 KW.

12

6 EQUAL-TO-NEW LATE TYPE 500 KW SHIPS SERVICE TURBO GENERATORS

1962—DeLaval. Very little use. Completely preserved with rotors and diaphragms crated separately. TURBINE: DeLaval—585 PSI—840°TT—6-stage—6391 RPM—class CD—Also suitable 440 lbs.—740°TT—25" vac. GEAR: 6391/1200 RPM. GENERATOR: Allis-Chalmers—450/3/60. Totally enclosed, with static exciter and voltage regulator system. Weight 17,665 lbs. Complete with latest dead front switch gear. Also available are the condensers, circulating and condenser pumps. All very up-to-date, compact construction. Turbines will easily handle 600 KW if up-grading is desired.

13

AP2 VICTORY WORTHINGTON-MOORE CROCKER-WHEELER 300 KW UNIT

TURBINE: 440 PSI—740°TT—28½" vacuum—type S4—5-stage—6097 RPM—serial 7547 & 7548. GEAR: 6097/1200. GENERATOR: 300 KW—120/240 volts DC—1250 amps—compound wound—973643—999759. Armature flange 8½"; B.C. 7"—12 holes. ALSO NEW ARMATURES IN STOCK & 300 KW SHUNT ARMATURES.

UNUSED C-4

CROCKER-WHEELER

500 KW

GENERATOR ENDS ONLY

120/240 VOLTS D.C.—1200 R.P.M.

FORMERLY USED WITH WORTHINGTON-MOORE TURBINES & GEARS

14

Upgraded by U.S. Navy—rewound in glass. Generator Frame and Armature—Marine 500 KW type 3-1200—dripproof enclosure—base mount. Modified from Crocker-Wheeler generator frame 152HD—240/120 volts DC—2083/521 amps—1200 RPM. Ambient temperatures 50°C. APPLICATION: For C-4-SA1; C4-SA-3; T-AP-134 vessels, using Worthington-Moore Turbine—Form S-6 and generator Form 14 x 10. No pedestal bearing.

15

WESTINGHOUSE 400 KW TURBO-GEN 835 LBS—840°TT

Newport News Hulls 480—541 Esso ships. TURBINE: Westinghouse 835 lbs/840°TT—9018 RPM—6-stage—instruction book 1430-C1—serial 5A-7090-7 & 8. GEAR: 9018/1200 RPM. GENERATOR: Westinghouse 400 KW—440/3/60/1200 RPM—rewound field—instruction book 5442. EXCITER: 5.5 KW.

TWO 538 KW WESTINGHOUSE T-2 AUX. GENERATORS

(COMPLETE)

16

TURBINE: 538 KW @ 5010 RPM—438 PSIG—750°TT—28½" vacuum. GEAR: 5010/1200 RPM. A.C. GENERATOR: 400 KW 450/3/60/1200—0.8 PF. DC EXCITER: 32.5 KW—120 volts (variable voltage)—shunt—4-pole—DC excitation 5 KW. ALWAYS WELL MAINTAINED BY MAJOR OIL CO.

TURBINES & ROTORS

MAIN PROPULSION

17

BETH. CLASS—13,600 H.P.

Sparrows Point & Quincy 1600 hulls. H.P. turbine casing only. Excellent blading & labyrinth packing.

KNOWN 'ROUND THE WORLD

THE BOST

313 E. BALTIM

Main Office: (301)

18

H.P. & L.P. COUPLINGS

1 Set—for Beth Class 13,600 HP 4400 hulls and Quincy 1600 hulls.

19

G.E. 6690 HP @ 7062 RPM HIGH PRESSURE 8-STAGE TURBINE

835 lbs—840°TT—#83341—originally built for Esso Christobol—Newport News.

T-2 TURBINES & ROTORS

20

COMPLETE WESTINGHOUSE T-2 MAIN TURBINE—UNSHROUDED 6600 HP—435 PSI—750°F 28" VACUUM—3720 RPM

Instruction book IB-8345—type D—serial No. 5A-2124-6—unshrouded. Unit complete with all packing, stationary blading, linkage, governors, diaphragms, nozzles, etc. WILL SELL ROTOR SEPARATELY OR COMPLETE TURBINE CASING & ROTOR. Always well maintained by major oil company.

21

2 COMPLETE T-2 G.E. TURBINES

#61818 and #61834—large Lynn—all stages magnafluxed.

ROTOR WILL INTERCHANGE WITH ELLIOTT MAIN TURBINE

Will Sell Rotors Separately

22

T2-SE-A1 MAIN PROPULSION ROTOR—G.E.

Large Schenectady—serial 77418—reconditioned Bethlehem Steel 1970—all stages magnafluxed.

23

T-2 TANKER

UNUSED—4 UNITS AVAILABLE

AUX. G.E. TURBO GEN. ROTORS

DORV—325M—5645 RPM—for 525 KW G.E.

VICTORY SHIP TURBINES & ROTORS

24

8500 H.P. 8-STAGE TURBINES FOR LARGE VICTORY SHIPS

L.P. – 3509 RPM

H.P. – 6159 RPM

LP Serial #77943—HP Serial #77942—Interchanges Ingalls C-3—Class 442 & Sun C-4 vessels—U.S. Navy Victory "Liberty".

LP Serial #72272—HP Serial #72271—Interchanges Ingalls C-3—10 boxes of spares.

LP Serial #62042—HP Serial #62043—GEI 16263—Ridgeway Victory.

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39-1900 Marine Dept.: (301) 355-5050

25 VICTORY SHIP AP2 H.P. & L.P. TURBINES
NEW — UNUSED — 6000 HP SETS
G.E.—H.P. & L.P.—with throttle valve
Westinghouse—L.P.—with throttle valve
Allis-Chalmers—H.P. & L.P.—with throttle valve

26 6000 H.P. G.E. — NORTH CAROLINA C-2
H.P.—8-stage—serial 78040
L.P.—7-stage—serial 78043
G.E.I. 16262

27

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.

28

G.E. 8500 H.P. REDUCTION GEAR FOR LARGE AP3 VICTORY & C3
MD-48A—8500 HP—6159/3509/763/85 RPM.

29 ALSO 6000 H.P. VICTORY AP2 REDUCTION GEAR
Westinghouse 4A-1640.

PUMPS

30

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 condition.

31 CARGO PUMP TURBINES
WESTINGHOUSE
One set of gears available for Westinghouse C-25 Cargo Pump Turbine.

32

UNUSED DELAVAL 24.5 H.P. LUBE OIL PUMP
Turbine-driven main lubricating oil pumps — vertical rotary with horizontal worm geared turbine drive. 575# Steam pressure—5000 RPM—15# back pressure. GEAR: 5000/1035 RPM. PUMP: 550 GPM at 50 PSI—suction lift 10.0". Suitable for Fletcher Class Destroyer. DD 445 Class.

33 NEW TURBINE DRIVEN FIRE AND GENERAL SERVICE PUMP

Allis-Chalmers 6x5 pump, type SKH—1200 GPM—125 PSI—3500 RPM. Coppos turbine type TF-22-2½ — 3500 RPM. 273#—50° superheat.

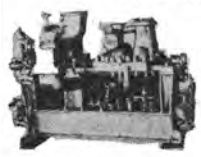
TURBINE DRIVEN BOILER FEED PUMPS

Suitable for Navy and Merchant Vessels

34

COFFIN TYPE D.E.B. TURBO FEED PUMP
CAPACITY: 350 GPM—2600' total head. Steam 845 PSIG—temp. 575°F TT—exhaust 42 PSIG—HP 396—RPM 8030—rated design 10,000 RPM. Serial #51-143-37. Suitable for tankers 25,000 GT and up.

35 UNUSED DD445 CLASS WORTHINGTON TURBINE-DRIVEN FEED PUMP



Worthington — drawing SL5043—425 GPM—1675' total dynamic head—5000 RPM 3-stage — double suction. Flanged 4½" inlet—4" outlet. Powered by Sturtevant steam turbine—282 HP—590 PSI. For Fletcher DD-445 Class Destroyers.

36 INGERSOLL-RAND BRONZE CARGO PUMP
10GT—4500 GPM at 125 lbs.—2-stage—size 14x12.

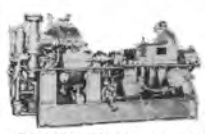
37

BUFFALO SIZE 4 FEED PUMPS
Terry Turbine—BM—273 HP—550 RPM—exhaust 15 lbs—590 PSI—superheat 0°—425 GPM Buffalo Pump—discharge pressure 750 lbs—5"x4"—built for USN DD destroyers. DD 445 Class Fletcher.

38

WORTHINGTON 16"x14"x18" VERTICAL DUPLEX STRIPPING PUMP
1400 GPM @ 110 PSI—suction lift 11.5 ft.—steam back pressure 15 lbs. Suction 14" — discharge 10"—steam 2½" — exhaust 4". Overall width 6'8"—overall height 9'11½" — depth 3'9½"—wt. approx. 10,000 lbs.

39



WORTHINGTON 3-STAGE UNUSED BOILER FEED PUMP
PUMP: 5" Worthington—460 GPM @ 750 PSI—5000 RPM—305 HP—steam flow 8052/hr—26.4 lbs HP hr. TURBINE: Sturtevant C-22—type 21—575# dry saturated steam—15 lb. back pressure—259°F water temperature—15 lbs/inch suction pressure.

MISCELLANEOUS

REDUCTION GEARS for Diesel Drive

40

3200 HP DOUBLE INPUT SINGLE OUTPUT DIESEL REDUCTION GEARS 20 DEGREE OFFSET
Farrell-Birmingham — 3200 SHP. REDUCTION GEAR: 1.81:1—handles two 1600 HP diesels @ 720 RPM. With hydraulic couplings & Fawick clutch. Port and starboard. Gear output 400 RPM. Suitable for dredge pumps. Non-reversing. OK for 38D8-⅛ engine.

41 IN LINE GEARS
Farrell-Birmingham 3200 HP non-reversing — from seaplane tenders. Ratio 1.867:1. Complete with hydraulic couplings, etc. Will handle two 38D8-⅛ FM diesels. Has Fawick clutch.

42 2100 HP DOUBLE INPUT SINGLE OUPUT GEARS
Farrell-Birmingham — heavy duty — originally built for 2 heavy-duty direct-reversing engines —300 RPM—1050 HP each. Ratio 3.435:1.

43 SINGLE ENGINE REDUCTION GEAR
Farrell-Birmingham — non-reversing—1600 HP at 2.4909:1. With hydraulic couplings.

44

NEW—UNUSED 1-5/16" IDEAL ANCHOR WINDLASS
Made by Ideal Electric Co.—with spares. Double wildcat—1 5/16"—15 HP—115 volts DC—1750 RPM—all controls—two outboard gypsies. Wildcat 36" between centers—6000 lb line pull at 50 FPM. DIMENSIONS: O.A.W. over gypsies 84"—OAL 81". Will sell windlass without power if desired.

45 ANCHOR WINDLASS
Hyde 2-11/16" — 12x14 — 100 PSI — steam — 54,100 lbs.

46

SHARPLESS LUBE & DIESEL OIL PURIFIERS
Type M-34-W22-UM—15,000 RPM. BOWL MOTOR: 2 HP—230 volts DC—8.5 amps—3450 RPM—250 to 300 GPH. Originally built for C-1-A diesel vessels.

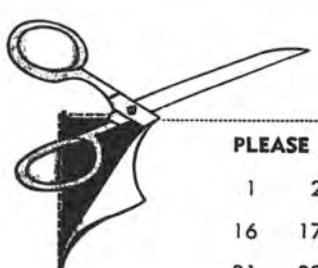
47

UNUSED 1135 SQ. FT. C.H. WHEELER CONDENSER
20" Ex. inlet—⅝" Cu-Ni tubes—with or without air ejector.

48

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

INQUIRE FOR ALL OTHER ITEMS
Forced draft blowers, reduction gear parts, bilge and ballast pumps, main circulators, general service pumps, F.O. transfer pumps, lube oil service, standby feed pumps, condensate pumps, aux. circulating pumps, feed water heaters, wash water pumps, etc.



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

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

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

P.D. Marchessini & Co. Names de Smedt President

A. Theodore de Smedt has been named president of P.D. Marchessini & Co. (New York) Inc., according to an announcement by **Alexander P. Marchessini.** Mr. **de Smedt** formerly held top executive positions with a number of other ocean steamship companies—most recently, Prudential-Grace Lines.

P.D. Marchessini is the United States general agent for Marchessini Lines and, according to the report by the company, Mr. **de Smedt** will join the executive management group in directing the worldwide liner and tramp ship operations of Marchessini.

Ocean And N.S.U. Form Joint LNG Company

Ocean Transport & Trading and N.V. Nederlandsche Scheepvaart Unie have formed a joint company in Belgium, N.V. Gastransco S.A., which will develop the marketing of liquefied natural gas transport.

So far, member companies of the Ocean and N.S.U. Groups, respectively, have each ordered one 120,000-cubic-meter LNG vessel from Chantiers de L'Atlantique, St. Nazaire, France. These sister vessels, which will be delivered in 1976 and 1977, are of the Gas Transport Membrane type and will be capable of a speed of 19 knots. The Gas Transport system is that used successfully in the Polar Alaska and the Arctic Tokyo running from Alaska to Japan. It is also being installed on three of Shell's new 75,000-cubic-meter ships on the Brunei-Japan run.

Managing director of the new company is **B.B.G. Lagers,** a deputy-member of the N.S.U. board of executive directors. General manager is **P.D. Graham** from the Ocean Group. Technical and commercial manager, respectively, are **G.J.W. Van de Weert** and **H. Heyligers,** both from N.S.U.

Gastransco's officers are in Antwerp, Belgium.

Jamesbury Names Marine Representatives

Three organizations have been named marine representatives for Jamesbury Corporation, Worcester, Mass. The new representatives are: M.J. Gigy & Associates, Inc., P.O. Box 750, San Pedro, Calif. 90733; Alexander Marine Associates, Inc., 1901 Julia Street, New Orleans, La. 70113, and Tate Temco, Incorporated, Carey & Ward Streets, Baltimore, Md. 21230.

Each organization will be handling Jamesbury's full lines of Double-Seal ball valves and high-performance Wafer-Sphere butterfly valves, including Coast Guard approved positive shut-off butterfly valves and cryogenic valves suitable for LNG applications. Jamesbury valves are being offered for either manual or automatic operation.

David W. Warner Joins Jones, Bardelmeier

David W. Warner joined the Nassau, Bahamas-based ocean bulk shipping consulting firm of Jones, Bardelmeier & Co. Ltd. on June 1, 1973, as senior consultant-New York. Until May 31, 1973, Mr. **Warner** was manager-administration in the Physical Distribution Group of International Paper Company in New York, and had been involved in the planning and operation by I.P.C. of marine and transportation activities, including the charter and regular use of LASH, ro/ro, and container vessels.

Jones, Bardelmeier & Co. Ltd., founded in 1963 by several former executives of major U.S.-owned shipping companies, has subsequently been retained by or conducted special project shipping studies for approximately 100 companies throughout the world with an interest of one nature or another in the large volume movement of liquid and dry bulk commodities by sea.

With the addition of Mr. **Warner** to Jones, Bardelmeier & Co. Ltd., **Roger M. Jones,** president, stated: "Mr. **Warner** will add a new dimension to our consulting services, as his experience with LASH, ro/ro and container and intermodal systems should be of great assistance to certain of our clients."

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Between Suez and Japan, Sembawang Shipyard in Singapore is the centre for Total Service. Check this list of repair, maintenance and Marine engineering back-up facilities. Couple the list with the expertise of a 3,500 strong highly skilled work-force and you are on the way to speedier, less costly service. Call Sembawang for more facts.

DOCKS: Graving Dock of 100,000 tons. 5 Floating docks from 1,000 tons to 30,000 tons. A 400,000 tons Graving dock under construction.

BERTHS: 1,524 metres of sheltered repair berths with 12.2 metres of water.

CRANAGE: 24 Docks and berths cranes of up to 30 tons lift. Floating crane of 152.4 metric tons.

WORKSHOPS: 22 Hectares of workshops offering complete engineering facilities within the Shipyard.

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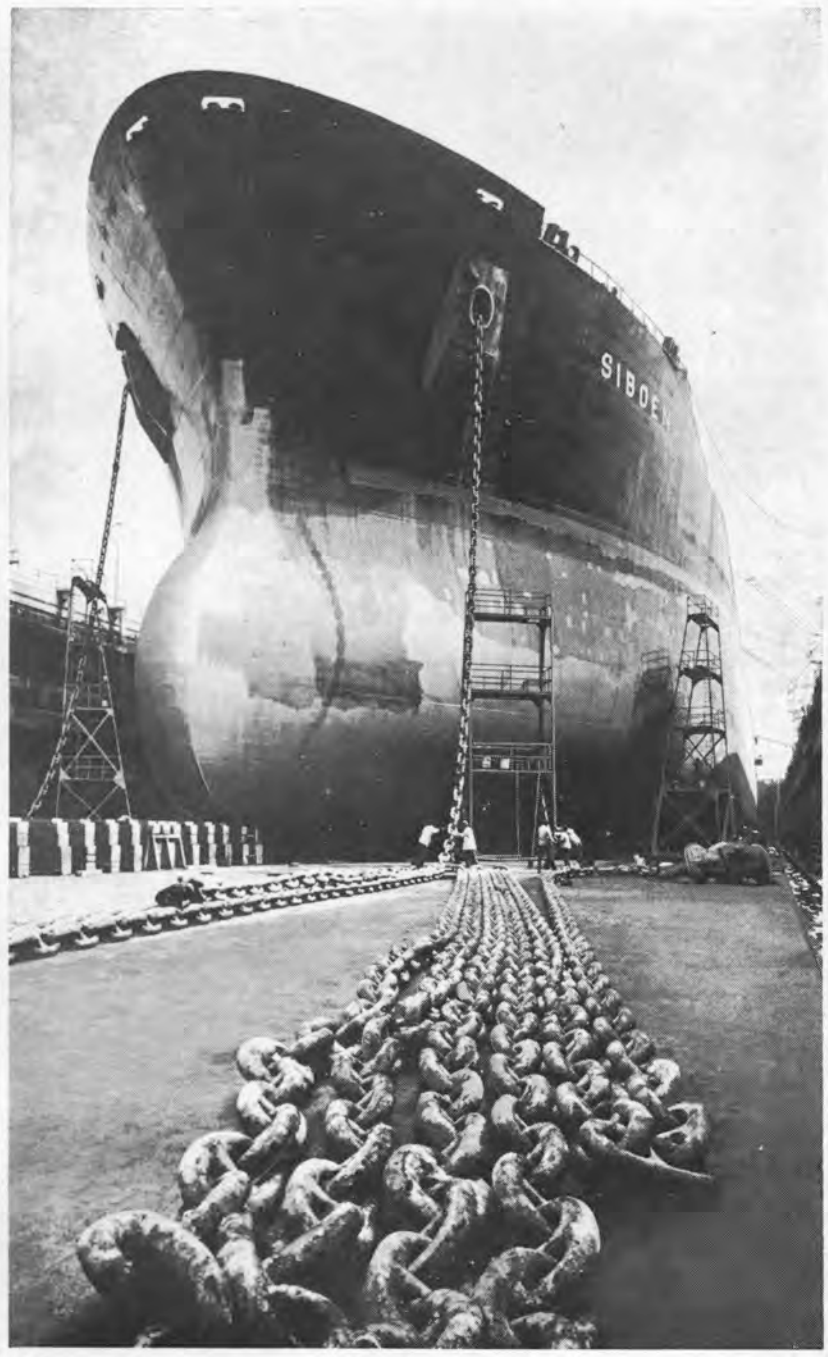
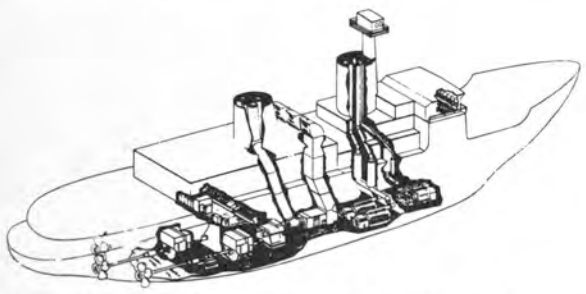
Sembawang Shipyard SINGAPORE



Philadelphia Gear Furnishes Gear Drive For World's Most Powerful Icebreaker

When the 400-foot, 12,000-ton icebreaker Polar Star goes into service for the U.S. Coast Guard next year, it will be outfitted with three Philadelphia Gear 20,000-hp marine gear drives weighing 220,000 pounds each. The unique vessel, under construction at Lockheed Shipbuilding and Construction Co., Seattle, Wash., will have 1½ times the power of the Soviet Union's Lenin, presently the most powerful icebreaker afloat. Philadelphia Gear Corporation has recently received an order for three more propulsion gears for a sister ship, with delivery in the 1973-74 production schedule.

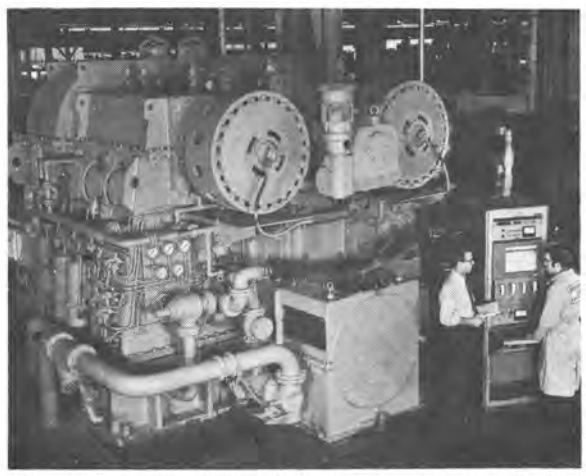


The 400-foot 12,000-ton U.S. Coast Guard icebreaker Polar Star will be outfitted with three Philadelphia Gear 20,000-hp marine gear drives weighing 220,000 pounds each.

The triple-screw propulsion system on the Polar Star, with each shaft powered by a Turbo Power & Marine Systems gas turbine, will develop a total of 60,000 shaft horsepower in icebreaking configuration. This is enough to break ice six feet thick continuously or to ram through 21 feet of ice. Philadelphia Gear designed the double reduction locked gear trains large and sturdy enough to be able to withstand the extreme service demanded—200 percent torque loading during low-speed icebreaking and 250 percent torque or a peak load of 50,000 shaft horsepower for one-second cycles.

The company used vacuum degassed alloy steel forgings which were specially heat-treated to rigid standards so they would assure the high strength of teeth and core needed to handle the severe loading. Among the gears in each icebreaker drive was a 20-ton bull gear 135 inches in diameter.

Philadelphia Gear subjected the three icebreaker gear drives to a rigorous test program in order to assure meeting the extreme load and speed conditions. First, both static and dynamic clutch tests were initiated, including simulated dead shaft pickups. Other important tests included a 24-hour full-load test with the torque locked in at 3,600 rpm, and a spin test 20 percent over the maximum rated speed of 4,320 rpm.



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Dynamic balancing one of the three 20-ton bull gears for the icebreaker drives. Each gear was 135 inches in diameter and was tested to specification Mil-Std-167.

EQUITABLE-BUILT BAUXITE BARGES: Equitable Equipment Company, Inc., New Orleans, La., has delivered the last two of three bauxite barges under a $1-million contract by Aluminum Company of America for the account of Suriname Aluminum Company. The new barges, shown above, identical to one built in late 1970 for the same interests, have overall dimensions of 195 feet by 50 feet by 17 feet. They were built at Equitable's Madisonville, La., shipyard. The new bauxite barges are of the open hopper type of double-skin construction with loaded drafts of 16 feet. The cargo compartments of each is 120 feet long, 40 feet wide, and 18.5 feet high to the top of the coaming. Heavily constructed, the barges are designed to provide containment for a cargo density of 125 pounds per square foot, as well as to withstand the pounding of clam shell unloading methods.

Electro-Nav, Inc. Named U.S. Distributor For Ericsson Marine Radio Equipment

Robert E. Negron, president of Electro-Nav, Inc. of 501 Fifth Avenue, New York, N.Y., has announced its recent appointment as exclusive United States distributor for the Ericsson line of marine radio equipment manufactured by the Elektrisk Bureau Division.

The EB 1500 Radio Station was introduced at the recent Mariport Show held at the Americana Hotel in New York City, and the OTC Show in the Astro Hall, Houston, Texas.

Mr. **Negron** stated that it will enhance its current line of electronic equipment, which includes radars from Decca, satellite navigation and doppler from Magnavox, radiotelephones from Motorola, clear view screens from Speich, collision avoidance from Automated Marine International, and many others.

The EB 1500 features a 1,500-watt synthesized transmitter which offers worldwide voice and wireless contact from the operator's office directly to the vessel. This equipment is currently on the QE 2 and the new Norwegian cruiseliner Vistafjord, as well as the newer tankers and freighters, totaling over 250 vessels at sea today.

1. UNLOCK

2. OPEN

TIME: 30 Seconds

Memarco
Rapid Action Deck Cover

The quick, simple way to seal deck openings. Forget about cumbersome studs and nuts. Our Rapid Action Deck Cover locks and unlocks in seconds. It fits a standard 12½" opening and is adjustable to any deck plate thickness up to 3".

All bronze construction makes it non-sparking. Buna-N seal makes it watertight. And, best of all, its removable, special wrench makes it theft proof.

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Dravo Completes Acquisition Of A.L. Mechling Barge Lines

Dravo Corporation has announced completion of the acquisition of A.L. Mechling Barge Lines, Inc., Joliet, Ill., and the consolidation of that firm with Union Barge Line Corporation, a subsidiary of Dravo.

The resulting new company will operate as Union Mechling Corporation, a subsidiary of Dravo, and will be headquartered in Pittsburgh.

Consolidation of the two barge lines was authorized by the Interstate Commerce Commission in an order released March 28, 1973.

Terms of the acquisition of A.L. Mechling Barge Lines and related companies were $3,960,924 in cash and 165,514 shares of Dravo Cumulative Convertible Series B Preference Stock.

Chief executives of Union Mechling Corporation are **C.E. Walker,** president; **F.A. Mechling,** executive vice president; **A.J. Brosius,** vice president-administration; **Dudley Coles,** vice president-marketing; **Alan H. Edwards,** vice president-engineering; **F.R. Markland,** vice president-finance; **H.G. Mechling,** vice president-maintenance; **John W. Oehler,** vice president-sales, and **A.D. Osbourne,** vice president-operations.

The new firm has 535 employees.

Mr. **Walker** said the consolidation would be carried out smoothly and with no interruption in present operations.

Combination of personnel, floating equipment, terminals and other facilities of both firms will result in better service to the shipping public, he said, through improved utilization of equipment and closer coordination of schedules.

Mechling, which was established in 1920, had a fleet of eight towboats and tugs and more than 260 barges. It operated primarily between the Illinois area and the Gulf Coast, including Tampa, and with full common carrier rights for immediate points and certain tributary waterways and specific commodity rights to the West Coast.

Robert Dickey III (seated, right), president and chief executive officer of Dravo Corporation, signs the agreement for the acquisition by Dravo of A.L. Mechling Barge Lines, Inc. and its related companies. The Mechling assets were then consolidated with those of Union Barge Line Corporation, a Dravo subsidiary, to form Union Mechling Corporation. Looking on from A.L. Mechling Barge Lines are **A.L. Mechling** (seated, left), chairman; **H.G. Mechling,** vice president, and **F.A. Mechling,** executive vice president; from Dravo, **L.P. Struble Jr.,** group vice president; and from Union Barge Line, **C.E. Walker** president.

Mechling also operated a public terminal and warehouse in Chicago; terminal, repair and drydock facilities in Joliet, and barge painting and fleeting facilities in Lemont, Ill. It also owned a 514-acre area for industrial development along the Illinois Waterway at Seneca, Ill. Sales offices were maintained in Chicago, Houston, Joliet, New Orleans and Tampa.

In 1972, Mechling and related companies reported revenues of $15,165,403.

Union, founded in 1928, owned a fleet of nine towboats and about 400 barges. It operated principally between the Ohio Valley and the Gulf Coast, with full common carrier rights on certain tributary waterways, including the Arkansas Waterway. Union reported revenues of $17,587,990 in 1972. Union's sales offices were in Pittsburgh, Houston, Memphis, New Orleans, New York City and St. Louis.

Union Mechling will maintain sales offices in all cities where its predecessor companies had offices.

SERVICE

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ANOTHER PLUG FOR THE TRADE DRAIN.

For U.S. vessels to compete successfully with foreign-flag ships for the carriage of U.S. foreign trade, they've got to be highly productive.

Converting break-bulk freighters into containerships is an effective way of making them more productive.

And that's exactly what Lykes Lines asked Todd to do for 13 of their freighters.

Hull-cutting, plug construction and reassembly add 97 feet to each vessel, enabling them to transport 166 containers in addition to break-bulk cargo.

The Lykes awards bring to 62 the number of freighters for which Todd has received conversion contracts from U.S. flag operators during the past decade. Which is kind of a nice "plug" for Todd.

Talk to TODD

TODD SHIPYARDS CORPORATION: New York • Brooklyn • New Orleans • Galveston • Houston • Los Angeles • San Francisco • Alameda • Seattle.
Executive offices: One State Street Plaza, New York, New York 10004. (212) 344-6900. Cable: "Robin" New York.

NASSCO Begins Construction On First Of Three Tankers

Dignitaries present for the keel-laying ceremony included, left to right: **Walter Oates,** Public Affairs Officer, U.S. Department of Commerce, Maritime Administration; **John M. Murphy,** vice president, sales, National Steel and Shipbuilding Company (NASSCO); **William T. Egan,** vice president, administration, NASSCO; **John Fenton,** owner's construction representative, Aeron Marine Shipping Company; the Honorable **Howard F. Casey,** Deputy Assistant Secretary of Commerce for Maritime Affairs; **John V. Banks,** president, NASSCO; **John B. Letherbury,** vice president engineering, NASSCO; **Oliver T. Henry,** Southern California Area Representative, U.S. Department of Commerce, MarAd; **John McQuaide,** vice president, yard operations, NASSCO; Comdr. **Raymond W. Bernhardt,** USCG, O.I.C. Marine Inspection; **Ed Gagne,** representative, American Bureau of Shipping, and **Thomas M. McGeoghegan,** Construction Representative, U.S. Department of Commerce, MarAd.

The 70-ton keel section of the first of three 89,700-dwt tankers for Aeron Marine Shipping Company was laid May 22, 1973, at the San Diego shipyard of National Steel and Shipbuilding Company (NASSCO).

Participants in the ceremony included **Howard F. Casey,** Deputy Assistant Secretary of Commerce for Maritime Affairs, in the role of keel-layer; **John Fenton,** owner's construction representative, Aeron Marine Shipping Company; **Walter Oates,** Public Affairs Officer, U.S. Department of Commerce, Maritime Administration; **Thomas M. McGeoghegan,** MarAd Construction Representative; **Oliver T. Henry,** Southern California Area Representative, U.S. Department of Commerce, MarAd, and **John V. Banks,** president, National Steel and Shipbuilding Company.

The new tanker, NASSCO Hull No. 390, MarAd designation T8-S-1004, will be the largest ship built by NASSCO and the largest ever built on the West Coast.

Designed by NASSCO as the San Clemente Class oil carrier, the new ship will be 89,700 dwt, 894 feet length overall, 105 feet 9 inches in beam, and have a molded depth of 62 feet (the maximum size that can transit the Panama Canal). This class of ship incorporates unique pollution abatement features such as a double bottom and high-capacity clean ballast system.

Propulsion is by a geared steam turbine plant which is capable of being operated continuously at 24,500 shaft horsepower. The latest in automation has been designed in the ship's operational controls. A console in the engine room provides remote control of the plant after start-up, and a console in the wheelhouse controls engine speed and direction.

The new ship is scheduled to be launched February 2, 1974, and delivered July 12, 1974. The second and third ship of the group will be delivered in March 1975 and October 1975.

The contract for the three new oil carriers awarded in July 1972 represents the third group of bulk carriers to be built under President **Nixon's** new Maritime Program at NASSCO. A contract for two oil-bulk-ore carriers was awarded in June 1971 and a contract for three tankers was awarded in January 1972.

During March of 1973, NASSCO signed contracts for eight additional San Clemente Class oil carriers, increasing the total of bulk carriers to be built by NASSCO to 16. These contracts are subject to the availability of Federal subsidies.

The keel-laying ceremony was one of several marine events scheduled during the week of May 20 in connection with National Maritime Day (May 22). Other events included a memorial service dedicated to merchantmen lost at sea; National Maritime Day luncheon in which Mr. **Casey** was keynote speaker, and a Maritime Ball.

NASSCO is managed by Kaiser Industries Corporation and equally owned by Kaiser Industries Corporation and Morrison-Knudsen Company, Inc.

Participating in the keel-laying, left to right, **Fred M. Schrader,** welding foreman, NASSCO; the Honorable **Howard F. Casey,** Deputy Assistant Secretary of Commerce For Maritime Affairs, as keel-layer; **John V. Banks,** president, NASSCO, and **John Fenton,** owner's construction representative, Aeron Marine Shipping Company.

Engineer Claims Solution To Hazards Of Importing Oil

Robert Taggart, president of Sea Transfer Systems, Inc. of Fairfax, Va., has announced the development of a system for ship-to-shore transfer of supertanker cargoes without hazard to the shore environment.

Mr. **Taggart's** recently patented method and apparatus requires modifying supertanker design to permit the coupling of a large diameter hose between the stern of the supertanker and the bow of a shuttle tanker for the transfer of cargo while the ships are under way at sea.

According to Mr. **Taggart,** a naval architect and marine engineer, the primary hazard presented by tankers stems from the loss of maneuverability at the low speeds necessary while operating close to shore or in ports. By the transfer of cargo at sea via hose coupling, control can be maintained and the transfer made at remote distances from the shoreline and out of high density shipping lanes.

Sea rendezvous points can be selected to permit uninterrupted operation of the supertanker, in contrast to fixed transfer points which are vulnerable to weather conditions. Supertanker unloading time would be sharply reduced because of the large capacity of the connecting hose.

The hose element of the system would be stowed aboard the supertanker in a longitudinal centerline cylindrical tunnel which terminates at the end of the transport; it is fitted at the after end with a probe cylinder and float assembly, and fitted at the forward end with a sliding seal arrangement.

The transfer operation is accomplished by floating the hose from the stern of the supertanker to mate with the bow of the shuttle tanker, which is equipped with an inverted tapering-throated bulb for receiving the probe. A centrifugal pump mounted in the bulb throat draws the probe into a locking position. This pump serves both as a bow thruster, for close maneuvering control during mating operations, and as a cargo transfer booster pump when the probe is in place. The shuttle tanker is also equipped to exercise precise maneuvering control when it enters a port, a safety feature not possessed by most tankers now in operation.

Mr. **Taggart** asserts that the estimated multi-million-dollar cost of superports now under consideration is vastly greater than the comparatively nominal expense of ship modifications required for adaptation of his system.

Sea Transfer Systems, Inc. is located at 3930 Walnut Street, Fairfax, Va. 22030.

Gulf Mississippi Marine Corp. Names Richard M. Currence VP

Richard M. Currence has joined Gulf Mississippi Marine Corporation, a Louisiana-based company providing marine transportation to the offshore petroleum industry, as vice president, according to **Claude J. Autin,** president of Gulf Mississippi. In this new position, Mr. **Currence** will be primarily responsible for legal, administrative and related matters.

Mr. **Currence** is a 1964 graduate of Tulane University School of Law, and for the past six years has been employed by Tidewater Marine Service of New Orleans, most recently as administrative manager.

Gulf Mississippi, a subsidiary of St. Louis, Mo.-based Pott Industries, Inc., is the owner of a large fleet of tugs, barges and supply vessels serving the petroleum and related industries in the Gulf of Mexico and foreign areas.

KOCKUMS DELIVERS FIRST OF TWO: With the traditional ceremony marking the exchange of flags in Malmo harbor, Esso Petroleum Company Ltd. of London recently took over the Kockum-built 255,000-ton tanker Esso Demetia shown above. She is the first of two sister ships ordered by Esso London. The second ship will be delivered next month. The new tanker has the following approximate measurements: length overall, 1,117 feet; breadth, 170 feet, and depth, 84 feet. The Kockum-Stal-Laval turbine engines, type AP 32, developing 32,000 shp at 85 rpm, provided a contracted speed of 15.9 knots.

Baldt Anchor And Chain Opens Technical Center In Houston

Baldt Anchor and Chain has announced the opening of a Technical Center in Houston, Texas. In making the announcement, **A.S. Marzo,** chairman, emphasized that this is the first of a series of steps designed to provide better liaison with the offshore oil industry and shipyards in the Southwest.

The primary objective of this office is to provide technical assistance to area customers while staying abreast of new requirements in the very dynamic offshore oil industry. The importance Baldt places on this office is further emphasized by the fact that it will be headed by **C.D. Linnenbank**, division president, who will relocate to the Houston area.

The Baldt Technical Center Office will be located at 4600 Post Oak Place Drive, Suite 359, Houston, Texas 77027.

Washington Iron Works Promotes Joe Wilson

Joe Wilson, who joined Washington Iron Works, Seattle, Wash., in 1971, has been promoted to chief engineer, Material Handling Division, under **L.S. Commora,** vice president and general manager. Mr. **Wilson** was previously supervisor of mechanical engineering for Washington cableways and cranes, including construction, shipyard and container handling types.

Philadelphia Resins Occupies Second Plant

Philadelphia Resins Corporation has occupied a second 18,000-square-foot plant in the Montgomeryville Industrial Center, Montgomeryville, Pa., more than doubling space for production of the company's line of vibration damping materials, chocking compounds, glass-epoxy rope, coatings and adhesives for marine applications and general industry.

Since moving to Montgomeryville from Philadelphia in 1968, the company has expanded markets for its existing products, added new products, and established subsidiaries in England and France, and affiliates in other European countries, as well as in Japan, Australia, South Africa, and Latin America.

Plant No. 2 is being used for the manufacture of products originally developed for marine applications which are now broadly used in industry. These include damping products and a patented sprayable damping system for noise and vibration control, and Chockfast pourable chocking compounds for mounting and permanently aligning heavy equipment.

The damping products have been used by the U.S. Navy for 10 years. The Chockfast system has been approved by all of the major classification societies whose regulations must be adhered to in order to have vessels insured. Chockfast is now being used to replace metal chocks in heavy equipment installations throughout industry.

The new plant is also being used for the production of specialty products such as non-skid coatings, tailshaft coatings, and adhesives.

David H. Kollock III, president, says that the company's future plans include manufacturing operations in Europe and the Far East. **David P. Kollock** is vice president-operations.

Two 316,000-Dwt Tankers Ordered From Setenave Yards

Contracts for construction of two oil tankers of 316,000 deadweight tons each have been completed between the Setenave Shipyard Co. in Portugal and the Panamanian-based Kaszone Caribbean Corp. According to information received from Lisnave Shipyards, Inc., New York representative of the shipbuilders, the agreements were concluded earlier in June, with the delivery slated for the middle and end of 1977.

Setenave—more formally known as Estaleiros Navais de Setubal, S.A.R.L.—is still being built for its role of constructing oceangoing vessels. The report said that the first steel construction will be started in the beginning of 1974 and that the repair yard at the facility will start operations about one year later, in 1975.

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AWO HONORS FOUNDING MEMBERS: Founding members of The American Waterways Operators, Inc., the national association of the barge and towing industry, were honored in St. Louis, Mo. on May 24 in a special ceremony held in connection with the spring quarterly meeting of the board of directors. The association was founded in St. Louis in May 1944. Those founding members honored are still active in the association. First row (left to right): **H.G. Williams,** president, Gulf Atlantic Transport, Jacksonville, Fla.; **David A. Wright,** president, National Marine Service Incorporated, St. Louis; **F.A. Mechling,** executive vice president, A.L. Mechling Barge Lines Inc., Joliet, Ill., and **A.L. Mechling,** A.L. Mechling Barge Lines Inc., Joliet. Second row (left to right): **Jesse E. Brent,** president, Brent Towing Company, Inc., Greenville, Miss.; **Braxton B. Carr,** former president of the association; **James R. Smith,** president of the association; **T.F. Ellis Jr.,** president, Ellis Towing & Transportation Company, Galveston, Texas, and **Robert J. Hughes,** president, James Hughes, Inc., and chairman of the board of AWO. Other founding members of the association who were honored at the ceremony but who were not present when the photograph was taken were: **Frank E. Aiple,** president, Aiple Towing Company, Inc., Stillwater, Minn.; **Harry W. Anderson Sr.,** president, Anderson Petroleum Transportation Co., Inc., Houston, Texas; **Walter Baskerville Sr.,** chairman of the board, Upper Mississippi Towing Corporation, Minneapolis, Minn.; **Scott Chotin,** Chotin Transportation, Inc., New Orleans, La.; **Gerald D. Clower,** president, Harbor Towing & Fleeting, Inc., New Orleans; **Harry J. Collins,** president, Koch-Ellis Marine Contractors, Inc., Westwego, La.; **George P. Crounse Sr.,** chairman of the board, Crounse Corporation, Paducah, Ky.; **Bailey T. DeBardeleben,** vice president, Thomas & Thomas Enterprises, Inc., Metairie, La.; **Harry B. Dyer,** chairman of the board, Nashville Bridge Company, Nashville, Tenn; **C.W. Edwards,** Barge Transport Company, Inc., Houston; **Forsee (Jack) Estes,** president, Gnots, Inc., Kenner, La.; Capt. **H.G. Koch,** Koch-Ellis Marine Contractors, Inc., Westwego; **R.C. Meyer,** president, B & M Towing Company, Houston; **E.J. O'Donnell,** executive vice president, Chotin Transportation, Inc., New Orleans; **C.W. Rushing,** president, Missouri Barge Line Company, Cape Girardeau, Mo.; **A.L. Simms,** Simms Brothers Towing Company, Inc., Mobile, Ala.; **Ed A. Smith,** president, Alamo Barge Lines, Houston; **J.W. Von Herbulis,** president, Pittston Marine Corporation, New York, N.Y., and **C.G. Willis Jr.,** president, C.G. Willis, Inc., Paulsboro, N.J.

SNAME California Sections' Joint Spring Meeting

Shown at the joint meeting, left to right: **David R. Rodger,** San Diego Section, vice chairman; **Klemme Jones,** speaker (Global Marine); **E.F. Eton,** speaker (General Electric); **R. Schoen III,** speaker (Babcock & Wilcox); **R.A. Grams,** speaker (Babcock & Wilcox); Comdr. **R.W. Bernhardt,** USCG, papers chairman; **Melvin F. Good,** secretary-treasurer of the Section, and **G.A. Uberti,** chairman. **J.P. Murphy,** speaker (Global Marine), is not shown.

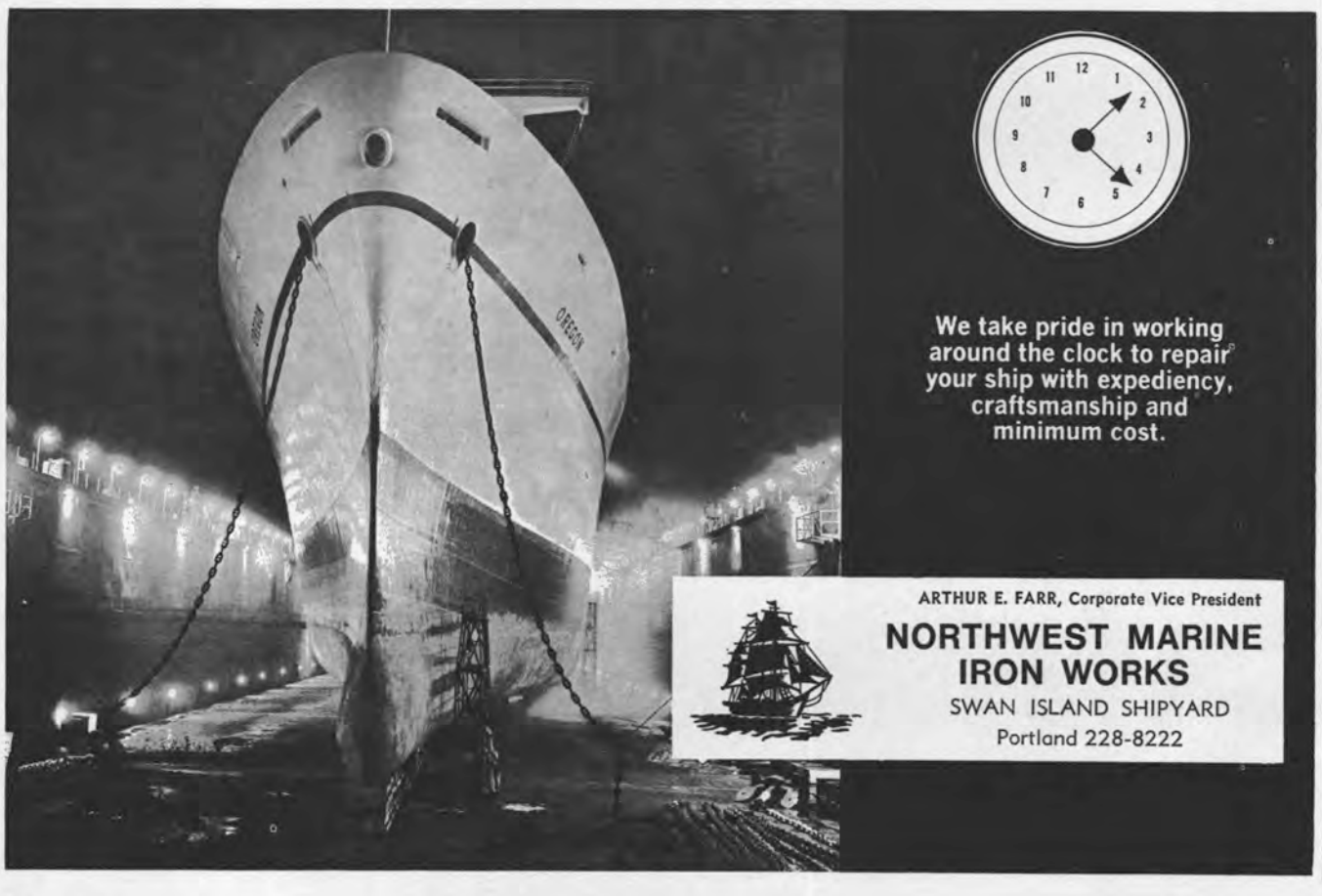
The San Diego Section of The Society of Naval Architects and Marine Engineers was the host for the recent joint spring meeting of the California Sections. The three-day meeting was held at the Sea Lodge Hotel in La Jolla, with the dinner-dance at the adjacent La Jolla Beach and Tennis Club.

The three-day meeting consisted of a hosted cocktail party on Friday evening, with Saturday morning reserved for the technical program, followed by a luncheon in the afternoon, and hosted cocktails and dinner-dance in the evening. Sunday was left as a free day so that guests and fellow members of the Los Angeles Metropolitan and Northern California Sections could enjoy the beautiful La Jolla seashore and surrounding areas of San Diego.

The Saturday morning technical program consisted of three very excellent papers as follows: (1) "Design Guidelines for Marine Boiler Specifications," by **R.A. Grams** and **R. Schoen III,** Babcock & Wilcox; (2) "New Developments in Large Shipboard Electric Systems," by **E.F. Eton,** General Electric, and (3) "PIPS—A New Technique in Ice Breaking," by **K. Jones** and **J.P. Murphy,** Global Marine.

The San Diego Section was privileged to have as its honored guest **John V. Banks,** president of National Steel and Shipbuilding Company in San Diego.

The women were treated to the annual St. James Home and Garden tour Saturday morning and then to luncheon in the afternoon at the La Valencia Hotel in La Jolla.



Steigerwald Named Hovermarine Controller

Dan E. Steigerwald has been named controller of Hovermarine Corporation, Pittsburgh, Pa.-based producer of commercial surface effect ships. He had been a certified public accountant with the firm of Jordan & Jordan, Portland, Maine.

A native of McDonald, Pa., and a graduate of Cecil Township High School. Mr. **Steigerwald** received his bachelor's degree from Pennsylvania State University and his M.B.A. degree from Dartmouth College. In addition to the Maine public accounting firm, he was also associated with the Girard Bank as a trust administrator, and the New Hampshire Ball Bearing Inc. as a cost accountant.

Mr. **Steigerwald** is a member of the American Institute of Certified Public Accountants, Data Processing Management Association, and Maine Society of Public Accountants.

Brown & Root Names W.B. Pieper Senior VP

W.B. Pieper

W.B. Pieper has been named senior vice president of Brown & Root, Inc., Houston, Texas, and five new vice presidents have been elected by the company's board of directors, according to **Herbert J. Frensley**, president and chief executive officer.

Brown & Root, a subsidiary of the Halliburton Company, is one of the world's leading engineering and construction companies.

The new vice presidents are **E.W. Hise** and **R.E. Nebel,** Heavy Construction Division; **Edward M. Marselli,** Business Development; **James C. Norris,** Petroleum and Chemical Engineering, and **J.T. Gossett,** Petro-Chemical Plant Construction.

Mr. **Pieper** joined Brown & Root in 1957, and has served in various positions for projects in Brazil, Libya, Nigeria, and the United States. He was named assistant manager of engineering, Marine Industries, in 1957, and was elected vice president, Marine Industries and Pipeline Engineering in 1972.

Born in Beeville, Texas, Mr. **Pieper** is a graduate of Rice University.

Subsidy Asked To Build And Operate Nine 80,000-Dwt Tankers

An application for both construction and operating subsidies for nine 80,000-dwt tankers has been filed by United Shipping Corp., 250 Park Avenue, New York, N.Y. The cost is estimated to be $32.5 million each. The owners would be one or more investors, who would then lease the nine tankers back to United for time charter.

Farrell Lines Appoints E.F. McIntyre To Direct Safety-Loss Prevention

Edward F. McIntyre has been appointed director of safety and loss prevention of Farrell Lines Incorporated, according to an announcement by the firm's president, **Thomas J. Smith.**

Mr. **McIntyre** has served both in the United States Navy and the U.S. merchant marine. In his new post, he will be responsible for the implementation and direction of Farrell Lines' safety program.

Tidewater Marine Reports Record Annual Revenues And Earnings

Tidewater Marine Service, Inc., New Orleans, La.-based marine transportation firm, reported highest revenues and earnings in its history for the year ending March 31, 1973.

Net earnings for the fiscal year were $7,914,142, or $2.03 per share, compared with $6,633,558, or $1.71 per share for the previous year.

Gross revenues for the current fiscal year were $59,940,145, compared with $58,917,126 a year ago.

Tidewater Marine chairman and president **John P. Laborde** commented that while the general level of offshore marine support activity worldwide was lower than a year ago, the company's growing number of new, larger vessels enjoyed profitable occupancy, contributing to overall performance. He added, tax advantages from the company's oil exploration and production ventures in Indonesia and high levels of safety and efficiency company-wide were also factors in the improved results.

Common shares outstanding for both years averaged approximately 3.9 million.

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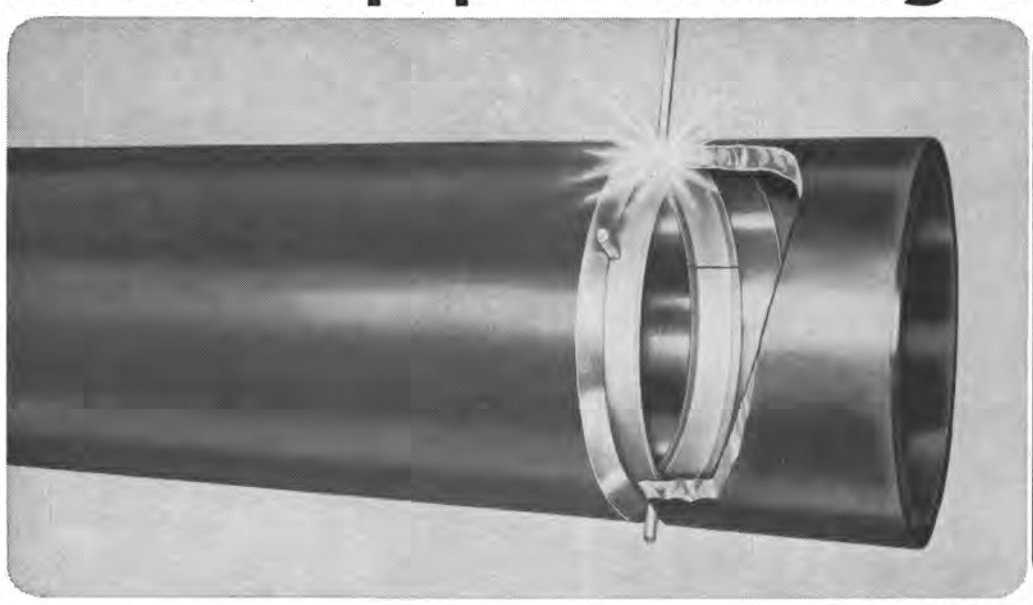

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American Delegation From U.S. Waterways Visits Soviet Union

A six-man team of American inland waterways experts embarked on a two-week visit to the Soviet Union on June 3 to compare the U.S. and Soviet river transportation systems.

Co-sponsored by the Maritime Administration and the Department of Transportation, the visit was part of a cultural exchange program arranged by the Department of State, under which a similar delegation from the Soviet Union toured the United States last year.

According to Assistant Secretary of Commerce for Maritime Affairs **Robert J. Blackwell**, who heads the Maritime Administration, the exchange will provide officials in both nations with up-to-date information on how the other realizes the transportation potential of its inland waterways network.

Specific areas of interest to the American delegation, which comprised both Government and industry representatives, include national waterways planning, port and waterway facilities, vessel operations, aids to navigation, and company management, Mr. **Blackwell** said.

Burton T. Kyle, Chief of the Maritime Administration's Office of Domestic Shipping, headed the U.S. team.

Members of the delegation from industry were **H.E. Breit,** president of Breit Engineering, Inc., a naval architectural firm; **Richard P. Conerly,** president of Pott Industries, Inc., the corporate parent of an inland barge line and shipbuilder; **John A. Creedy**, president of the Water Transport Association, and **James R. Smith,** president of The American Waterways Operators, Inc.

The other Government representative on the delegation was **William R. Riedel,** Chief of the U.S. Coast Guard's Ports and Waterways Planning Staff.

The delegation's itinerary included visits to seven cities in the Soviet Union — Moscow, Volgograd, Leningrad, Irkutsk, Bratsk, Novosibirsk, and Kiev.

Bertram Yacht Names Midwest Sales Mgr.

Patrick D. Cunningham

Bertram Yacht, Miami, Fla., has announced the establishment of a regional sales office in Detroit, Mich., and has named **Patrick D. Cunningham** as Midwest regional sales manager.

In making the announcement, **George Couzens,** general sales manager of Bertram Yacht, said Mr. **Cunningham** would direct the company's ambitious dealer development and sales management programs in the Midwest.

Mr. **Cunningham** has an extensive marine industry background, coming to Bertram from Mark Twain Marine where he served as district sales manager. He previously held a similar post with Chrysler Marine's boat and outboard division.

In addition to Mr. **Cunningham's** appointment, Mr. **Couzens** announced that **James C. Ramsey** has been promoted from regional sales manager to assistant sales manager, and would work out of the Miami, Fla., office in an administrative capacity.

Also promoted in the Bertram Yacht sales department were **James A. Schaefer,** named sales administrator, and **Veronica Patterson**, appointed assistant sales administrator.

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DINNER DANCE: The 23rd Annual Dinner-Dance hosted by the Philadelphia Section of The Society of Naval Architects and Marine Engineers was held at the Marriott Motor Inn, Bala Cynwyd, on May 19, 1973. The Commonwealth Banquet Room set the scene for 456 members and their guests to renew friendships and make new acquaintances while enjoying cocktails before dinner. Seated at the head table, clockwise, were: **T.P. Campbell,** chairman, entertainment committee; **Mrs. T.J. Kavanagh; T.J. Kavanagh,** vice chairman, Philadelphia Section; **Mrs. D.S. Champlin; D.S. Champlin,** past chairman, entertainment committee; **Miss Denise Duckworth; W.G. Neal Jr.,** chairman, Philadelphia Section; **Mrs. M.A. Morris; M.A. Morris,** member, executive committee, and **Mrs. T.P. Campbell.**

Texas Gas Names Hawkins To Post At Transfer Terminal Corp.

C.A. Hawkins Jr.

C.A. Hawkins Jr. has been elected vice president-sales of Transfer Terminal Corporation, part of the Inland Waterways Services Division of Texas Gas Transmission Corporation.

Announcement of Mr. **Hawkins's** promotion from his former position of sales manager at the division's Port of Louisville Terminal, was made at division headquarters in Jeffersonville, Ind., by **Floyd H. Blaske,** chief executive officer.

Transfer Terminal Corporation operates terminals serving waterways operators, shippers, business and industry at Louisville, Ky., on the Ohio River; Memphis, Tenn., on the Mississippi River; Joliet, Ill., on the Illinois River, and Guntersville, Ala., on the Tennessee River. Mr. **Hawkins's** primary responsibility is for Port of Louisville Terminal sales.

He is a native of Newport, R.I., and since 1953 has been an employee in the organization that now forms the Inland Waterways Services Division of Texas Gas. He joined the division's Jeffboat, Inc., as a sales engineer, served the division's American Commercial Barge Line Company as insurance claims supervisor in 1964 and 1965, and has been sales manager for Port of Louisville Terminal since July 1, 1965.

Mr. **Hawkins** attended the University of Maryland, majoring in mechanical engineering and minoring in business administration. He is also a graduate of the Preparatory Engineering School of Baltimore City College.

BARGED INTACT TO LONG BEACH: Three Paceco Transtainers® (container cranes) as high as a five-story building were recently loaded aboard a single barge at Alameda, Calif., and towed to the Port of Long Beach for service in the I.T.S. container terminal. The cranes were designed and built by Paceco, a Division of Fruehauf Corporation, for loading and unloading containers in a port terminal area. They can straddle six rows of containers and a truck roadway, and are able to stack containers four-high for maximum utility of the storage area. The new Transtainers are capable of lifting two 20-foot containers simultaneously, and are equipped with telescoping spreaders to handle 20-foot, 27-foot, and 40-foot containers. Each crane has a rated 40-long-ton capacity. The cranes were ready for operation shortly after they were unloaded from the barge at the Port of Long Beach.

Fansteel, Inc. Board Elects John P. Diesel

John P. Diesel

John P. Diesel, president of Newport News Shipbuilding, a Tenneco company, has been elected a director of Fansteel, Inc., it was announced in North Chicago, Ill., by **David D. Peterson,** president.

The appointment was made to fill the vacancy caused by the death of **Robert C. Straka Jr.,** group vice president of the Carborundum Company.

A native of St. Louis, Mo., the new director received a bachelor of science degree in industrial engineering from Washington University.

Mr. **Diesel** was a partner in the consulting firm of Booz-Allen-Hamilton and served as an executive of Operations Research, Inc., and Management Technology, Inc., prior to joining A.O. Smith Corp., where he was a group vice president. He was named president of Newport News Shipbuilding in June 1972.

He was chairman and president of Armor Elevator Co., and chairman of the board of Armor Elevator LTD., both subsidiaries of A.O. Smith, during his tenure with that concern.

Mr. **Diesel** is a member of The Society of Naval Architects and Marine Engineers, American Society of Naval Engineers, the Virginia State Chamber of Commerce, the Eastern Virginia Medical School Foundation Development Committee, The Propeller Club, Shipbuilders Council of America, and he served as a member of the board of the National Elevator Industries, Inc., and as a member of the Advisory Board to the National Highway Safety Bureau.

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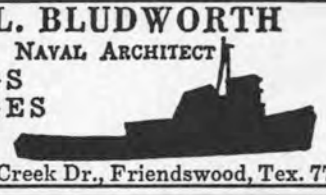
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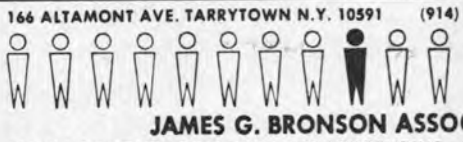
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ITT Mackay Names J. Paul Jorgensen

The appointment of **J. Paul Jorgensen** as sales representative, West Coast Region, ITT Mackay Marine, a division of International Telephone and Telegraph Corporation, was announced by **Edward A. Engebretson,** general sales manager.

Mr. **Jorgensen** will be responsible for marine radio product sales in the states of Alaska, Washington, Oregon, California and Hawaii. Previously, he served as consultant for Northwest Bell in marine communications. He has also been an instructor and consultant to Seattle Community College for marine navigational systems and has held FCC commercial radiotelegraph and USCG radio officer licenses.

Mr. **Jorgensen** received his B.S.E.E. degree from the University of Washington and B.A. degree from Stanford University.

Sea Horse Institute Holds Thirty-Fifth Annual Meeting

Shown at Wrightsville Beach, left to right: Dr. **Roger A. Covert,** specialist in corrosion research, and project manager, commercial development, International Nickel Company; **Arthur H. Tuthill,** INCO project group manager, commercial development (shipbuilding and marine industries), and **Dan Efird,** corrosion engineer, Francis L. LeQue Laboratory.

Sponsored by International Nickel Company's Francis L. LaQue Laboratory, the 35th annual meeting of the Sea Horse Institute was held June 4-7 in Wrightsville Beach, N.C. The four-day conference, held at the Blockade Runner Motor Hotel, was attended by 174 scientists, governmental representatives and industrial leaders. Among those attending were officials and representatives of the Canadian, British, Australian, Netherlands and Japanese Governments and metal firms.

Metal alloys and their behavior in seawater as to corrosion, pitting and cracking formed topics for discussion during the meeting. Low-alloy steel, stainless steel, copper-base alloys and aluminum alloys were also topics of primary importance.

Questions on which discussion revolved included ones such as "Do production or finishing techniques of stainless steels have any influence on their marine corrosion performance?"; and "What is the significance of the pitting potential of aluminum alloys to marine applications?" Other sessions focused on protection of the various metals and progress made with coatings, laminates, cathodic protection systems and the influence of various chemicals, oil spills, and polluted harbors on metals.

Those attending were also given a tour of the Kure Beach atmospheric test site where various materials were undergoing tests at beach sites.

John H. Page, president of International Nickel Company, Inc., spoke at the banquet which was held on the evening of June 5.

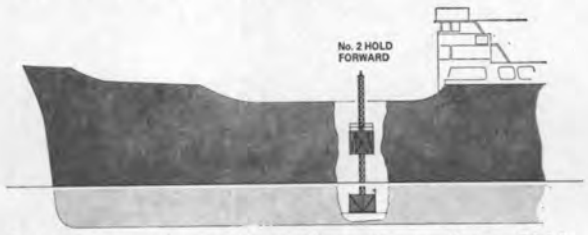
Ship Conversion Utilizes ESCO-Supplied Alimak Hoist In 'First Time' Application

Getting workmen, their tools and materials of construction in and out the hold of a ship is normally quite a problem. The solution, for Willamette Iron & Steel Company, was found with the assistance of ESCO's Contractor Service Center and two Alimak Scando I hoists.

Willamette Iron & Steel Company, prime contractor for a $3-million conversion of a grain freighter to an oil tanker, installed a "high-rise" hoist inside the ship's hold for the purpose of transporting both men and materials. Alimak's Scando hoists are primarily designed for building projects. However, in this case, the Scando I hoists were more than suitable for the ship conversion job.

Commenting on the performance of the hoist, **Bob Spang,** Willamette superintendent for the project, said: "It was remarkable that there were no shutdowns considering all the dust created by sandblasting the inside and outside of the hull." Mr. **Spang** added that the safety factor involved in the utilization of the hoists far exceeded any alternative method considered.

The ESCO-supplied hoists operated to the bilge line, 45 feet inside the No. 2 hold forward, and the No. 8 hold aft. Mr. **Spang** reported that the hoists were making 250 to 300 lifts per day.



Cutaway view shows the position of one of two ESCO-supplied Alimak Scando I hoists used to transport men and materials to and from the ship's hold. The hoists were located in No. 2 hold forward and No. 8 hold aft, and made 250 to 300 lifts per day.

Mr. **Spang** said that the Scando hoists saved countless hours of productive time, and operated without interruption throughout the length of the project. A study conducted by Alimak, shows that on a 15-story building employing 25 men, one Scando hoist in one day will turn approximately 75 man-hours of lost time into 75 man-hours of productive building time. Similar savings of productive time are reported in any instance where hoists are used as an alternative to stairs or ladders.

The conversion project on the 661-foot ship included a new piping system, extensive hull work, 45 new shell plates, new bulkheads and a new boiler system. Materials for the individual projects plus the personnel required for the overall installation, were carried down into the hold by the Scandos.

When the S/S Santa Clara underwent conversion from a grain freighter to an oil tanker, an ESCO Contractor Service Center supplied this Alimak Scando I hoist for the transportation of workmen and building materials into the hold. Alimak Scando hoists, used for the first time in this type of application, can be installed and removed in less than 30 minutes.

In addition to the cost savings and safety of the Alimak hoists, the dismantling of the equipment was carried out quickly and efficiently. The hoists can be lifted out in one piece. In this particular project, three picks were made and the "move out" was accomplished in only 30 minutes.

ESCO Corporation also distributes an Alimak Ship Hoist developed for transportation between the quay level and main deck.

For more information on the Alimak Ship Hoist, the Alimak "time-saving" study, Scando hoists or other high-rise equipment, write to ESCO Corporation, Dept. FY, 21 N.W. 25th Avenue, Portland, Ore. 97210.

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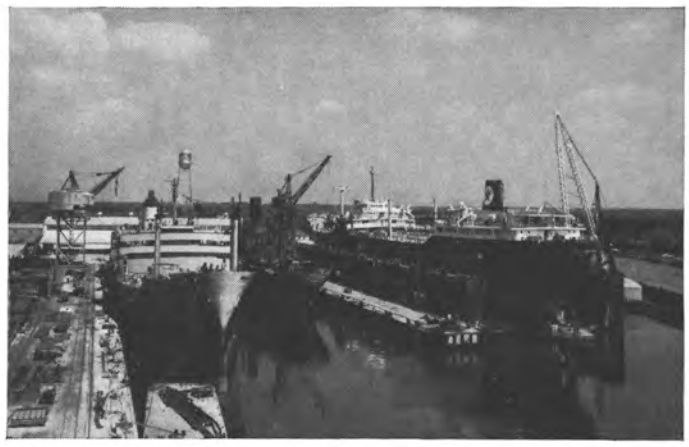

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New Repair Yard—Yura Dockyard—Starts Operations To Fill Need For Servicing Deep-Draft Vessels

Aerial view of the new ship-repair yard at Yura, Japan. This new facility with its first repair job in the large drydock was built to fill a need for servicing large tankers and containerships having deep drafts.

The Yura Dockyard in Yura, Japan, recently started operations with the docking for final outfitting of the 134,000-dwt tanker Takagisan Maru, which was built at Mitsui's Tamano Works. The new ship will be owned by Mitsui O.S.K. Lines.

Construction of the new repair dock was begun in May, 1971 to meet the increasing demand for repair yards capable of handling the large and deep-draft tankers and containerships. Following the completion of reclamation work which was started in July, the repair dock was built to accommodate vessels up to 330,000 dwt. It is one of the few dockyards in Japan dedicated exclusively to ship repairing.

The repair dock has a length of 1,148 feet, a breadth of 213 feet and a depth of 47 feet. It is serviced by a 50-ton, a 20-ton and a 6-ton crane. Incorporated in the construction of the new yard are a 902-foot mooring quay with 50-ton and 6-ton cranes and a mooring pier, 1,082 feet long, with one 10-ton crane.

The repair dock is equipped with a millimeter-wave TV and laser-beam systems for guiding ships in and out of the dock, a mobile-type self-travelling platform and many other latest facilities and systems. Docking and undocking can be carried out safely and reliably at night and in bad weather.

The new facility is equipped with a purification device to dispose of sewage from the ships as well as the dockyard.

It is anticipated that the new yard will have an employment level of about 560 people and an annual ship-repairing capacity of 5,700,000 gross tons.

Kockums Shipyard Adopts Metritape Tank Gaging For Ship Automation Systems

Kockums Shipyard of Malmo, Sweden, a leader in marine instrumentation and automation systems, has just entered into a letter agreement with Metritape, Inc. of Concord, Mass. U.S.A., for the supply of unique Metritape level gaging sensors, initially for automation of the popular Kockums "Loadmaster" loading control computer, and later for full computerization of tanker loading and unloading operations. Finalization of the supply relationship will follow the successful conclusion of Metritape operational performance tests commenced by Kockums about 18 months ago.

First ships to utilize the advanced Metritape tank level gaging system will be the initial four VLCCs of the new Kockums 350,000 dwt series. These will have twenty-nine 100-foot Metritape sensors for full-range gaging of cargo and ballast tanks; twenty-six 10-foot topping-off sensors for automatic system self-checking in the critical upper tank region, and four 100-foot sensors for ship's draft and wave-height gaging.

The Metritape sensor is unique in that it has no moving parts, offers a stable 2-terminal resistance output for convenient computer and readout utilization, and is fully accessible from above-deck for installation and service while the ship is in normal use. The sensor is patented in key countries throughout the world, and in addition to marine and oceanography uses is being applied to industrial liquid and dry bulk gaging and to the automation of large-scale petroleum-storage water-supply and sewage-handling systems.

Metritape, Inc. is located at 77 Commonwealth Avenue, Concord, Mass. 01742.

Edo Western Offers Brochure On Navtrak Docking System

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A comprehensive full-color brochure will be sent upon request by contacting Edo Western Corporation, 2645 South 2nd West, Salt Lake City, Utah 84115.

MEMORIAL WREATH: Every year a steamship company acts as host aboard one of its vessels to the American Legion Robert L. Hague Post. Farrell Lines' S/S African Mercury was the scene for this yearly affair. Prior to luncheon, a solemn ceremony was held at which time Prof. **Lester A. Deutscher** of the New York Maritime College presented a wreath to Capt. **Costas Tripolitis,** master of the African Mercury. On Memorial Day, while at sea, the vessel sounded its Slow Bell, and the wreath was lowered upon the sea in memory of all merchant mariners who gave their lives for their country. On the deck of the African Mercury are, left to right: Captain **Tripolitis; Muriel L. Hall,** manager-public relations, Farrell Lines; **Norman W. Lee,** vice president-marine superintendent, Farrell Lines; **Christian A. Bendixen,** acting chaplain, Robert L. Hague Post, American Legion; Professor **Deutscher,** Commander, Robert L. Hague Post, and **Mrs. William Schwartz.**

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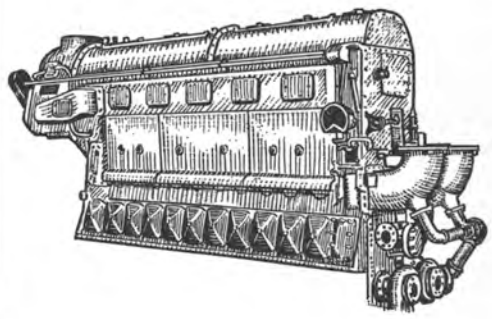
MARINE DIESEL ENGINES



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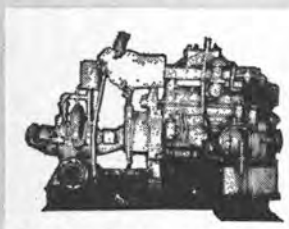
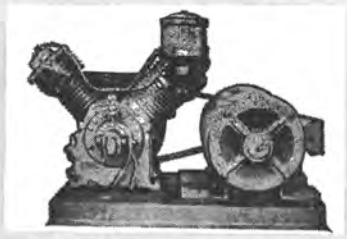


2—BUDA, Model 6-LD-468, Diesel Engines, 6 cylinders, 100 BHP, Marine, Gardner-Denver, centrifugal Pumps, Bronze, horizontally split case, 1000 GPM, 280' head, 6" suction and 5" discharge.



2—GARDNER-DENVER, 150 CFM, 125 PSI, Class WB, Size 7x5¾x5, with Diehl Motors, 45 HP, 230 Volts DC, 870 RPM, 167 Amperes.

3—INGERSOLL-RAND, Size 5x5x4x 4, 50 CFM, 150 PSI, with G.E. Motor, 20 HP, 440/3/60.

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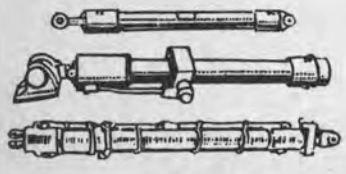
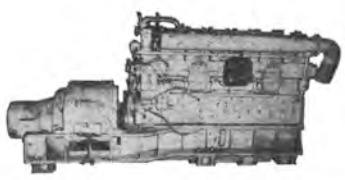


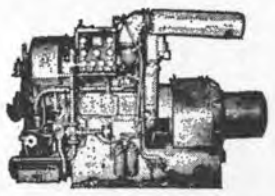
Bore	Overall Stroke	Rod Diameter	retracted length	Action
10"	12"	3.75"	45½"	double
10"	26"	3.75"	58½"	single
2"	8"	1½"	20"	double
2.5"	15"	1.12"	25½"	double
3"	8"	1.37"	15½"	double
6"	8'	4"	144"	double

MARINE DIESEL GENERATORS



4—COOPER-BESSEMER, Marine . . . Model FSN 6, 6 cylinders, 375 HP, 900 RPM with General Electric generators, 250 KW 440/3/60.

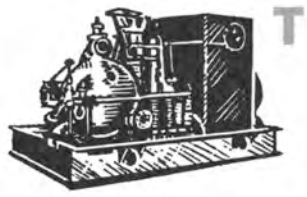
6—SUPERIOR Diesel Engines . . . Model GBD8 Marine, 150 HP, 1200 RPM, 8 cylinder, with Delco Generators, 100 KW, 120/240 DC.



4—GENERAL MOTORS, Model 3-268A, marine, 150 BHP, 1200 RPM, 3 cylinders, with 100 KW Generators, 450/3/60.

3—GENERAL MOTORS, Model 3-268 A, Marine, 150 HP, 1200 RPM, 3 cylinders, with Allis-Chalmers Generators, 100 KW, 120/240 DC.

TURBINE GENERATORS



4—GENERAL ELECTRIC, 525 PSI, with G.E. Generator, 250 KW, 440/3/60.

1—GENERAL ELECTRIC, with G.E. Generator, 350 KW, 440/3/60.

3—GENERAL ELECTRIC, Type ATB-2, 1250 KW, 440/3/60.

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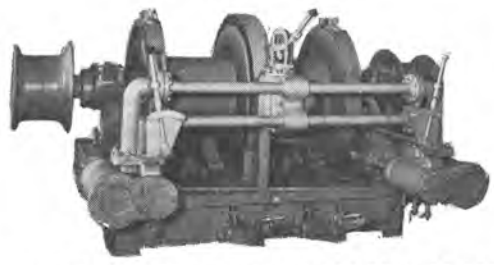

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6-Dog right and left hand hinged steel doors—with frames. Built and tested to A.B.S. spe-specifications.

SIZE	NET WT.	PRICE
26"x48"	250 lbs.	$225.00
26"x60"	300 lbs.	$269.50
26"x66"	320 lbs.	$297.50
30"x60"	330 lbs.	$345.00

EACH DOOR

IMMEDIATE DELIVERY

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

UNUSED 1⅝" HEAVY DUTY
LINK BELT WINDLASS

Below deck motor drive. Double wildcat—driven by 50 HP 230 VDC motor with vertical shaft and worm drive. Single speed—handles 7000 lb anchors and 60 fathoms of 1⅝" chain at 7 fathoms per minute. Wildcat centers 56". Complete with all controls and warping features. Total weight 27,500 lbs. With spares.

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

NEW 7" RADIUS
PANAMA CHOCKS
(MEET PANAMA REGULATIONS)
With extended legs for welding to deck. IMMEDIATE DELIVERY FROM STOCK.

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

UNUSED ALLIS-CHALMERS FIRE & GENERAL SERVICE PUMPS

200 GPM — 180' head — 2½"x2"—bronze—flange connections. MOTOR: 20 HP—115 volts DC—2400 RPM—153 amps.

THE BOSTON METALS COMPANY

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

Deck-Mounted BERGER FAIRLEADS

Model 614—1¼" line size — 14" sheave — 5" shank opening. Tapered roller bearings. 985 lbs. Approximate base dimensions: 32" x 24" fore and aft.

THE BOSTON METALS COMPANY

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

M.G. SETS

APPROX. ½ KW 110/1/60 M.G. SET NEW—UNUSED

INPUT: 115 VDC—6.1 amps—3600 RPM. AC OUTPUT: 425 watts—4.55 amps—110/1/60. Ball bearing. 13⅞" long—7 9/16" wide—10½" high. Has radio noise supression filter. Net wt. 58 lbs—83 lbs packed for shipping.

$89.50 EACH

UNUSED—10 KW—120/1/60 M.G. SET

INPUT: Motor 25 HP — 120 VDC — 156 amps — 1800 RPM —flange-coupled to output generator.

OUTPUT: 10 KW generator — 120 volts 60 cycle single phase —108 amps — 0.80 PF — with direct-connected 125 volt 8 amp exciter. Motor starter by Cutler-Hammer. AC generator has voltmeter and ammeter. Bassler voltage regulator.

RECONDITIONED BOGUE M.G. SET 230 VDC Input 7.5 KW 120/1/60 Output

Model 2635—2 bearing. INPUT: 15 HP.—230 VDC—57 amps continuous—1800 RPM. OUTPUT: 7.5 KW—10 KVA —83.5 amps—120/1/60—0.8 P.F

RECONDITIONED CONTINENTAL 2 KW—220 D.C. TO 120/1/60 A.C.

INPUT: 5 HP—230 VDC—20 amps. **OUTPUT:** 2.5 KVA —2 KW—120/1/60 AC—0.8 PF—1800 RPM—21 amps. With controls. 38" long—15" wide—480 lbs.

THE BOSTON METALS COMPANY

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

UNUSED 2" BRONZE STRAINERS (DUPLEX)

Flanged—mfg by Derbyshire Machine & Tool Co. Flange has 6 holes 9/16".

$387.50

THE BOSTON METALS COMPANY

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

BUYERS DIRECTORY

AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231

ANCHORS AND ANCHOR CHAINS
Lockstad Co., Inc., 179 West 5th Street, Bayonne, N.J. 07002

AUTOMATIC DRAFTING SYSTEMS
Gerber Scientific Instruments Co., P.O. Box 305, Hartford, Conn. 06101

BEARINGS
BJ Marine Bearings, a Borg-Warner Industry, P.O. Box 2709, Terminal Annex, Los Angeles, Calif. 90054
Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, Ohio 44309
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wis. 53186

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

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

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

CARGO HANDLING EQUIPMENT
MacGregor International Organization, 49 Gray's Inn Road, London W.C.I., England

CATHODIC PROTECTION
Engelhard Industries, 430 Mountain Ave., Murray Hill, N.J. 07974

CLUTCHES, GEARS & BRAKES
Amarillo Gear Co., 517 No. Polk St., Amarillo, Texas 79105
Wichita Clutch Co., Inc., Wichita Falls, Texas 76307

COATINGS—Protective
Ameron Corrosion Control Div., Brea, Calif. 92621
Carboline Co., 328 Hanley Industrial Court, St. Louis, Mo. 63144
Devoe & Raynolds Co., Inc., Subsidiary Celanese Coatings Co., 414 Wilson Ave., Newark, N.J. 07105
EGD Spee-Flo Co., 4631 Winfield Rd., Houston, Texas 77039
Patterson-Sargent, P.O. Box 494, New Brunswick, N. J.
Philadelphia Resins Corp., 20 Commerce Dr., Montgomery, Pa. 18936

CONTAINERS—CONTAINER HANDLING SYSTEMS
Ameron Corrosion Control Div., Brea, Calif. 92621
Lighter Aboard Ship, Inc., 225 Baronne St., New Oreans, La. 70112
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
Star Iron & Steel Co., 326 Alexander Ave., Tacoma, Wash. 98421

CONTAINER LASHINGS & COMPONENTS
American Engineered Products, P.O. Box 74 Nichol Ave., McKees Rock, Pa. 15136
W. W. Patterson Co., 830 Brocket St., Pittsburgh, Pa. 15233

CONTROL SYSTEMS
Frederick Cowan & Co., Inc., 120 Terminal Drive, Plainview, L.I. New York 11803
Galbraith-Pilot Marine Corp., 600 Fourth Ave., Brooklyn, N.Y. 11215
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

CRANES—HOISTS—DERRICKS—WHIRLEYS
ASEA Marine, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
Conrad-Stork, Div. Stork-Werkspoor, P.O. Box 134, Haarlem, Holland
Houston Systems Mfg. Co., P.O. Box 14551, Houston, Texas 77021
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
Star Iron & Steel Co., 326 Alexander Ave., Tacoma, Wash. 98401

CRANE LOAD INDICATORS
W.C. Dillon & Co., 14620 Keswick St., Van Nuys, Calif. 91407
Mark Products, Inc., 10507 Kinghurst Dr., Houston, Texas 77072
Trans-Sonics, Inc., P.O. Box 326, Lexington, Mass. 02173

DECK COVERS (METAL)
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Mechanical Marine Co., 900 Fairmount Ave., Elizabeth, N.J. 07027

DECK MACHINERY
Appleton Machine Co., P.O. Box 2265, Iron Mountain, Mich. 49801.
ASEA Marine, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
Markey Machinery Co., Inc., 79 S. Horton St., Seattle, Wash. 98134
A. G. Weser, Seebeckwerft, 2850 Bremerhaven 1, Germany

DIESEL ACCESSORIES
A.G. Schoonmaker, Box 757, Sausalito, Calif. 95965

DIESEL ENGINES
Alco Engine Div., White Industrial Power, Inc., 100 Orchard St., Auburn, N.Y. 13021
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
De Laval Turbine Inc., Engine & Compressor Div., 550 85th Ave., Oakland, Calif. 94621
Electro-Motive Division General Motors, La Grange, Illinois 60525
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany.
Sulzer Brothers, Ltd., Winterthur, Switzerland

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

DOCK BUILDERS
GHH Sterkrade Ferrostaal Overseas Corp., 17 Battery Place, New York, N.Y. 10004

DOORS—Watertight—Bulkhead
Overbeke-Kain Co., 20905 Aurora Rd., Cleveland, Ohio 44146
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., 166 National Rd., Edison, N.J. 08817
Harvard Murlin Div., P.O. Box 302, Quakertown, Pa. 18951
Merrin Electric, 162 Chambers St., New York, N.Y. 10007
Oceanic Electrical Mfg. Co., Inc., 159 Perry Street, N.Y. 10014

EVAPORATORS
Aqua-Chem, Inc., Water Technologies Div., Box 421, Milwaukee, Wis. 53201.
Bethlehem Steel Corp., Shipbuilding, 25 B'way, N.Y., N.Y. 10004
Riley-Beaird, Inc., Maxim Evaporator Profit Center, P.O. Box 1115, Shreveport, Louisiana 71130

FAIRLEADS
Appleton Machine Co., P.O. Box 2265, Iron Mountain, Mich. 49801.

FENDERING SYSTEMS—Dock & Vessel
BJ Marine Products, subsidiary of Borg-Warner, P.O. Box 2709, Terminal Annex, Los Angeles, Calif. 90054
Hughes Bros., Inc., 17 Battery Place, New York, N.Y. 10004

FITTINGS & HARDWARE
Robvon Backing Ring Co., 675 Garden St., Elizabeth, N.J. 07207

FLOATING EQUIPMENT—Steel—Aluminum Pontoons
Dravo Corporation, Neville Island, Pittsburgh 25, Pa.

INSULATION—Marine
Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231

LIGHTS—Emergency, Search & Navigation
Elco Corp./Safecraft Div., Maryland Road & Computer Avenue, Willow Grove, Pa. 19090
Snelson Oilfield Lighting Co., 1201 E. Doggett St., Fort Worth, Texas 76104.

LNG SHIP DESIGN AND LICENSING
PDM/GAZ Transport, 919 Third Ave., New York, N.Y. 10022

LNG TANKAGE
Gazocean U.S.A. Inc., 125 High St., Boston, Mass. 02110
Pittsburgh-Des Moines Steel Co., Neville Island, Pittsburgh, Pa. 15225

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

MACHINERY MONITORS
Bently Nevada Corp., P.O. Box 157, Minden, Nevada 89423

MARINE BLOCKS & RIGGING
Crosby Group, Box 3128, Tulsa, Okla. 74101

MARINE DRIVES—GEARS
Hoffert-Lowe, Inc., 108 Ridge Road, North Arlington, N.J. 07032
Philadelphia Gear Corp., Schuylkill Expressway, King of Prussia, Pa. 19406
Western Gear Corp., Industrial Products Div., P.O. Box 126, Belmont, Calif. 94003

MARINE EQUIPMENT
Comet Marine Supply Corp., 157 Perry St., New York, N.Y. 10014
Homelite Corporation, 70 Riverdale Ave., Port Chester, N.Y. 10573
ITT Henze Service, P.O. Box 1745, Mobile, Ala. 36610
Kearfott Marine Products, 780 South 3rd Ave., Mt. Vernon, N.Y. 10550
Nicolai Joffe Corp., P.O. Box 2445, 445 Littlefield Ave., So. San Francisco, Calif. 94080
Merrin Electric, 162 Chambers St., New York, N.Y. 10007
Metritape, 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
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wis. 53186

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

MARINE INSURANCE
Adams & Porter, Cotton Exchange Bldg., Houston, Texas
Midland Insurance Co., One State St. Plaza, New York, N.Y. 10004
R.B. Jones Corp., 301 West 11th St., Kansas City, Mo. 64105

MARINE OIL BURNERS
John Zink Co., 4401 So. Peoria, Tulsa, Okla. 74105

MARINE PROPULSION
Babcock & Wilcox Co., 161 East 42nd Street, New York, N.Y. 10017
Combustion Engineering, Inc., Windsor, Connecticut 06095
Jacuzzi Bros., Inc., 11511 New Benton Highway, Little Rock, Ark. 72204
Murray & Tregurtha, Inc., 2 Hancock St., Quincy, Mass. 02171
Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014
Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
Tech Systems, Inc., 405 Watertown Rd., Thomaston, Conn. 06787
Turbo Power & Marine Systems, Subsidiary of United Aircraft Corp., 1690 New Britain Ave., Farmington, Conn. 06032

MARINE SURVEYORS
Schmahl and Schmahl, Inc., 1209 S.E. Third Ave., Fort Lauderdale, Fla. 33316

MARITIME FINANCING—Leasing
General Electric Credit Corp., 4 Corporate Drive, White Plains, N.Y. 10604
Rhode Island Hospital Trust National Bank, 15 Westminster Street, Providence, R.I. 02903

NAVAL ARCHITECTS AND MARINE ENGINEERS
J. L. Bludworth, 4030 Wynne St., Houston, Texas
Breit Engrg. Inc., 441 Gravier St., New Orleans, La. 70130
James G. Bronson Associates, 166 Altamont Ave., Tarrytown, N.Y. 10591
Childs Engineering Corp., Box 333, Medfield, Mass. 02052
Coast Engineering Co., 711 W. 21st St., Norfolk, Va. 23517
Crandall Dry Dock Engrs., Inc., 238 Main St., Cambridge, Mass. 02142
Francis B. Crocco, Inc., Box 1411, San Juan, Puerto Rico
C.R. Cushing & Co., Inc., One World Trade Center, New York, N.Y. 10048
Arthur D. Darden, Inc., 1040 International Trade Mart, New Orleans, La. 70130
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., 40 Rector Street, New York, N.Y. 10006
John W. Gilbert Associates, Inc., 58 Commercial Wharf, Boston, Mass. 02110
Morris Gurainick, Associates, Inc., 583 Market St., San Francisco, Calif. 94105
J. J. Henry Co., Inc., 90 West St., New York, 10006
Hydranautics, 6338 Lindmar Dr., P.O. Box 1068, Goleta, Calif. 93017
C.T. Ilariucci & Associates, Tourism Pier #3, San Juan, P.R. 00902
Jantzen Engineering Co., 15 Charles Plaza, Baltimore, Md. 21201
James S. Krogen, 2500 S. Dixie Hwy., Miami, Fla. 33133
Littleton Research and Engrg. Corp., 95 Russell St., Littleton, Mass. 01460
Robert H. Macy, P.O. Box 758, Pascagoula, Miss. 39567
Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, Ohio 44114
Marine Design Inc., 1180 Ave. of Americas, N.Y., N.Y. 10036
Marine Design Associates, P.O. Box 2674, Palm Beach, Florida
Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225
John J. McMullen Associates, Inc., 1 World Trade Center, New York, N.Y. 10048
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
Nickum & Spaulding Associates, Inc., 71 Columbia St., Seattle, Wash. 98104
Ocean-Oil International Engrg. Corp., P.O. Box 6173, New Orleans, La. 70114
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida 33156
S.L. Petchul, Inc., 8-D So. New River Drive East, Ft. Lauderdale, Fla. 33301
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. Spaetgens, 156 West 8th Ave., Vancouver 10, Canada
R. A. Stearn, Inc., 100 Iowa St., Sturgeon Bay, Wisc. 54235
Richard R. Taubler, 50 Court St., Brooklyn, N.Y. 11201
H. M. Tiedemann & Co., Inc., 74 Trinity Pl., New York, N.Y. 10006
Whitman, Requardt & Associates, 1304 St. Paul St., Baltimore, Md. 21202
Yankee Shipwrights, P.O. Box 35251, Minneapolis, Minn. 55435

NAVIGATION & COMMUNICATIONS EQUIPMENT
American Hydromath Co., 55 Brixton Rd., Garden City, N.Y. 11530
Collins Radio Co., M/S 407-321, Dallas, Texas 75207
Edo Western Corporation, 2645 South 2nd West, Salt Lake City, Utah 84115
ELCO Corp./Safecraft Division, Maryland Road & Computer Ave., Willow Grove, Pa. 19090
Electro-Nav, Inc., 501 Fifth Ave., New York, N.Y. 10017
F&M Systems Co., P.O. Box 20778, 2525 Walnut Hill Lane, Dallas, Texas 75220
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
ITT Decca Marine, Inc., 386 Park Ave. South, New York, N.Y. 10016
ITT Mackay Marine, 2912 Wake Forest Road, Raleigh, N.C. 27611
Lorain Electronics Corp., 2307 Leavitt Road, Lorain, Ohio 44052
Magnavox Navigation Systems, 2829 Maricopa St., Torrance, Cal. 90503
National Marine Service, 1750 So. Brentwood Blvd., St. Louis, Mo.
Radiomarine Corp., 20 Bridge Avenue, Red Bank, N.J. 07701
Raytheon Co. Marine Products, 676 Island Pond Rd., Manchester, N.H. 03103
Raytheon Co., Submarine Signal Div., P.O. Box 360, Portsmouth, R.I. 02871

Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
Standard Communications Corp., 639 N. Marine Ave., Wilmington, Calif. 90744
Teledyne Hastings Raydist, P.O. Box 1275, Hampton, Va. 23361
Tracor, Inc., 6500 Tracor Lane, Austin, Texas 78721
The Waterways Co., 3512 Metairie Hts. Rd., New Orleans, La. 70002

OILS—Marine—Additives
ESSO International, Inc., 1251 Avenue of the Americas, N.Y. 10020
Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019
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
International Paint Co., 21 West St., New York, N.Y. 10006
Patterson-Sargent, P.O. Box 494, New Brunswick, N. J.
Porter Paint Company, 400 South 13th Street, Louisville, Ky. 40203
Transocean Marine Paint Association, P.O. Box 456, Delftseplain 37, Rotterdam, Holland

PETROLEUM SUPPLIES
Independent Petroleum Supply Co., 1345 Ave. of Americas, New York, N.Y. 10019
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.

PIPE—Cargo Oil
Kubota, Ltd., 22, Funade-cho 2-chome, Naniwa-Ku, Osaka, Japan
Tioga Pipe Supply Co., Inc., P.O. Box 5997, Philadelphia, Pa. 19137

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

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

PROPELLERS: NEW AND RECONDITIONED
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Coolidge Propellers, 1601 Fairview Ave. East, Seattle, Wash. 98102
Escher Wyss Gmbh, P.O. Box 798, Ravensburg, Germany
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 Falls, N.Y. 13148
Houttuin-Pompen N. V. Sophialaan 4, Utrecht, Holland
Jacuzzi Bros., Inc., 11511 New Benton Highway, Little Rock, Arkansas 72204

RATCHETS
W. W. Patterson Co., 830 Brocket St., Pittsburgh, Pa. 15233

REFRIGERATION—Refrigerant Valves
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231

ROPE—Manila—Nylon—Hawsers—Wire
American Mfg. Co., Inc., Noble & West Sts., Brooklyn, N.Y. 11222
Du Pont Co., Room 31H1, Wilmington, Delaware 19898
Jackson Rope Corp., 9th & Oley, Reading, Pa. 19604
Wall Rope Works, Inc., Beverly, N. J. 08010

RUDDER ANGLE INDICATORS
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.

SANDBLASTING EQUIPMENT
Pauli & Griffin Co., 826 Folsom St., San Francisco, Calif. 94107

SCAFFOLD BOARDS
Howmet Corporaton, Southern Extrusions Division, P.O. Box 40, Magnolia, Arkansas 71753

SEWAGE DISPOSAL
Babcock & Wilcox Co., 161 East 42nd Street, New York, N.Y. 10017
Jered Industries, Inc., 1300 S. Coolidge Rd., Birmingham, Mich. 48008
Koehler-Dayton, Inc., P.O. Box 309, New Britain, Conn. 06050
LaMere Industries, Inc., 277 N. Main Street, Walworth, Wis. 53184

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

SHIPBOARD VENTILATION
Coppus Engineering Corp., P.O. Box 457, Worcester, Mass. 01613
TANK S.A.P.P. Inc., 330 Madison Avenue, New York, N.Y. 10017 and 1020 Springfield Avenue, Mountainside, N.J. 07092

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
Zidell Explorations, Inc., 3121 S. W. Moody St., Portland, Ore. 97201

SHIP BROKERS
Agemar, P.O. Box 1465, Maracaibo, Venezuela
Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
Mowbray's Tug and Barge Sales Corp., 21 West St., N.Y., N.Y. 10006
Oaksmith Boat Sales, Inc., Fisherman's Terminal, Seattle, Wash. 98119

SHIPBUILDING STEEL
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., 25 Broadway, New York, N.Y. 10004
Huntington Alloy Products, Div. International Nickel Co., Inc., Huntington, W. Va. 25720
International Nickel Co., 1 New York Plaza, New York, N.Y. 10004

SHIPBUILDING—Repairs, Maintenance, Drydocking
Astilleros Espanoles, S.A. Zurbano, 70, Madrid 10, Spain
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Barbour Boat Works, Inc., P.O. Box 1069, New Bern, N.C.
Beliard, Crighton & Cie, P.O. Box 2074, Route des Docks, 59, Dunkirk, France
Beliard Murdoch S. A., Kattendijkdok Westkaai 21, Antwerp, Belgium
Bertram Marine, Division of Whittaker, 3663 N.W. 21 Street, Miami, Fla. 33142.
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
Blount Marine Corp., P.O. Box 360, Warren, Rhode Island 02885
Bludworth Shipyard, Inc., Box 5426, Cypress St., Brady Island, Houston, Texas 77012
Carrington Slipways Pty. Ltd., Tomago, N.S.W. 2322, Australia
Conrad Industries, P.O. Box 790, Morgan City, La. 70380
Curacao Drydock, Inc., P.O. Box 153, Willemstad, Curacao, N.A.
Devcon Corporation, Endicott Street, Danvers, Mass. 01923
Dravo Corporation, Neville Island, Pittsburgh 25, Pa.
Empressa Nacional Bazan, 65 Castellana, Madrid 1, Spain
Equipment Systems, Inc., A Microdot Co., P.O. Box 95, Port Deposit, Md. 21904
Equitable Equipment Co., Inc., P.O. Box 8001, New Orleans, La. 70122
General Dynamics, Electric Boat Division, 99M Eastern Point Road, Groton, Conn. 06340
General Dynamics, Quincy Division, Quincy, Mass. 02169
Halter Marine Services, Inc., Route 6, Box 287H, New Orleans, La. 70126
Havre de Grace, Havre de Grace, Md.
Hillman Barge & Construction Co., Grant Bldg., Pittsburgh 19, Pa.
Hongkong & Whampoa Dock Co. Ltd., Kowloon Docks, Hong Kong
Ishikawajima-Harima Heavy Industries Co., Ltd., 15 William St., New York, N.Y. 10005
Jacksonville Shipyards, 644 E. Bay St., Jacksonville, Fla. 32203
Jeffboat, Inc., Jeffersonville, Ind. 47130
Kawasaki Dockyard Co., 8 Kaigon-dori, Ikuta-ku, Kobe, Japan
Kelso Marine, Inc., P.O. Box 268, Galveston, Texas 77550
Keppel Shipyard (Private) Ltd., P.O. Box 2169, Singapore
Kockums Malmo, Fack, Malmo, Sweden
Litton Industries, 9920 W. Jefferson Blvd., Culver City, Calif. 90230
Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
Marathon Manufacturing Company
Marathon LeTourneau Offshore Company, 1700 Marathon Building, 600 Jefferson, Houston, Texas 77002
Marathon LeTourneau Gulf Marine Division, P.O. Box 3189, Brownsville, Texas 78520
Marathon LeTourneau Marine Division, LeTourneau Rural Station, Vicksburg, Mississippi 39180
Marathon LeTourneau Offshore Pte., Ltd., P.O. Box 83, Taman Jurong Post Office, Singapore 22, Singapore
Marathon Shipbuilding Company, P.O. Box 870, Vicksburg, Miss. 39180
Marathon Shipbuilding Company (U.K.) Ltd., Clydebank Bunbartonshire, G81-1YB, Scotland
Maryland Shipbuilding & Drydock, P.O. Box 537, Baltimore, Md. 21203
Matton Shipyard Co., Inc., P.O. Box 428, Cohoes, New York 12047
Mitsui Shipbuilding & Engrg. Co. Ltd., 6-4, Tsukiji 5-chome, Chuo-ku, Tokyo, Japan
Mitsubishi Heavy Industries, Ltd., 5-1 Marunouchi 2-chome, Chiyoda-ku, Tokyo, Japan
Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655
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Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156
Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862
St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111
Sasebo Heavy Industries Co., Ltd., New Ohtemachi Bldg., Chiyoda-ku, Tokyo, Japan
Savannah Machine & Shipyard Co., P.O. Box 787, Savannah, Ga. 31402
Sembawang Shipyard (Pte) Ltd., P.O. Box 3, Sembawang, P.O. Singapore, 27
Slocum Iron Works, Inc., P.O. Box 2506, 1752 Telegraph Road, Mobile, Ala. 36601
Sumitomo Shipbuilding & Machy. Co., Ltd. 2-1 Ohtemachi 2-chome, Chiyoda-ku, Tokyo, Japan
Swedish Shipbuilding Association, Fack S-402 70, Gothenburg 8, Sweden
Teledyne Sewart Seacraft, P.O. Box 108, Berwick, La. 70342
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Tracor/Mas, Inc., P.O. Box 13107, Port Everglades, Fla. 33316
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State Boat Corporation, 3701 Kirby Drive, Houston, Texas 77006
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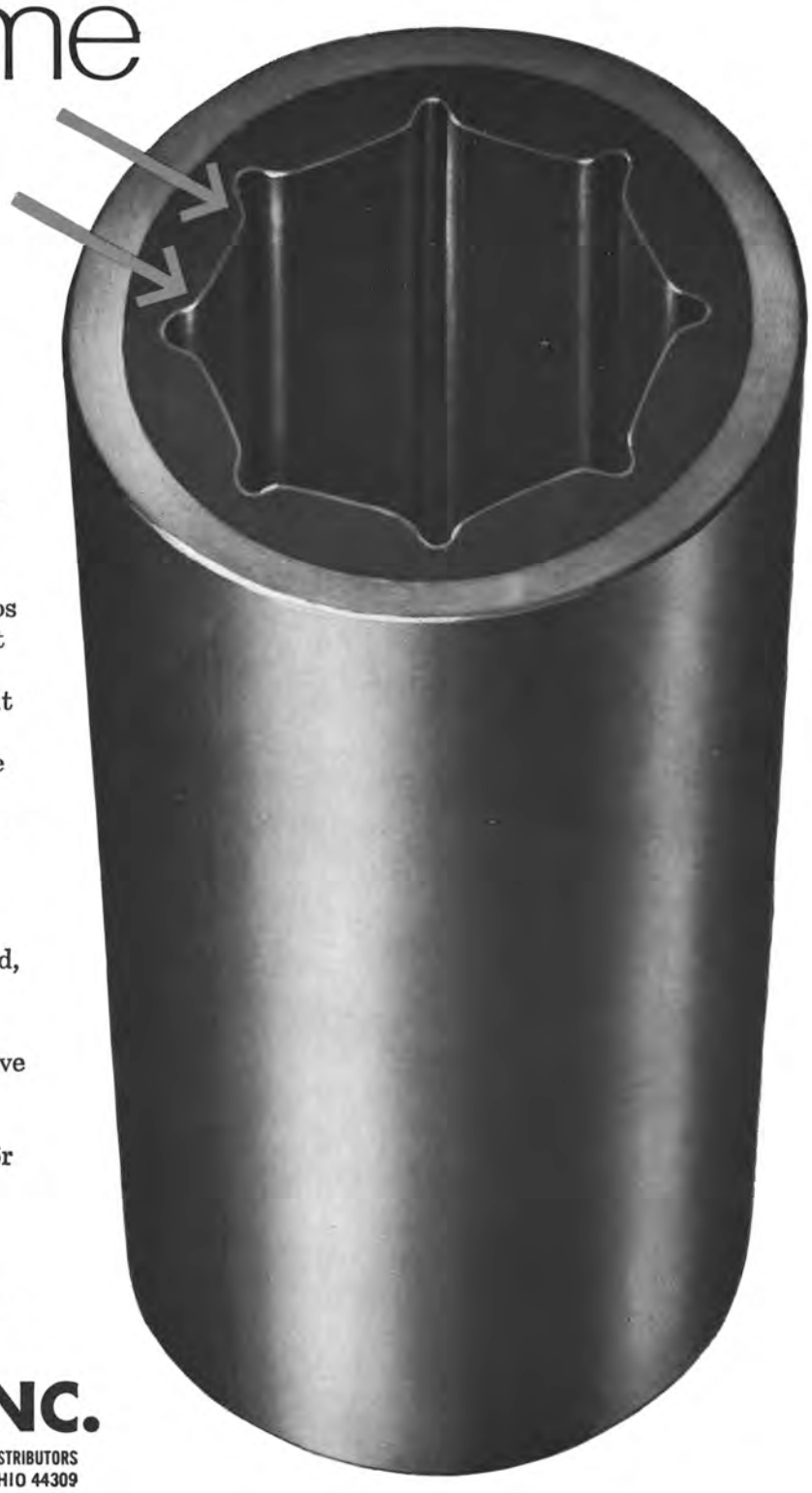

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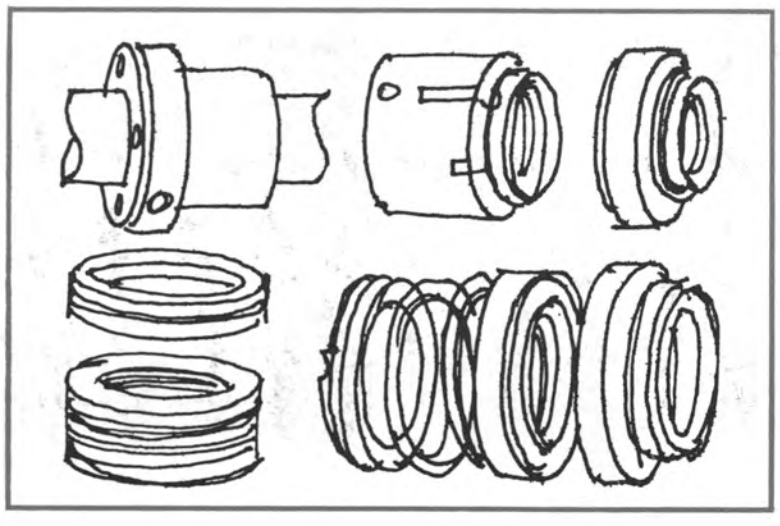

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