

# MARITIME REPORTER

AND  
ENGINEERING NEWS



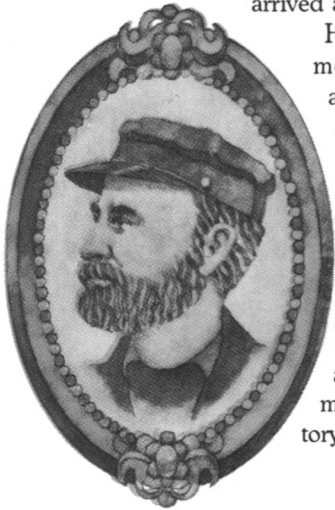
**Teledyne Sewart Seacraft Delivers  
First 40-Foot All-Aluminum Prototype  
To Replace 200 Old USCG Patrol Craft**  
(SEE PAGE 6)

**JANUARY 1, 1971**



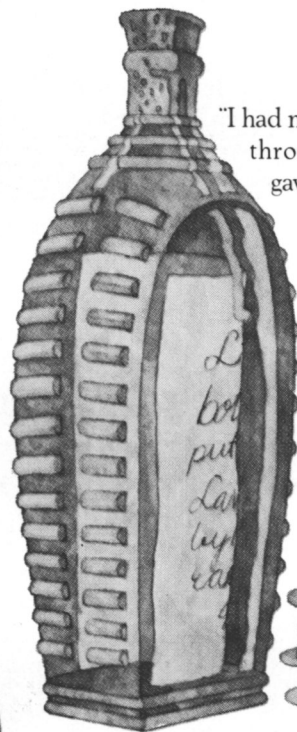
## The incredible sea voyage of Capt. William Andrews.

On July 21, 1892, Captain William Andrews set sail, alone, from Atlantic City, New Jersey, and on September 20th he arrived at Palos, Spain.



His craft, the *Sapolio*, measured 14 feet 6 inches and he made it himself. Her rig was archaic. She had no engine and wasn't watertight. As for Andrews, he didn't even have a flashlight.

But he had unbelievable courage, endurance and tenacity and his voyage stands as one of the most remarkable in the history of small boat sailing.

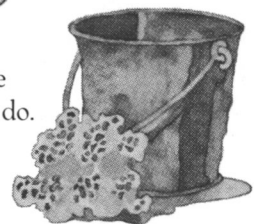


"I had notes prepared and every day I would throw one over in a bottle. The notes gave my position and destination."

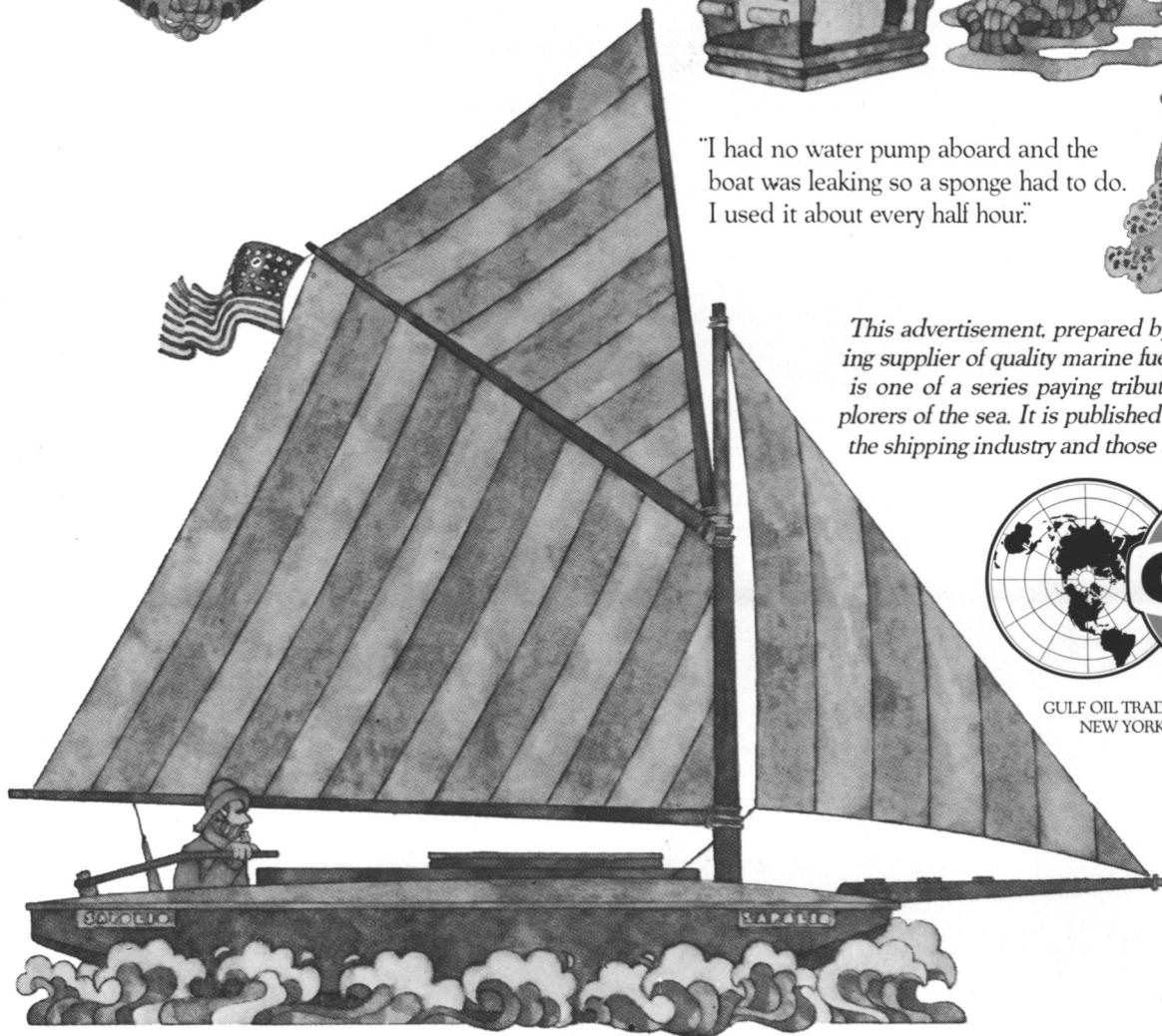
"It was about two feet wide and thirty feet long. I never saw anything like it in my life. It was a sea monster."



"I had no water pump aboard and the boat was leaking so a sponge had to do. I used it about every half hour."

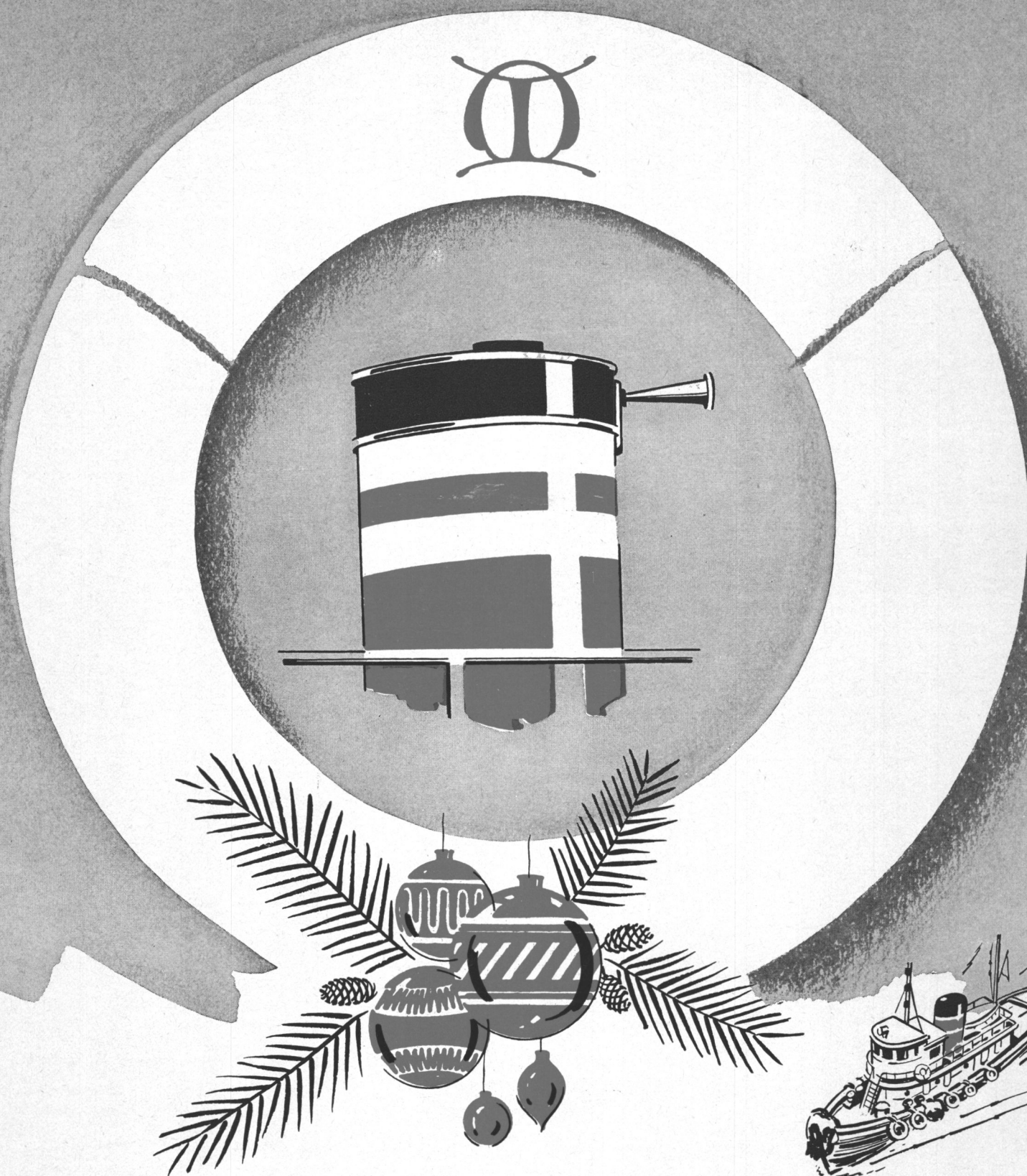


*This advertisement, prepared by Gulf Oil, a leading supplier of quality marine fuels and lubricants, is one of a series paying tribute to the great explorers of the sea. It is published in the interest of the shipping industry and those associated with it.*



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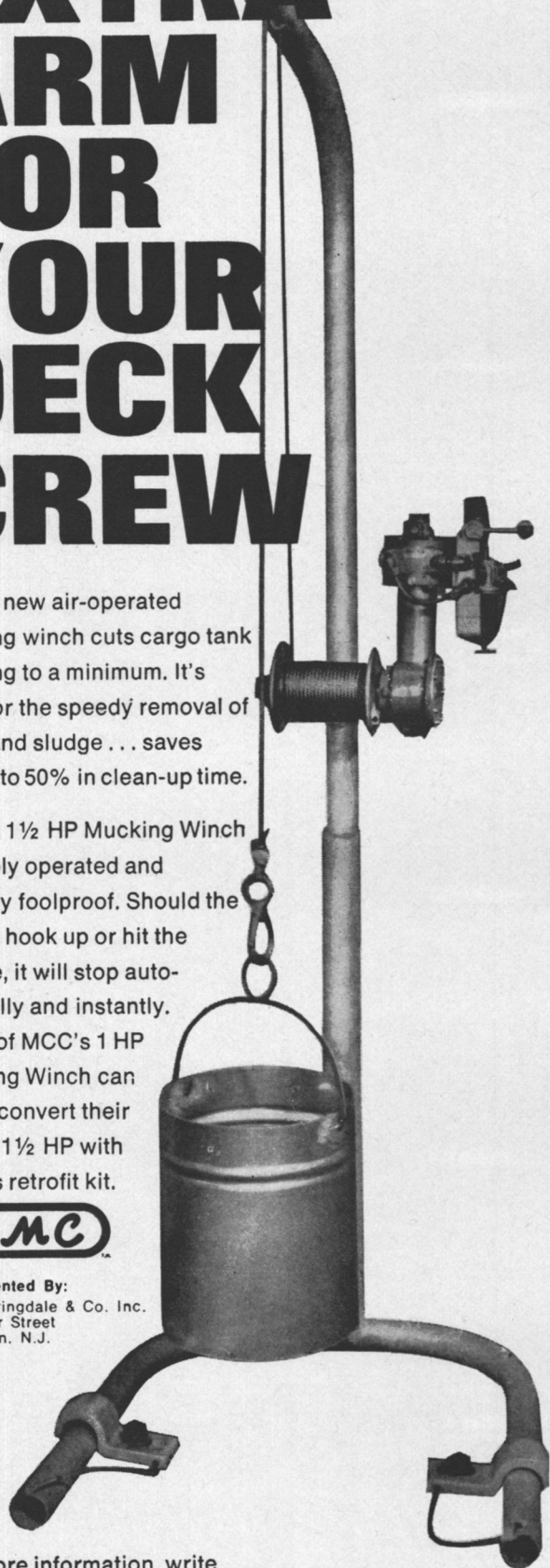
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## Todd Houston Division Lays Keels For Two Con-Edison Barges

The keels have been laid at Todd Shipyards Corporation (Houston Division) for two of the four fuel storage barges being constructed for Consolidated Edison Company of New York, Inc. The 250-foot by 44-foot by 14-foot 6-inch single-skin, fuel storage tank barges each have a 25,000-barrel capacity of No. 2 fuel oil. After completion they will be moored at Con-Edison's Gowanus substation in Brooklyn, N.Y., fueling gas turbine-powered generators.

The barges will be equipped with steam coils capable of heating heavy distillate fuel oil with a pour point of 100 degrees Fahrenheit. Each barge will be equipped with three 400-gpm electric motor-driven fuel oil pumps, using shore-based power source.

Delivery of the first two barges is scheduled for February 1971 in New York Harbor, and the last two barges should arrive in April 1971.

## Ingram Files New Bid On Tug-Barge System

A second application for government mortgage insurance on a tug and barge has been filed by Ingram Ocean Systems, Inc., Nashville, Tenn. According to documents filed with the Maritime Administration the project, totaling more than \$11 million, would be used on a charter basis to haul petroleum products from Gulf refineries to Atlantic ports.

It has been reported that Ingram was negotiating with Livingston Shipbuilding Corp., Orange, Texas, to construct the tug and with Southern Shipbuilding Corp., Slidell, La., for the 33,000-ton barge. A similar tug-barge system was covered in the previous application.

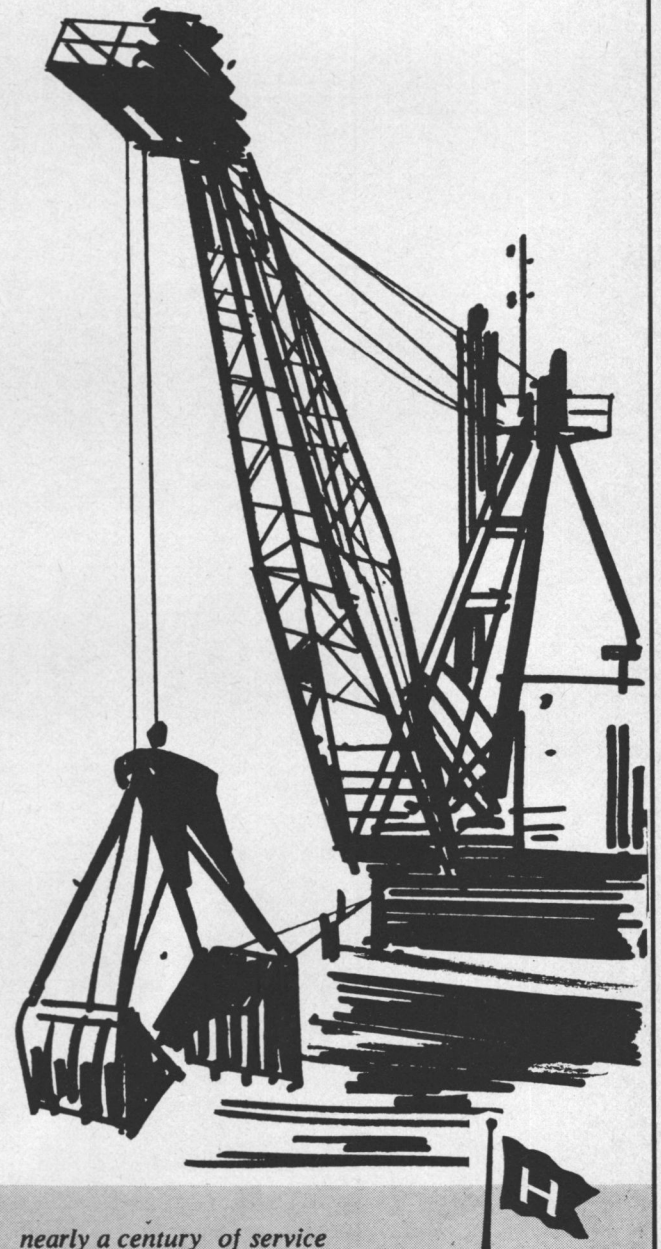
## Book Describing Steam Yacht Era Published By John de Graff

A book entitled "The Steam Yachts" has been published by John de Graff Inc. of Tuckahoe, N.Y. Erik Hofman is the author of the book which takes in the first decades of this century describing the elegance of that era at a time when steam yachts were one of the impressive status symbols. The publication contains 272 pages, including 130 photographs and 107 drawings.

The book is priced at \$18.50 a copy and can be obtained from John de Graff Inc., of Tuckahoe, New York.

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**ENGINEERING NEWS**

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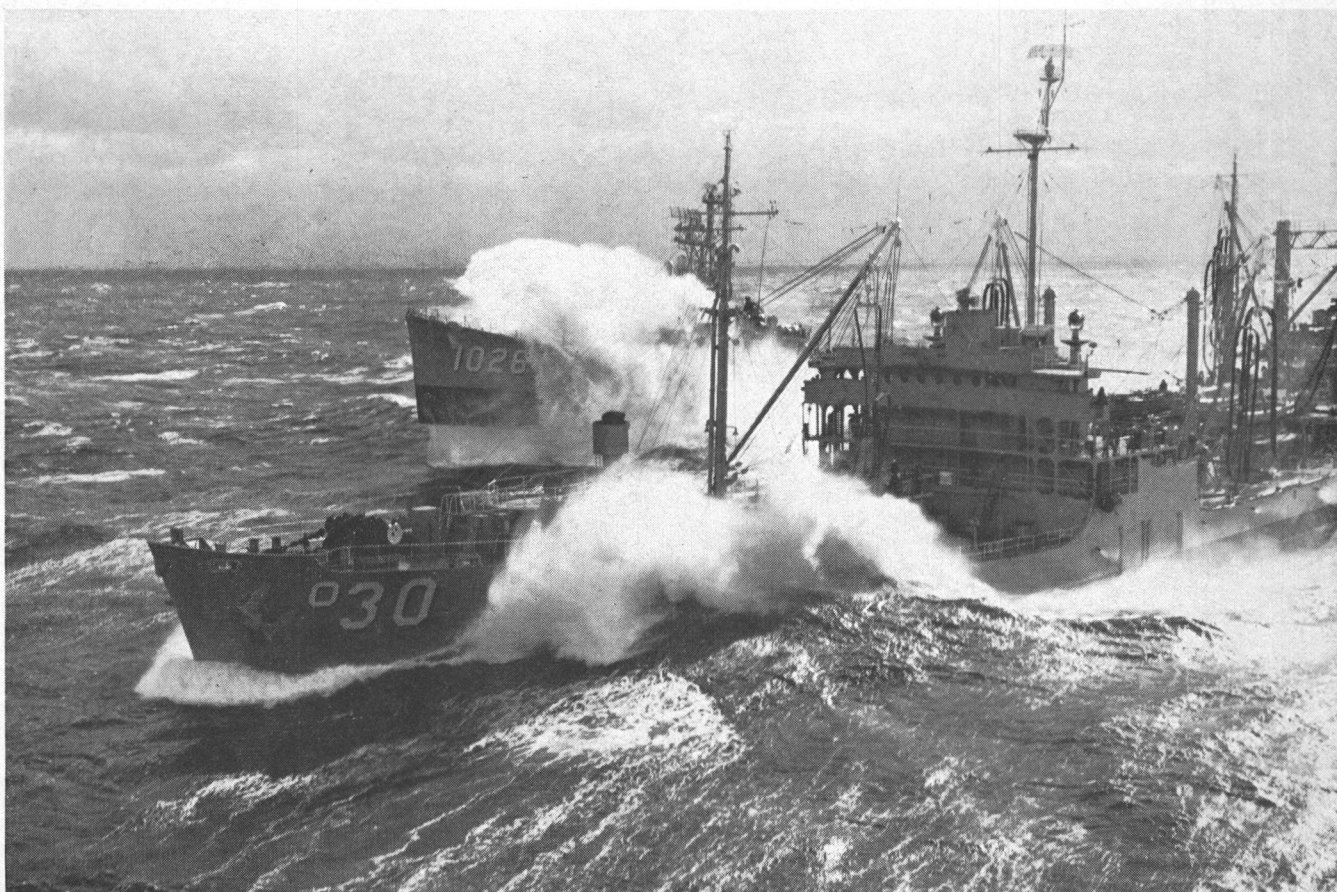
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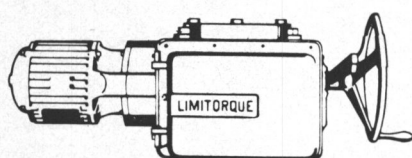
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## Teledyne Sewart Seacraft Delivers First Prototype Vessel To Coast Guard



The new Coast Guard 42048, specially designed and built by Teledyne Sewart Seacraft, is shown on a test run prior to being delivered on schedule by the shipyard.

The United States Coast Guard in New Orleans wasted no time placing into service the first of four competitive prototype all-aluminum boats designed to replace its present fleet of 200 old 40-foot steel-hulled rescue and patrol boats.

The normal transfer of ownership from the vessel's builder to the Coast Guard was charged with unexpected interest when the trim craft was sent to the aid of the crippled Coast Guard lightship New Orleans some 30 miles from its home port.

The 42-foot Coast Guard 42048, built by Teledyne Sewart Seacraft in Berwick, La., was delivered on schedule following extensive testing by the shipyard when **Bert Chauvin**, president of the company, formally turned the new vessel over to CWO-2 **Mitchel Arnold**, engineering officer representing the Coast Guard.

Comdr. **Hodges Gallop**, Executive Officer of the New Orleans Coast Guard Base, along with Lt. Comdr. **Steve Richmond**, Operations Officer, decided to put the craft to the task of aiding the New Orleans. The New Orleans had been struck by two barges in tow and partially disabled 12 hours earlier. She had developed engine trouble on her return up the Mississippi River-Gulf Outlet and was temporarily grounded for navigational safety and was being supported by one of the 40-footers from the base.

Immediately, a test run for the new vessel, which is equipped with sensitive electronic equipment, was started, supervised by **Dan Sentilles** of Teledyne. The boat worked through the Industrial Canal and out toward the Gulf of Mexico checking out engines, electronic equipment and other features.

When the Coast Guard 42048 reached the Coast Guard New Orleans, plans were made to either complete the needed engine repairs or have the Coast Guard 42048 take the larger vessel in tow. How-

ever, officers and men managed to return use of the engine to the vessel.

It was completely dark when the three vessels started back to base. The new boat, using its superior radar, took the lead. The officers said they were very pleased with the vessel and the way she responded to the demand put on her in the situation.

Teledyne Sewart Seacraft, builders of over 1,700 high performance steel and aluminum boats, more than any other shipyard in the world, specially designed and built the Coast Guard 42048 to meet specific Coast Guard requirements. The Coast Guard 42048 is equipped with twin GM Detroit Diesels Model 8V71N, Federal propellers, Karr Electronics radar and a built-in 250-GPM Aurora fire pump.

The new vessel has a speed of 25 knots and can continually patrol at full speed for 12 hours over a range of 300 nautical miles.

Included in its electronic gear is a listening device for rescue that can hear the human voice from distances far beyond the range of the human ear, plus long-range radar, Fathometer, automatic direction finder, single side band radio and a public address system.

Currently, the Coast Guard's 200 steel-hulled 40-footers are operating in harbors and on coastal waters throughout the United States, from the warm waters of the Gulf to the coldest Alaskan ports.

The new vessel is equipped with cold weather operation in that her engines can be artificially warmed and electronics kept dry while docked at standby in even northernmost ports.

Further testing will be conducted by the owner from New England down to the central Gulf Coast area, about one month in each Coast Guard district, starting in Boston this month, and leading to the selection of an optimum craft for the replacement program.

## Greek Owner Orders Ships From Canada Worth \$55.5 Million

An agreement has been signed by shipowner **Nicos Vardinoyannis** and Davies Shipyards of Canada for a series of 80,000-ton tankers worth a total of \$55.5-million, it was reported in Athens.

The agreement was signed in November, according to Mr. **Vardinoyannis**, with the shipyard which is based in Lauzon, a town facing Quebec City across the St. Lawrence.

Delivery of the first tanker is scheduled for mid-1972. Others, whose number Mr. **Vardinoyannis** would not reveal, will be delivered at eight-month intervals. The tankers will be equipped with Sulzer

engines and will have a speed of 16 knots.

Mr. **Vardinoyannis** is a former Greek Navy lieutenant commander who entered the tanker business in 1966 by using three small ships in a bid to break the British oil blockade on Rhodesia.

## Sumitomo Shipbuilding Launches OBO Carrier

The Sumitomo Shipbuilding & Machinery Co., Ltd., has launched the Avon Bridge, a 142,000-dead-weight-ton ore/bulk/oil carrier at the Uraga shipbuilding yard in Yokosuka. It is being built for the United Kingdom firm of H. Clarkson and Co., Ltd. and will be one of the world's largest OBO carriers. Delivery has been scheduled for the end of March.

## SNAME Pacific NW Section Holds Joint Meeting With Canadian Div., Vancouver Branch, IME



Members of the Canadian Division, Vancouver Branch, of the Institute of Marine Engineers (IME) and the Pacific Northwest Section of The Society of Naval Architects and Marine Engineers (SNAME) are shown during the ringing of the meeting to order aboard the S/S Princess Louise II, which is permanently docked in Vancouver. Standing left to right are: **David Cowie**, Northwest executive committee, SNAME; **Peter Sias**, chairman Pacific Northwest Section, SNAME; **Fred Skinner**, vice chairman British Columbia area, SNAME; **George Fryatt**, chairman British Columbia area, SNAME; Dr. **Allen Davis**, Westinghouse Electric Corporation and presenter of technical paper "Turbine Blade Failure on Queen Elizabeth 2"; **Francis Miller**, secretary-treasurer British Columbia area SNAME; **Rod Boomer**, Vancouver executive, IME; **Kenneth Kasschau**, Westinghouse Electric Corporation, technical paper discussor. Seated: **Ted Jones**, chairman of the Vancouver Branch, IME.

Aboard the S/S Princess Louise II on November 20, 1970, in Vancouver, British Columbia, the Pacific Northwest Section of The Society of Naval Architects and Marine Engineers met jointly with the Canadian Division, Vancouver Branch, of the Institute of Marine Engineers. In this precedent-setting joint meeting, 111 members of the two societies were recipients of the generous presentation of experiences gained from turbine blade failures in the RMS Queen Elizabeth 2.

Assisted by a recording by authors **R. Coats** and **R. Fleeting**, of John Brown Engineering Limited, Dr. **Allen W. Davis** of Westinghouse Electric Corporation described the paper and provided observations based on his very qualified perspective. Formal discussion was initiated by **Kenneth Kasschau**, also of Westinghouse.

The presentation and discussion brought out that fatigue failure was

recognized and believed to be caused by excitation of the blades by nozzle wake. Rectification was described as blade redesign to further minimize stress concentrations and incorporation of binding wire.

The meeting conveyed to all present that the designers were designing to the limit of their knowledge at the time, and that the turbines were an enlargement of previous trouble-free units for which there was extensive design input. Thus, the basic danger of extrapolating from the previous engineering effort without redoing all detailed mathematical analysis was a possible contributory cause.

A highlight of the meeting was the announcement by **Peter Sias**, chairman of the Pacific Northwest Section of the Society, that Vancouver, British Columbia, has been selected for The Society of Naval Architects and Marine Engineers' 1975 National Spring Meeting.





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## Magnuson Introduces Bill To Revise Ship Mortgage Program

A bill that would pave the way for a revision of the government's ship mortgage program has been introduced by Sen. **Warren G. Magnuson**, D-Wash., chairman of the Senate's Commerce Committee. Many informed sources feel that the bill is especially needed to help finance President **Nixon's**

new long range program to rebuild the merchant marine. If acceptable this would be the first overhaul since 1954 when the program was revamped into substantially its present form.

The maritime industry, interested parties, and government agencies, the Senator indicated, would have the opportunity to examine the extensive suggested detailed changes for "possible future legislative action", as early as practicable, like-

ly this year. The current provisions of the 1936 Merchant Marine Act, which is generally known as Title XI, have financed mortgages on more than \$1 billion worth of ship building and reconstruction.

Under the provisions of the proposed bill, mortgage insurance would become more flexible, the insurance more useful, and the important mortgage bonds authorized more marketable. In addition there are many technical changes in the

bill (S-4534) which would make for the first time containers and their chassis eligible for mortgage insurance up to the maximum 87½ percent backing, rather than 75 percent of their cost. Also the new lighter-carrying vessels would be covered to the full 87½ percent and the minimum size to qualify reduced from 200 tons to 25 tons.

In regard to security, various technical alternations were proposed, including allowing the commerce secretary to hold the security directly from the start of the transaction, rather than acquiring it by assignment once default has occurred. It is thought the change would at least simplify the paperwork to some extent.

The proposed bill would "provide much needed simplicity and flexibility," the Senator said. He also noted that technical innovations were transforming the shipping industry "rapidly" into a "highly capital intensive business enterprise" and as a consequence its financing under Title XI "is becoming of crucial importance."

## McQuaide Appointed NASSCO Plant Manager



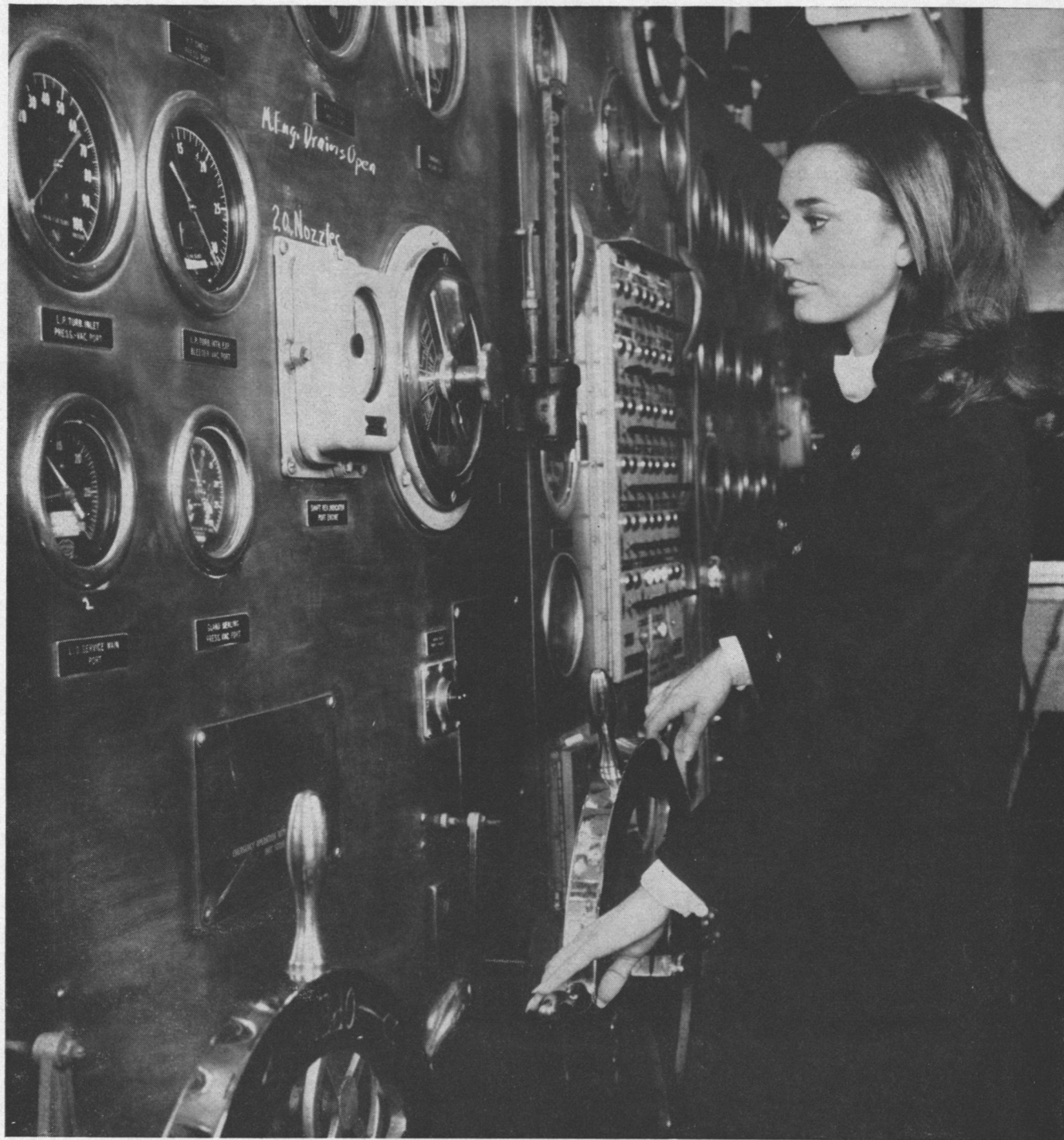
John McQuaide

**John McQuaide** has been appointed plant manager of National Steel and Shipbuilding Company, San Diego, Calif. The announcement was made recently by **John V. Banks**, NASSCO executive vice-president.

Mr. **McQuaide** has more than 35 years of experience in the shipbuilding industry. He began his career at the New York Shipbuilding Corporation, Camden, N.J., where he held various positions, including hull draftsman and general foreman, hull department. For a short time, Mr. **McQuaide** was employed by the J.J. Henry Company, Philadelphia, Pa., where he was in charge of the hull drawing room.

Mr. **McQuaide** joined NASSCO in 1959 as hull superintendent. In 1962, he advanced to assistant production manager, and in July 1970, to production manager, the position he held until his recent promotion. As plant manager, Mr. **McQuaide** is responsible for all production operations in the shipyard.

He is a native of Philadelphia, Pa. Mr. **McQuaide** attended Rutgers Extension at night, completing several engineering courses. He is a member of The Society of Naval Architects and Marine Engineers and The Propeller Club of the United States.



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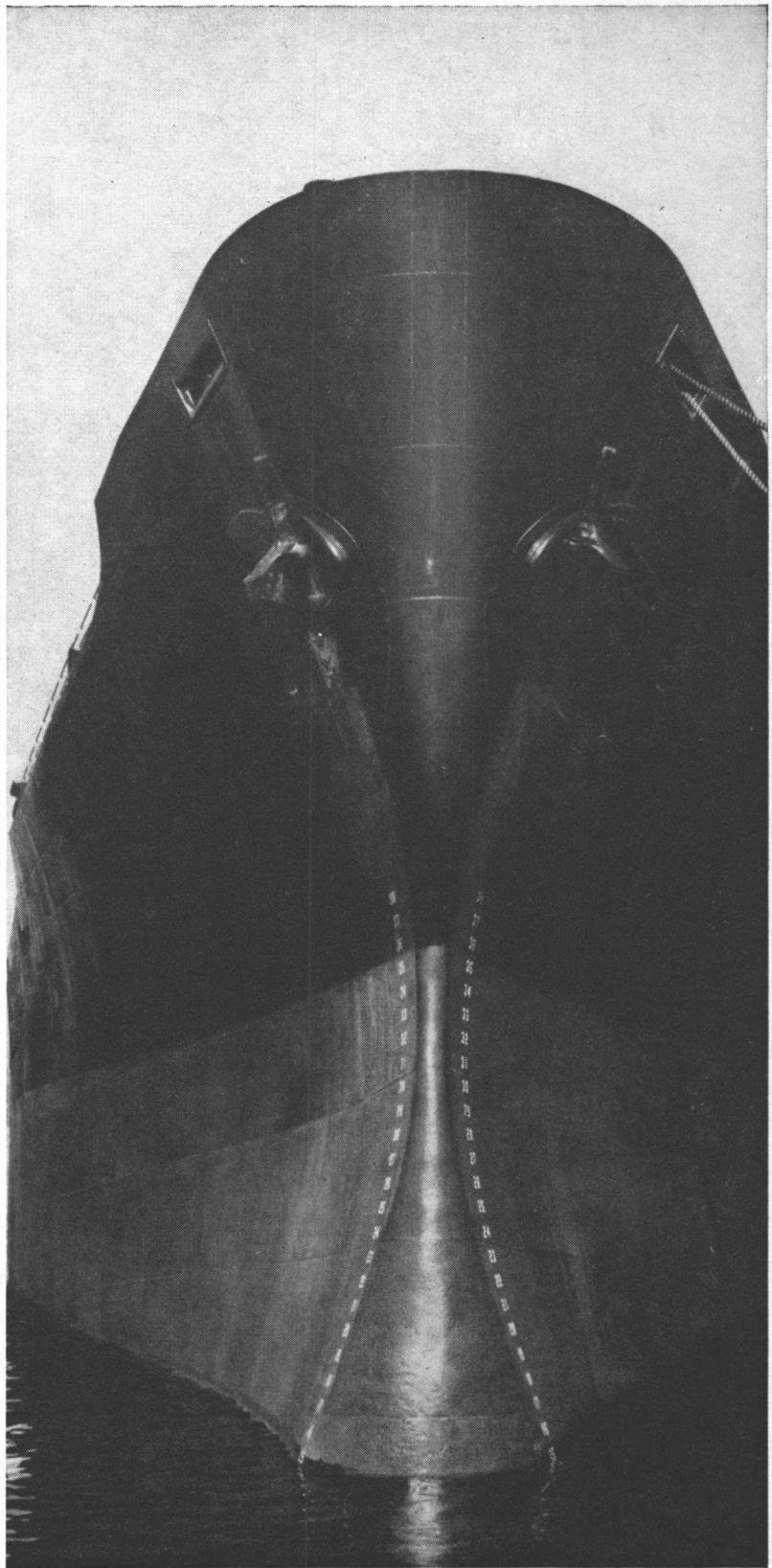
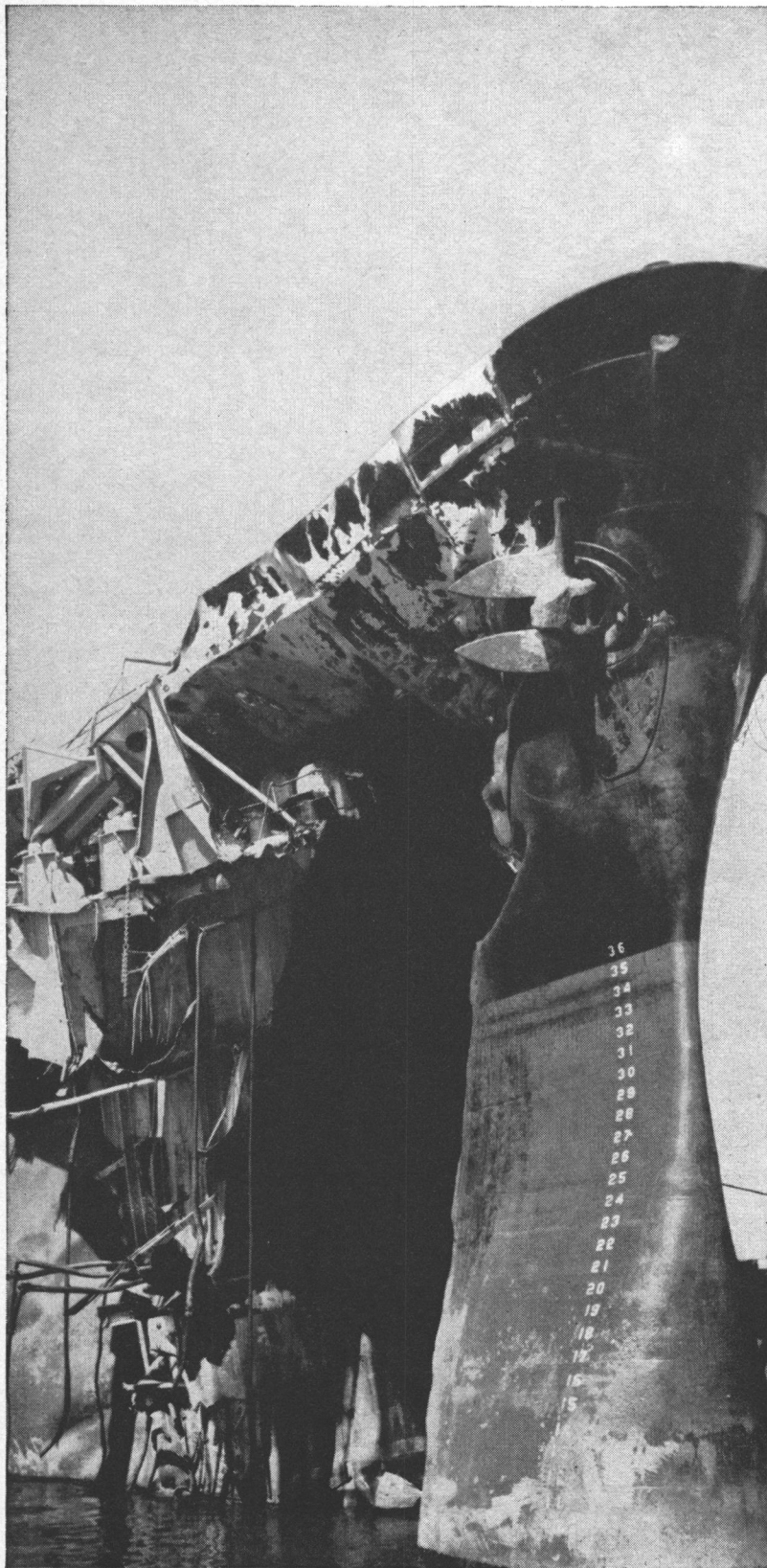
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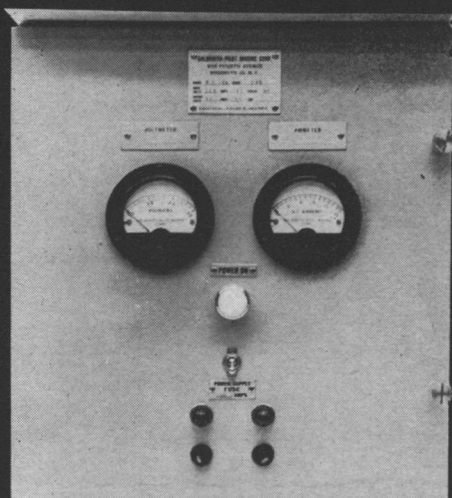
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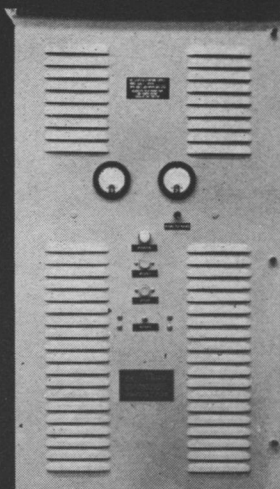
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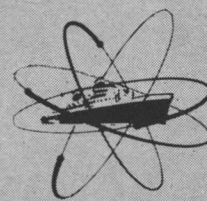
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## C.J.G. Wentz To Head MarAd's Eastern Region Ports-Intermodal Office



C.J.G. Wentz

Furthering the development of the recently created Office of Ports and Intermodal Systems by the Maritime Administration, U.S. Department of Commerce, Capt. Thomas A. King, Eastern Region Director of the agency, has designated C.J.G. Wentz to head this office in the Eastern Region.

One of the chief objectives of this new office is to serve as a facilitator and advocate of American-flag shipping's participation in intermodal transportation. It recognizes the need for the establishment of an all-embracing system that would include all modes of transportation and promote the closest possible cooperation among them, a matter of particular relevance in fully implementing the concept of containerization and related unitization methods.

The Office of Ports and Intermodal Systems will promote new cargo handling concepts, systems and the equipment for the carriage of cargo in domestic and international commerce. It will furnish information to shippers and carriers on new legislation and regulations affecting the movement of containers in domestic and foreign trade and will assist in the promotion and development of the U.S. ports, including modes of access to and from ports, traffic flow within a port area, and the physical layout of piers, wharves, docks and marine terminals.

Research projects are now being conducted on such subjects as the development of container consolidation centers, the integration of inland waterways into the LASH/Seabee systems, the state of container standardization and certification, constraints on the movement of specialized containers, equipment needed at intermodal terminals, and the use of E.D.P. in container systems.

The Eastern Region of the Maritime Administration is comprised of the states on the Atlantic Seaboard and the Great Lakes and also includes West Virginia, Vermont, Puerto Rico and the U.S. Virgin Islands.

Eastern Region headquarters is located in the Federal Building at 26 Federal Plaza, New York, N.Y. 10007. Mr. Wentz's telephone number is (212) 264-1150.

## Marseilles Ship Repair Facilities To Expand

An expansion of the ship repair facilities in the port of Marseilles is planned to permit vessels of up to 350,000 tons to be drydocked. Cost of the project is 125 million francs (\$23 million), and will be financed 60 percent by the national Government and 40 percent by the port. It is expected to be ready for service before the close of 1973.

Plans call for the construction of a new drydock and other facilities necessary for the accommodation of new giant tankers, which are soon expected to be discharging their cargo there.

Following completion of the work, Marseilles will be the leading ship repair center in France and one of the most important in the entire Mediterranean area.

Vessels aggregating 28.8 million tons were repaired in the port during

1969, which was the largest volume of shipping handled in recent years.

The 190,000-ton tanker Esso Bernicia was the largest vessel repaired and occupied the port's largest drydock. Of the ships repaired in Marseilles last year, 290 were French and 212 were foreign. All of the larger ones were tankers, including all ships in excess of 30,000 tons. Eleven of the vessels repaired were tankers of 50,000 tons or more.

# U.S. Merchant Shipbuilding Gets \$4 Billion Boost

## Program for Construction of 300 New Ships Turns Eyes of Maritime Industry To mariport'71

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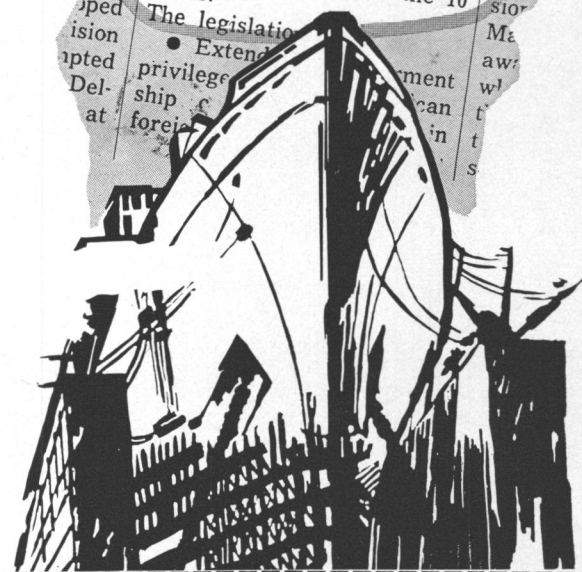
### Nixon signs shipbuilding subsidy bill

WASHINGTON — President Nixon signed legislation today calling for construction of 300 new merchant ships during the next 10 years.

The program will restore the United States to the front rank of maritime nations, Nixon said at a White House ceremony attended by about 100 persons from government, industry and labor.

The bill extends subsidy provisions to shipyards and bulk carriers but provides for future reductions in subsidy rates when American yards become more competitive. It will provide \$3.8 billion to \$4 billion over the 10 years.

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# Large Seagoing Unmanned Barge/Tug Developments

Roger M. Jones and Charles S. Smith\*

The never ending search for a better and cheaper way of moving coastwise bulk cargoes in the United States has brought on some very interesting developments within the last decade in the design and operation of large unmanned barges.

For purposes of this report, three generations of tugs/unmanned barges are considered as follows:

**First Generation**—tug/barges generally over 10,000 dwt. Primarily designed for offshore work on a towline but barge may have a stern notch and be designed to have the tug push in calm waters.

**Second Generation**—similar to the first generation, generally larger in barge deadweight and tug horsepower, but designed to permit the tug to stay in the notch in the open sea in light to moderate seas, generally over half the time while offshore.

**Third Generation**—special patented design. Rigid or semi-rigid connection to permit the tug to stay "in the notch" or pushing configuration 100 percent of the time.

As the first generation of barge/tug combinations increased in size and power it became evident that towing on a hawser in itself presented special problems. The occasional breaking of a towline in offshore tows often involved a substantial delay. Changing back and forth from hawser to notch while entering and leaving port also introduced a considerable delay factor.

Other than the size and increased horsepower involved, the distinctive feature of the second generation was the fact that they were for the most part designed not only with substantial stern notches of improved, more advanced designs but with additional tug/barge strengthening, special chafing gear and better hardware.

As larger barge/tug combinations followed, the method of connecting the tug within the notch also received special attention and today, there are a number of different and distinct designs adapted

to push-towing techniques being used or developed in offshore unmanned barge tows.

The emergence of these third generation barge/tug combinations with their rigid or semi-rigid notch connections will provide answers to some of the towing problems. If favorable experience is obtained with them, a dramatic breakthrough in large unmanned barge/tug towing techniques will have been accomplished.

## Push Towing Connections

The several types of stern-notch push-towing connections used may be categorized into three general groups: non-rigid, semi-rigid and rigid connections.

The non-rigid group includes all conventional designs, involving no patents, in which the connection of the tug within the notch is secured by cables or hawsers, allowing the tug to move flexibly on its own buoyancy.

The semi-rigid group covers those combinations in which the tug is rigidly connected at some point or points on the barge to provide a hinged effect for controlling some excess tug motions. Such designs include the Fletcher Artubar system and the Sealink system.

The rigid group includes the completely connected combinations and here the tug is securely fixed into the barge notch so that the tug stability is wholly dependent upon the barge itself. The Ingram design falls into this category.

**Interstate Oil Transportation Company** has a 30,000-dwt barge being built at Bethlehem Steel Company's Beaumont yard which will go into operation under charter to British Petroleum in the near future. The 520-foot barge will be mated with a 5,740-hp, 135-foot, twin-screw dedicated tug, being built at Main Iron Works. The combined unit is of a conventional design with a deep notch in the barge stern for the tug connection. The details of this connection have not been made available.

The barge is provided with both fixed and adjustable skegs and is designed with a modified ship's bow. A speed of approximately 12 knots, loaded, in moderate seas is expected while the tug is pushing. A total crew of 12 has been indicated for the tug.

The builder's price for the barge is reported to be \$3,700,000 and for the tug \$1,350,000.

Ingram Ocean Systems, Inc. has introduced one of the newer concepts in offshore towing. The concept, which was designed by Breit Engineering, Inc., consists of a barge unit of normal proportions, having a ship shape bow and deeply notched stern into which the tug unit is firmly secured as a rigid connection. The unique feature in this case provides means for sliding the tug completely into the stern notch of the barge along guide rails at the upper sides of the two units and then locking it into position by means of hydraulically operated horns which in effect forces the tug down into the floor of the notch. A hinged locking device on the forward deck of the tug then engages deck bitts on the barge and draws the tug unit securely into its locked position. A crew of 14 is contemplated for the first unit.

The initial unit is being built as a 532-foot, 33,000-dwt tank barge by Alabama Drydock & Shipbuilding Company and Southern Shipbuilding Corporation is building the 140-foot, 11,250-bhp tug. The reported cost for the combination is \$10,000,000. The owners have chartered the unit to a major oil company and have guaranteed a speed of 14 knots, loaded, in seas of up to force 7 weather conditions.

**Fletcher "Artubar" System** is among the better known semi-rigid, articulated methods of push towing techniques presently under development. This design embodies a barge with normal proportions, a full ship's bow, vertical wing-wall skegs and a deep notch at the stern. The tug is provided with hydraulically operated steel pins, one each port and starboard, located near the tug's quarter length, forward, at a level slightly above the main deck and designed to engage the barge in matching connections at the notch sides.

This system is under consideration by several firms. The barge sizes vary from 16,000 dwt to 50,000 dwt, and the tug horsepower vary from 4,200 to 7,000 hp. The cost of a 3,800-hp tug and 14,000-dwt barge unit with the Artubar connection has recently been priced at a U.S. shipyard and is reported by Fletcher Associates to be \$2,000,000 for the tug and \$2,000,000 for the barge. A minimum crew of six men, according to Fletcher, could operate the unit. For tank barge operations, two additional pump men would be needed.

**The Sea Link System** of push towing has been developed on the West Coast where it has been applied to smaller barge/tug combinations. The concept employs the use of a rigid horizontal frame hinged to the stern of the barge at one side and connected through a universal swivel joint to the same side of the tug. A steering strut connects the opposite side of the tug to the barge stern.

**Humble Oil & Refining Company** is having one of the largest unmanned barge/tug combinations built by Gulfport Shipbuilding Company. It consists of a 30,000-

dwt barge and a 7,000 hp, twin-screw tug. It is designed for push towing approximately 60 percent of the time at a speed of 14 knots in loaded condition. The barge has a deeply notched stern with a fore and aft opening of 55 feet. The notch is contoured to the shape of the tug which is inserted approximately one-third of its length. The tug is secured within the notch by 2-inch wire cables. The reported cost of the barge is \$5,940,000 and the tug \$3,000,000. A crew of 12 men is planned.

**Moran Towing Company** has participated in the offshore towing of large unmanned barges since the first generation barge units were introduced in the early 1960s. Late in 1969 the firm took delivery of a 508-foot, 26,000-dwt tank barge, built at Gulfport Shipbuilding Company, and has been operating it as a push-towing combination with a 5,800-hp dedicated tug. The combination is operated by a crew of nine men. The reported costs for the barge and tug combination was \$5,500,000.

**Ohio River Company** is among the operators who have been very active in the large barge-tug offshore movement of bulk cargoes. The company's latest venture into a large unmanned barge/tug movement has been the operation of two 26,000-dwt, 472-foot barges using a 5,000-hp tug. A crew of nine men has been used on the tug. The cost of the barges was reported to be \$2,700,000 each.

**McAllister Brothers Towing Company** is presently operating a 10,000-dwt tank barge with a 1,600-hp tug in the movement of oil from New York City to Boston and Albany. Speeds of 10 knots have been obtained in the ballast condition. The tug-barge connection is a conventional one for pushing within the notch with the towing winch located on the barge deck. A six-man crew operates the tug.

The firm also has extensive experience in push towing through its operations on the Great Lakes and its subsidiary on the West Coast, Island Tug & Barge Ltd. This latter firm operates many barges with the 15,000-dwt self-dumping deck log barge Island Yarder being the most recent addition to the fleet.

## Future Trends

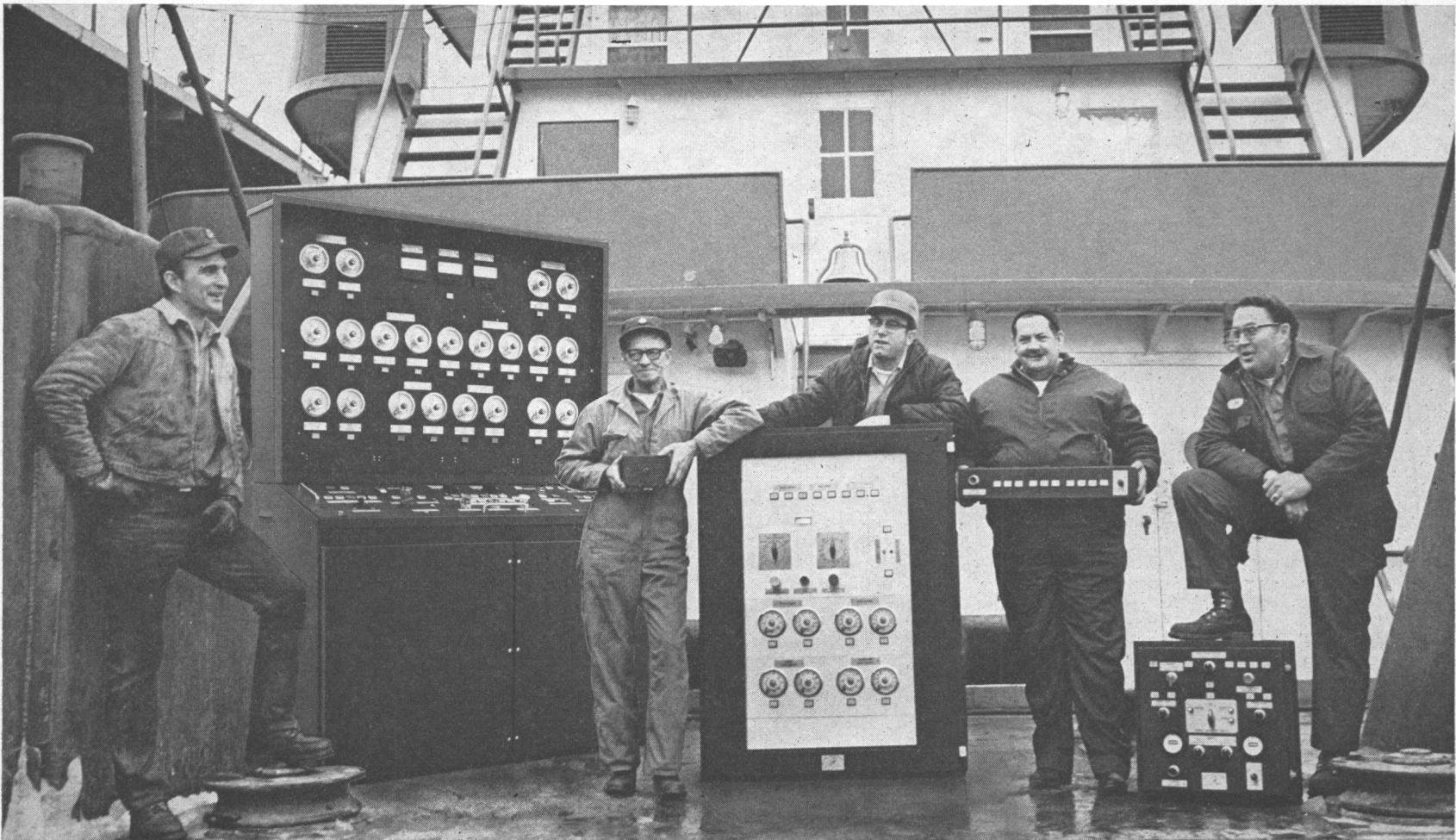
Further development and refinement of the third-generation barge/tug designs will depend to a great extent upon the degree of success obtained by those units presently under construction or in the design stage and scheduled for delivery within the next year or two. It may take considerably longer to establish the full reliability of rigid and semi-rigid notch connections.

At the present state of the art it does not seem likely that barges in sizes over approximately 30,000 dwt will be built without a semi-rigid or rigid notch connection, and the ability of the tug to stay within the notch most, if not all of the towing time, remains a critical test of all the third-generation units.

\*Mr. Jones, president, Jones, Bardelmeier, Clements & Co., Ltd., Nassau, Bahamas, and Mr. Smith, technical advisor, Jones, Bardelmeier, Clements & Co., Ltd., Pompano Beach, Fla., presented the paper condensed here before a recent meeting of the Southeast Section of The Society of Naval Architects and Marine Engineers.



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## AIMS And MarAd Act To Up Cargo Carriage On U.S.-Flag Vessels

James J. Reynolds, president of the American Institute of Merchant Shipping, Washington, D.C., has announced formation of a three-coast Maritime Trade Development Committee to work hand in hand with the Maritime Administration's Office of Market Development in a joint effort to increase the volume of internation-

al commerce moving on U.S.-flag ships.

In making the announcement, Mr. Reynolds said, "Assistant Secretary of Commerce **Andrew E. Gibson** has stressed that only through a close working relationship with maritime management and labor can the Government successfully carry forward a marketing program to increase cargo carriage on American-flag vessels. Certainly, an aggressive cargo development program is basic to the successful implementation of the

Merchant Marine Act of 1970. AIMS will do its part, through its Maritime Trade Development Committee, to accomplish this objective."

Mr. Reynolds referred to a recent marketing development statement by Mr. **Gibson**, who said: "The primary thrust of our market development efforts will be to assist U.S.-flag operators to attract shipper patronage based upon positive factors. Basically, the shipper has got to be sold on the idea that American-flag operators on many

trade routes, in terms of rates and scheduling, are equivalent or superior to foreign-flag operations. We also have to convince him that two other important ingredients—service and reliability—will not be lacking when he ships American. I cannot stress too strongly that the mission of the Office of Market Development is to supplement, not supplant, the marketing efforts of the individual lines."

**James T. Crowley**, Chief of MarAd's Office of Market Development, at a recent organizational meeting of the new AIMS committee, reviewed details of the U.S. cargo development program and discussed ways in which industry and Government can work together to achieve program goals. Attending the meeting were: **Arthur A. Chase**, American President Lines; **Paul F. Duffy** and **Wayne H. Christensen Jr.**, Farrell Lines; **Frank L. Kennedy**, Lykes Bros.; **Robert U. Foster**, Pacific Far East Line; **L.A. Renehan**, Prudential-Grace Lines, Inc.; **Charles C. Hopper**, Moore-McCormack Lines; and **John A. Barthrop**, States Steamship Company. **George Clarke** of MarAd, New York, and **William J. Coffey** and **Meredith S. Buel** of the AIMS staff also attended.

## Jose M. Echevarria Appointed President Maritime Service Corp.



Jose M. Echevarria

**Jose M. Echevarria** has been appointed president of the Maritime Service Corporation.

Mr. **Echevarria**, formerly chief economist of the Puerto Rico Ports Authority, will set up a computer operation to bill and collect demurrage charges on late trailers from shippers on behalf of the four major lines serving the \$3.2 billion Puerto Rican trade. The lines are Gulf-Puerto Rico Lines, Sea-Land Service, Seatrain Lines and Transamerican Trailer Transport.

In announcing Mr. **Echevarria's** appointment, **Richard J. Gage**, chairman of the Puerto Rico Ocean Service Association (PROSA), which represents the lines, said: "We are delighted at having obtained the services of such an outstanding Puerto Rican economist with such an unusual in-depth experience in maritime transportation economics."

Mr. **Echevarria**, 35, had been with the Puerto Rico Ports Authority since 1961 and received highly specialized training in shipping economics at the Federal Maritime Commission. While with the Ports Authority, he authored many studies on shipping problems.



## Tiger Tips For Longer Rope Life



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**100' DOUBLE END VEHICLE FERRY:** Delivered via the Champlain Canal, this ferry became the fifth Blount Double Ender to engage in Lake Champlain ferry service. She carries twenty automobiles in four lanes and makes 12 knots.



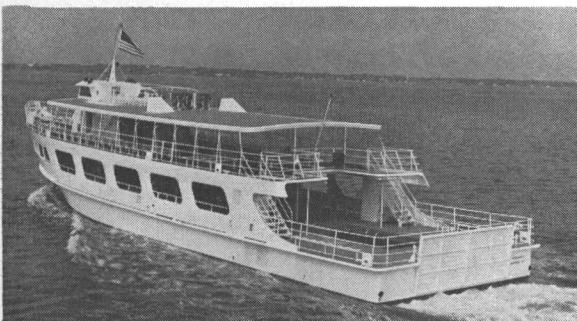
**112' CRUISE VESSEL:** The first vessel of her type to offer smooth water cruise service on the inland waterways of the Eastern U. S. She offers 20 deluxe cabins each with its own facilities and operates on runs from New England, the Saguenay River and Great Lakes to Key West, Fla., via either the Mississippi or the Atlantic Intercoastal Waterway.



**128' SIGHTSEEING FERRY:** This 500 passenger Vista-View (Pat. applied for) sightseeing vessel operates with three other Blount ferries on the Waikiki-Pearl Harbor Tour in Hawaii. The vessel was sailed under her own power from Rhode Island to the Pacific Island in 30 days.



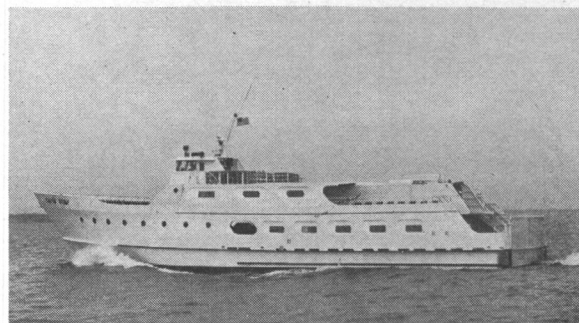
**117' JUMBO PARTY FISHING VESSEL** delivered to Jersey Coast operators. This 16 knot ocean going fisherman sails 149 anglers to highline fishing spots 100 miles off the coast.



**132' VISTA VIEW SIGHTSEER** delivered to Acapulco interests. 700 passengers, complete with two restaurants, glassed in lounge, two dance floors and swimming pool.



**57' 500 H.P. TEST BED:** Built and operated by Blount for research and development of power pods, sound attenuation and new offshore fishing methods. The propeller shaft and tailshaft bearing of this vessel can be removed and replaced without drydocking.



**132' PASSENGER VEHICLE FERRY:** This "TL" class vessel attained a speed of 21 m.p.h. on her trials. She is pod driven with two single and two double pods for a total of 3000 H.P. and operates regular service between Puerto Rico and the Virgin Islands. Certification is for 440 passengers and up to 2 tractor trailers and 8 autos.

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\*Subject of Patent Applications U. S. Patent Office by Luther H. Blount, Inventor



**100' DOUBLE END TWIN SCREW FERRY:** Delivered via the Erie Canal, this vessel joined two Blount sister ferries on a famous Lake Erie run between Sandusky and Kelley's Island. Powered by two 350 H.P. diesels, she makes 13 knots and carries 15 cars.



**80' EASTERN RIG DRAGGER:** Fifth in a series built for Southern New England fishing interests. This vessel began fishing in September and has stocked some impressive catches. In fact, almost as a harbinger of good luck, her builder ironed a swordfish off her bow on her trial run near Block Island.



## Litton Data Systems Posts To Breitwieser And Dudas

The appointments of **George F. Breitwieser** as vice-president of program management of the Data Systems Division and **Daniel L. Dudas** as vice president of ships electronic systems of the Data Systems Division of Litton Industries, Van Nuys, Calif., has been announced by Dr. **Nicholas A. Begovich**, Litton vice-president and head of the division.

In his new position, Mr. **Breitwieser** will be responsible for all aspects of the division's programs. His most recent position was vice-president of ships electronic systems at the division. He has also served as vice-president of program management, vice-president and general manager of Litton's Guidance and Central Systems Division, Europe, and vice-president and assistant general manager of that division's headquarters facility in Woodland

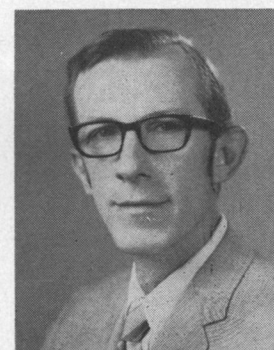
Hills, Calif. Mr. **Breitwieser** holds B.S. and M.S. degrees in electrical engineering from the Massachusetts Institute of Technology.

The position most recently held by Mr. **Dudas** at Data Systems was that of director of product development programs. He was graduated from the University of Illinois with a B.S. and M.S. degree in aeronautical engineering and an M.B.A. degree from the Harvard School of Business Administration.

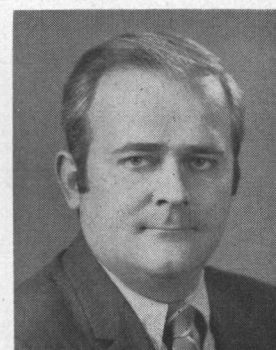
Data Systems Division has the responsibility for the electronic subsystems portion of the two new multimillion dollar Navy vessel programs—the highly automated DD-963 destroyers and the LHA general purpose amphibious launch ships.

Litton Industries, headquartered in Beverly Hills, Calif., is a major multinational corporation specializing in products, systems and services for business, defense, marine, industrial and professional markets.

## Wilson Marine Transit Co. Promotes Doncevic And Stobbe



Paul C. Doncevic



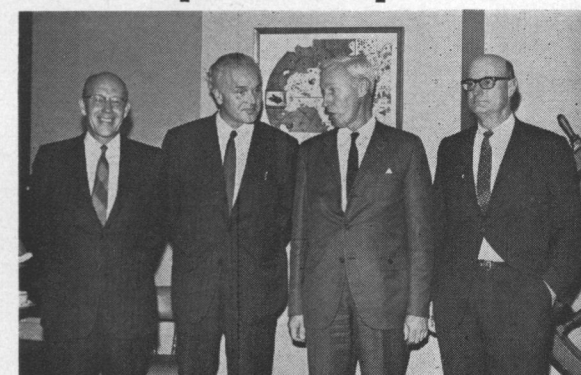
Donald A. Stobbe

**Ernest J. Andberg**, president of Wilson Marine Transit Company, Cleveland, Ohio, has announced the promotion of **Paul C. Doncevic** to vice-president, finance, and **Donald A. Stobbe** to traffic manager.

Mr. **Doncevic** has held various management positions in purchasing, insurance and pensions, office personnel, and finance since joining Wilson Marine in 1957. His academic background includes industrial engineering at Ohio State University and industrial management and business administration at Cleveland State University where he earned his B.B.A. degree.

Mr. **Stobbe** joined Wilson in 1963 as a dispatcher in the traffic department. In 1965 he was appointed chief dispatcher and in 1968 assistant traffic manager. Prior to joining Wilson Marine, Mr. **Stobbe** was with Republic Steel Corporation. He attended Cleveland State University where he majored in transportation.

## E. Canadian Section, SNAME Hears Paper On Propellers



Attending the Eastern Canadian Section meeting were, left to right: **H.E.G. Dupuy**, member, president of Diamond Canapower, Ltd.; Dr. **Baer**, author; **K.P. Farrell**, RCN, Canadian Vickers, Ltd., Section chairman, and **Charles F. Collins**, member, chief, Power Requirements Division, Shipbuilding Branch, Department of Transport, Canadian Government.

During the November meeting of the Eastern Canadian Section of The Society of Naval Architects and Marine Engineers, Dipl. Ing. **W. Baer**, director, Ship Technical Division of J.M. Voith, G.m.b.H., presented a technical paper to the Eastern Canadian Section of The Society of Naval Architects and Marine Engineers, titled "Principle and Design of the Voith-Schneider Propeller and its Incorporation in Ship Design."

The paper was expertly presented by Dr. **Baer**. The film and slides demonstrating the propellers in use on tugs in Europe clearly illustrated the great maneuverability to be had with the system. The presentation was most timely as two systems are currently being fitted to the C.N.R. ferries building at Port Weller Dry Dock Ltd.

Upon completion of the presentation, a lively discussion period ensued between Dr. **Baer** and various members of the Society, with the author being thanked by **William German**, German & Milne.

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## Nordata Inc. To Manufacture And Market In U.S. Norwegian Designed Marine Computer Systems

A series of advanced computer-aided systems aimed at achieving greater safety and reduced operating cost for super-tankers and other large ships were introduced into the United States at a recent seminar in New York City sponsored by Nordata Inc. The systems were developed in Norway by Norcontrol, a leading supplier of Scandinavia's marine automation systems. Nordata Inc., 459 E. Main Street, Denville, N.J. 07834 will manufacture and market the equipment in the United States.

In order to establish the feasibility of the systems, the units were installed on the Norwegian-flag ship Taimyr. The firm of Noratom-Norcontrol A/S was chosen to design and install the computer system and its software. The work was carried out in cooperation with the Norwegian ship classification society Det norske Veritas, the Technical University of Norway and the Ship Technical Research Association.

This development and testing program covered four areas: the engine room, bridge, cargo handling and administrative routines.

One of the systems, computerized bridge control called DataBridge, consists of an advanced anti-collision system, an improved autopilot and a computerized method of dead reckoning, position fixing and great circle sailing. This group is subdivided into DataRadar, DataSailing and DataPilot units.



The managing director of the Noratom-Norcontrol company, **Ibb Hoivold** (right) and Norcontrol Director **Erik Gjeruldsen** checking the testing of a DataBridge system.

The advanced anti-collision system, DataRadar, is based on a coordination of radar and computer. The system gives automatic tracking and also a relative and true-motion vector display. The vector for each target tracked is superimposed on the normal radar picture and gives data on position, velocity and bearing. In the standard version of the unit 12 targets can be tracked automatically and four manually.

DataSailing is an advanced navigational system. In the basic version the coordinates of the starting point are read into the computer. The computer calculates the great circle to steer and by means of data from the log and gyro the present latitude and longitude. Computations also are made of the remaining distance to the next turn point and the estimated time of arrival. In the more advanced version of DataSailing the computer will be interfaced to one of the available position-fixing systems, Decca, Omega or Satellite.

The DataPilot system is an improved autopilot. The DataPilot comprises a normal controller based on proportional, integral and derivative action and an adaptive controller which computes the neutral position of the rudder to counteract the steady forces acting on the hull due to wind and sea. The system accepts automatic input of the great-circle course to steer from DataSailing, or manual input of the same information. The advantage of DataPilot is the optimum use of the rudder.

The DataChief is the name of a corresponding family of systems for the engine room. The computer is mounted in the console in the engine room and the same computer serves a number of sub-systems. The two basic systems are DataSafe and DataTrend. DataSafe covers the watchkeeping and monitoring part of an unmanned engine room. DataTrend is a system which carries out continuous computations in order to determine the thermodynamic state of the machinery, based on measurements of certain parameters, the use of process modeling technique and comparison with stored reference data. With these results as input data to the process models, the machinery maintenance may be scheduled.

Another field which lends itself to computer application is cargo handling. The system developed for this project is called DataLoad and can use one of the other computers on the ship. It was developed originally for tankers and carries out the same functions as the analogue loading aids. The great advantage of using a programmable computer lies in the possibility of up-dating and changing the program as more experience is gained and new ideas are developed—it is possible to keep the installation modern after the customer has taken over the ship.

Other sub-systems have been developed and are in the process of development. Two of these systems are called DataDiesel and Data Freeze which cover special engine-room functions.

Spokesmen for Nordata Inc. state that Norcontrol has delivered instruments in the last few years for unmanned operation of engine rooms to 38 ships and has installed systems for control from the bridge on 52 ships with large Diesel engines. This vast experience is available to Nordata Inc.



The PPI unit of the bridge-control panel is put in place in the DataBridge unit. The radar screen is the central component in this system. The computer-aided radar will plot ships on a collision course and warn the watch.

## Northern And Chakas Named To New Positions At ACT (USA)



**Michael B. Northen**



**Donald S. Chakas**

**Michael B. Northen** and **Donald S. Chakas** have been named president and executive vice-president of Associated Container Transportation (USA). Formerly executive vice-president and vice-president for operations, respectively, the announcement of their new positions was made in New York by **R.A. Lloyd**, director of ACTA (Ltd), London-based parent of ACT's worldwide integrated, intermodal container transportation and distribution service.

Visiting in New York for conferences with ACT's North American partners, Mr. Lloyd cited Mr. Northen's and Mr. Chakas's promotions as indicative of the importance which ACT assigns to the impending container trade between North America and Australia and New Zealand. Five giant containerships are presently under construction for the trade, the first of which will enter service next spring.

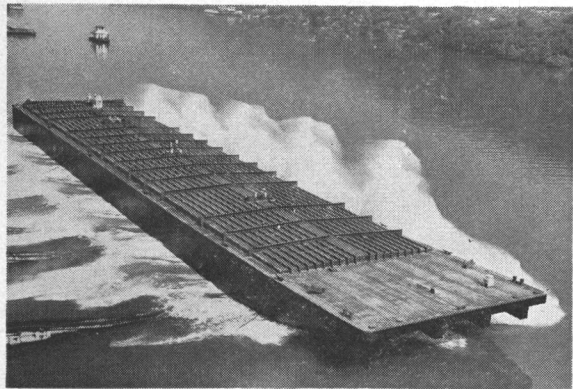
Mr. Northen has been with ACT (USA) since its inception in February 1969 and is primarily responsible for developing and coordinating the new service. A veteran steamship man, he joined the U.K.-based Blue Star Line in 1949 after service with the Royal Navy. In 1956 he was assigned to Blue Star's Wellington, New Zealand office. Mr. Northen was transferred to New York in 1964 to establish and manage the line's services from the east coast of North America.

Mr. Chakas has also been associated with ACT (USA) since its formation. He had been with the Caterpillar Tractor Company, Peoria, Ill. for 16 years where he was successively supervisor of domestic traffic and supervisor of export traffic. In the latter capacity he was in the forefront of the international shipment of heavy equipment and spare parts in marine containers. Mr. Chakas is a graduate of the University of Illinois and attended the College of Advanced Traffic and the John Marshall Law School. He is a member of the Association of Interstate Commerce Practitioners, the American Society of Traffic and Transportation and the transportation fraternity, Delta Nu Alpha.





## UBL Subsidiary To Operate Six Dravo-Built Tank Barges



One of the six new tank barges, built by Dravo Corporation for Union Barge Line, splashes into the Ohio River.

Six new tank barges with a combined capacity of nearly 7,000,000 gallons are being acquired by Union Barge Line Corporation, Pittsburgh, to expand its unit tow service.

Built by Dravo Corporation, the 297½-foot by 54-foot by 12-foot barges will be operated by Cardinal Carriers, Inc., a subsidiary of Union established to supplement its regular transportation service.

Cardinal presently operates two 3,200-hp towboats moving petrochemical products from Gulf Coast origins to destinations on the upper Ohio and Illinois Rivers.

For shipment of large volumes of liquid commodities from one region to another, the firm's unit tow service offers twice the capacity of standard tank barges, which are 195 or 200 feet by 35 feet by 12 feet. Transit times are improved significantly with unit tow service because of the single hull line configuration of these tows and the use of high speed pumping equipment.

Union's new barges include four double-skin bow pieces, one double-skin stern barge, and one

single-skin box-type unit. Capacity of the bow barges will be 1,045,000 gallons. The stern unit will have a 1,114,000-gallon capacity and the box barge 1,381,000.

Minimum off-loading rate for each vessel will be 1,480 gallons per minute.

Union is one of the few major carriers which offers both unit tow and general purpose barge service. The company operates a fleet of 10 towboats and nearly 400 barges throughout the entire Ohio and Mississippi River Systems, the Gulf Intracoastal Waterway and connecting waterways, and across the Gulf of Mexico to Tampa, Fla.

## \$10 Million Navy Contract To Sanders Definitized

A letter contract from the Naval Electronics Systems Command to Sanders Associates, Nashua, N.H., authorizing work on classified electronic equipment, has been definitized for \$10 million.

Work, which began in the early part of last summer, is being performed at the company's Nashua facilities on the fixed-price production award.

Sanders is engaged in research, development and manufacture of diverse electronic systems and products for the military and commercial markets.

## Holland America Line Names Buchanan Managing Director

The appointment of A. Campbell Buchanan as managing director of Holland America Line's passenger division has been announced by the company. He succeeds Paul H. Kraaijvanger who held the post in Rotterdam.

The company announced that its executive board has decided that due to the fact that its passenger ships are almost exclusively employed in the cruise trade from New York, that its passenger section will now be managed directly from the New York headquarters, where Mr. Buchanan will be located.

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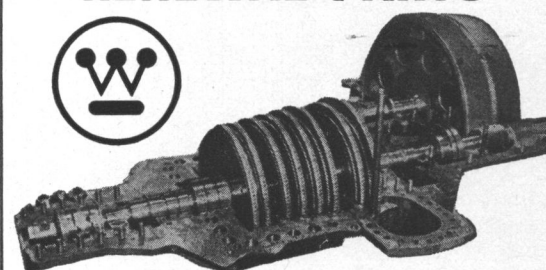


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# AAPA Panel Outlines Use Of Computers For Port Growth

"The ports which have modern transportation and data processing facilities or systems will be the ones that will experience the most growth and prosperity," **Peter V.R. Railey**, president, Information and Planning Systems Corporation, Arlington, Va., advised The American Association of Port Authorities at its annual convention in Houston, Texas. Mr. Railey was one of five panel speakers presenting views on "The Use of Computers and Data in Ports Today and Tomorrow."

This panel session was arranged for by the AAPA Committee on Standardization and Special Research, headed by **Thomas T. Soules**, director of the Port of Boston. **Matthew Carroll** of the Planning and Development Department, Port of New York Authority, and secretary to the sponsoring committee, served as moderator.

Mr. Railey presented views on the ways in which port authority managers might use automatic data processing profitably. Speaking on how the methods of moving cargo has changed in the last ten years, he said, "Bottlenecks in the flow of cargo are no longer caused primarily by the means of transportation, but by the lack of integrated and uniform information systems. Use of computers is the only solution to this dilemma. It is theoretically possible today to move cargo without any formal documentation by having computers talk to each other. This will be a reality in the future."

After describing the various types of computers and their capabilities, he stated that with the advent of high-speed ships it is necessary for steamship operators and agents to communicate information and process documentation rapidly. However, operators and agents find it difficult to afford the required equipment. By the ports installing the necessary equipment, agents and operators could use the computers for documentation, steamship agency accounting, vessel voyage accounting, market and sales data and payroll.

**F.B. Ellam**, director of financial services, National Harbours Board, Ottawa, Canada, described the methods being used in Canada to equip ports with the proper data processing equipment at a reasonable cost. He highlighted all the areas in port operation where computers could be used. However, to introduce such a wide range of functions at all Canadian ports would have been out of the question. "Recognizing the need to use each unit of input data at least twice, if not more," he said, "we felt the need to plan for every eventuality which might make today's system part of tomorrow's information requirement." To do

this, a dream port, called the Port of Utopia, was created where virtually all activities were controlled through a fully integrated data-processing system. From this study, requirements were ranked in relative order of merit.

After making this study, the Port of Montreal was selected, Mr. **Ellam** stated, and the developed system installed on a priority basis.

In closing, he stated, "If you want to meet the challenge of change in marine transportation in the 70s, data processing is a must. But don't think that the biggest and best computer will give you the biggest and best results, because it won't. What comes out is only as good as what goes in and what comes out is only as good as those who use it. My advice to you is think big and plan well, but don't forget the common denominator, your human resources, and the chances are you may not lose your shirt."

**Clifford C. Muller**, data processing manager, Port of Seattle, reported on the Port's plans for mechanized computer systems. He described the presently installed systems and how they are being used. "Approximately 50,000 transactions for general cargo and containers are made per month on the Port's on-line system," he advised. He also mentioned how the system for general cargo is leased to one of the Port's lessees for the control of two piers.

Speaking of the costs involved, Mr. Muller said, "the research and development cost of installing the new marine terminal system and conversion of the accounting systems to new equipment and concepts was very large. Hardware cost for the data-processing department is \$17,500 per month. Manpower for EDP is 35 people."

Explaining why the Port provided such a sophisticated system, Mr. Muller said, "the targets are customer service, operational control, analysis and growth."

**Milton Kaufman**, transportation advisor in the Foreign Trade Division of the U.S. Census Bureau, said that the Census Bureau, through its use of computers in its foreign trade statistics program, has been able to produce and release on a timely basis a substantial amount of information on U.S. foreign trade.

He told the AAPA members that port authorities can use this material for port promotion, determining participation in foreign trade by competing ports, and to assist in decision making.

**W.A.C. Connelly**, executive assistant in the Board of Engineers for Rivers and Harbors, U.S. Corps of Engineers, described the Engineer Corps' waterborne commerce statistics program.

## Chesapeake SNAME Hears Technical Paper On Deepstar 20,000 Design Philosophy



Principals of the Chesapeake Section meeting, left to right: **M. Steffens**, General Electric Company, publicity chairman; **P. Eisenberg**, Hydronautics Inc., chairman; **S. Feldman**, Naval Ship Systems Command, moderator; **B. Lowe** and Dr. **S. Quick**, both with Westinghouse Electric Corporation, co-authors, and **E. Miller**, Hydronautics Inc.

Approximately 100 members attended the third scheduled meeting of the Chesapeake Section of The Society of Naval Architects and Marine Engineers which was held at Washington Navy Yard Officer's Club on November 18, 1970.

Following the cocktail hour and dinner, **Phillip Eisenberg**, Chesapeake Section chairman, reviewed the highlights of the annual meeting recently held in New York. Of special interest to the members of the Chesapeake Section was the David W. Taylor Medal awarded to **L.C. Hoffmann**, of the Maritime Administration.

Reports on the activities of three of the Section's committees were then presented by their respective chairmen. These were: schools committee, by Dr. **S.R. Heller**; membership committee, by **W. Hunley**, and research committee, by **J.L. Schuler**.

The Deepstar technical paper on the design philosophy of 20,000 was presented by **B.J. Lowe**, programs engineering manager of the Westinghouse Electric Corporation Ocean Research and Engineering Center in Annapolis, Md.

Co-author of this paper with Mr. Lowe was Dr. **S.L. Quick**, engineering manager of the Westinghouse Ocean Research and Engineering Center.

In their paper, the authors presented a short history of the small submersible in oceanographic activities and then described how a particular vehicle, Deepstar 20,000, evolved. Deepstar 20,000 is the fifth in a family of Westinghouse submersible designs and is one of the most ambitious oceanographic development programs undertaken by private industry. The paper described the technical/management philosophy applied to this multi-million dollar commercial research and development program, and its impact on the design concept and overall system engineering on the vehicle is discussed.

**S. Feldman**, Naval Ship Systems Command, who commented on the paper prior to its presentation, acted as moderator during the technical session. The authors responded to questions from the membership following the presentation of the paper.

## Johnson Catalog On Stern Tube Bearings

Johnson Rubber Company has published a new 16-page catalog which describes several types of forward stern tube stuffing box assemblies for water service, water and grease service combination, and grease service. Featured is an "Air-seal" ring type which permits the changing of packing without dry-docking. Complete dimensional data for all types are shown in tables, as well as details showing stuffing boxes used in conjunction with demountable rubber stave bearings.

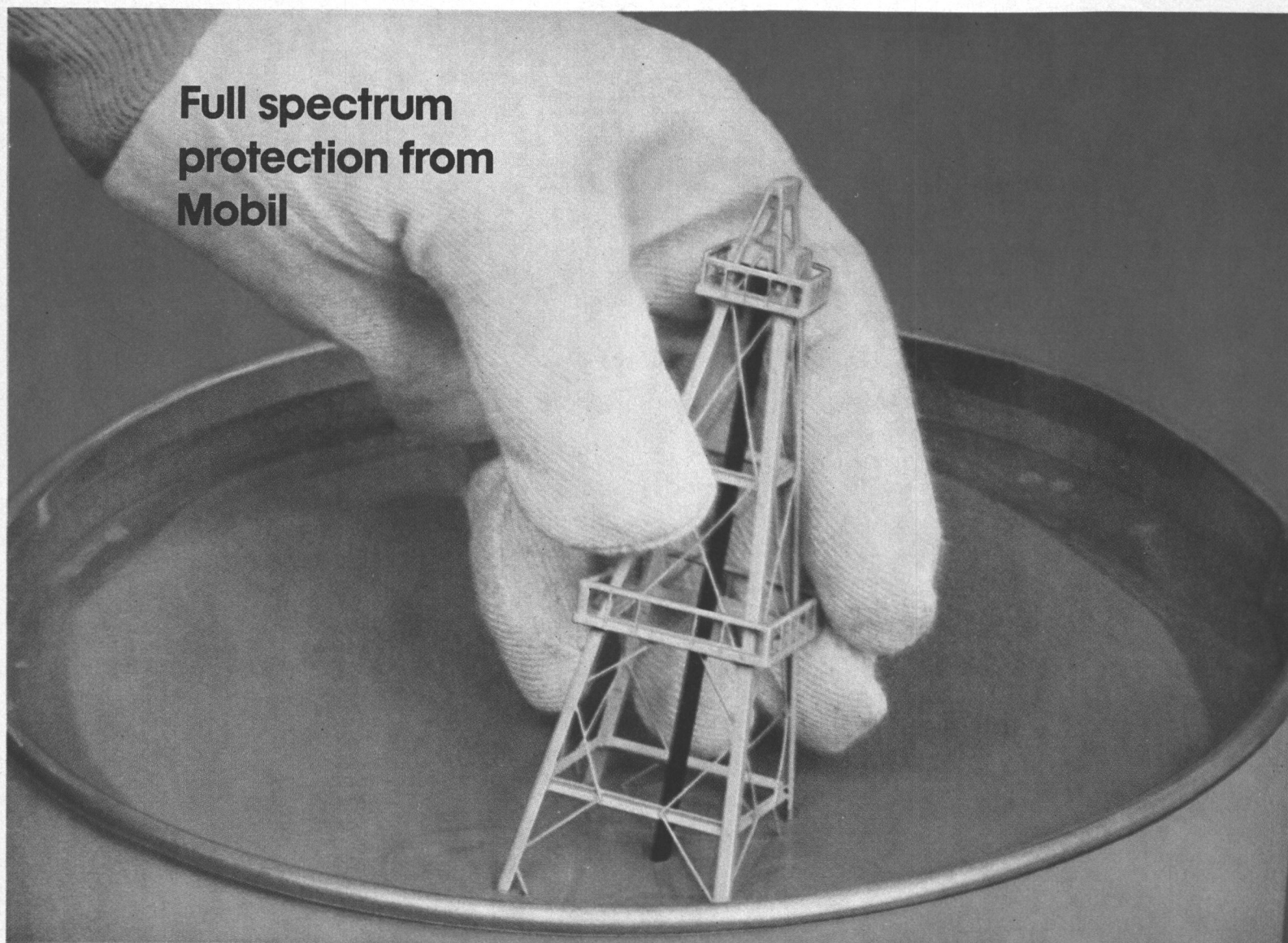
For a copy of SB770, write Marine Division, Johnson Rubber Company, Middlefield, Ohio 44062.

## Litton Industries Plans Tug/Barge Service For Ore On Great Lakes

A new tug/barge iron ore-carrying service is planned for the Great Lakes. Litton Industries Leasing Corp. has asked the Maritime Administration to extend loan and mortgage insurance to help finance the estimated \$23 million project.

A 14,000-hp tug is planned to work with a 52,000-dwt self-unloading barge. The barge is to be built by Erie Marine Division of Litton. The tug/barge system is to be operated by Wilson Marine Transit Co., another Litton affiliate.





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## Peterson Builders Launches Search And Recovery Vessel —243-Foot Alcoa Seaprobe

Alcoa Seaprobe, the most advanced deep-ocean search and recovery vessel ever constructed, has been launched in Sturgeon Bay, Wis. and hailed as a major vehicle in man's effort to unveil the secrets of the sea.

The 243-foot all-aluminum vessel will be operated by Ocean Search, Inc., an oceanographic venture of Aluminum Company of America and Ocean Science and Engineering, Inc. The ship has been under construction at Peterson Builders, Inc. since February, and will remain at the yard in Sturgeon Bay until fitting out is completed in August.

Mrs. William C. Woodward of Pittsburgh, Pa. wife of Alcoa vice-president William C. Woodward, christened the ship. Their daughter, Miss Cynthia Woodward of New York,

served as maid of honor. Mr. Woodward is president of Ocean Search, Inc., and an OSE director. Honored guest was Rear Adm. O.D. Waters Jr., adviser, National Oceanic and Atmospheric Administration. Others participating in the program were Willard Bascom, OSE's chairman and president, and Dr. Eric A. Walker, Alcoa's vice-president, science and technology.

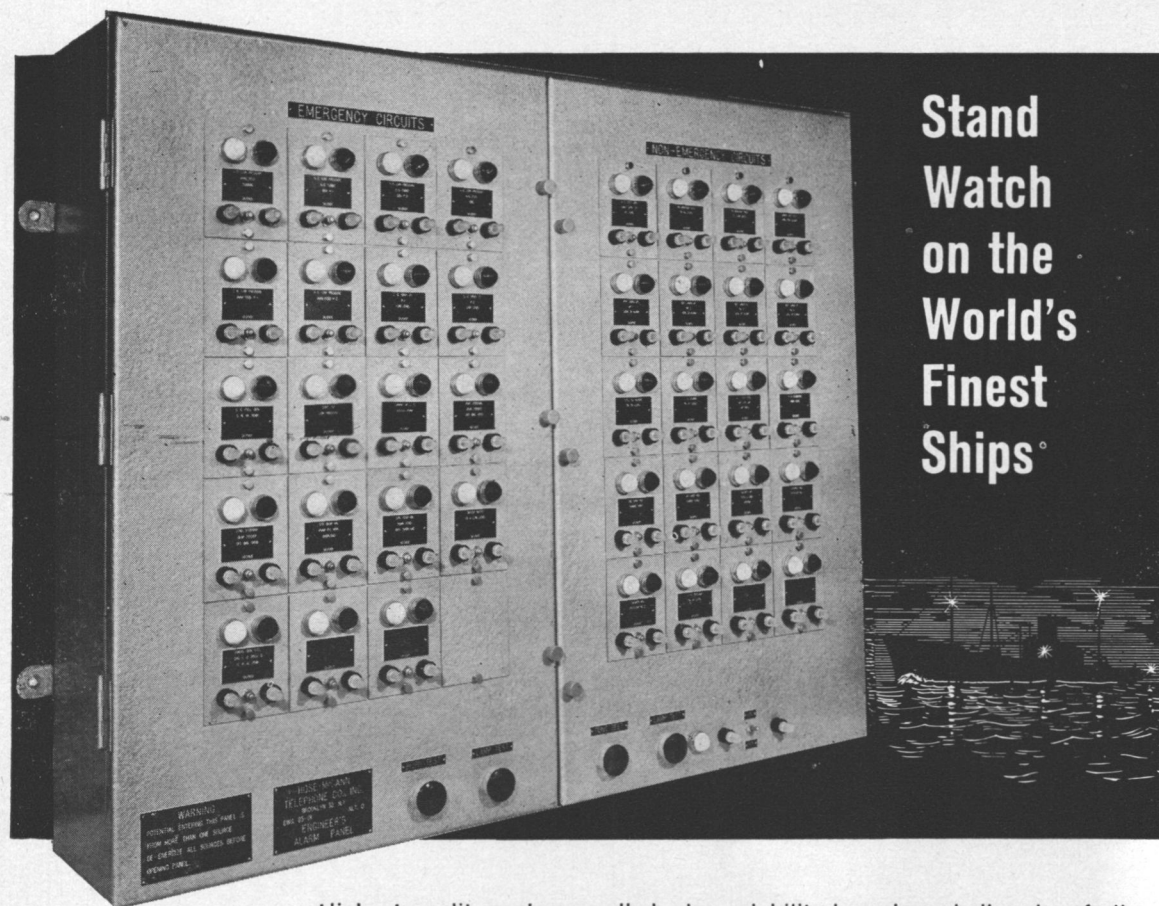
The Alcoa Seaprobe will be available for priority emergency operations, such as assisting in the search and recovery of missing submarines or other objects lost at sea. Other missions could include deep-sea recovery work, deep-ocean archeological projects, and proprietary undersea geological explorations for new mineral resources. The ship will be capable of recovering 200-ton payloads from 6,000-foot depths; it will possess the ability to hold

its position in rough seas; search, core and sample mineral deposits on the sea floor; locate and retrieve heavy objects more than a mile beneath the surface, and perform other research and exploratory oceanographic functions.



The Alcoa Seaprobe splashes into Sturgeon Bay, Wis. The 243-foot-deep ocean search and recovery vessel will be fitted out and ready for sea trials in August.

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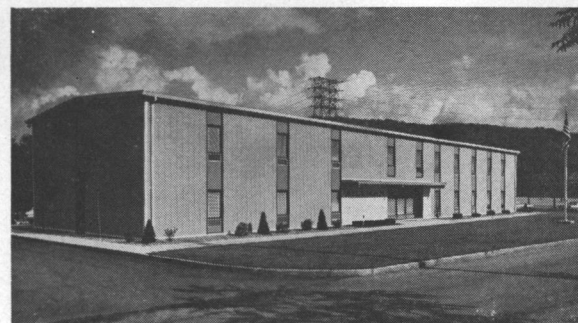
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Construction of the Alcoa Seaprobe is providing a practical "reference manual" of advanced aluminum fabricating techniques that will aid shipbuilders around the world. It represents unique examples of aluminum technology in welding, many of them developed by Alcoa specifically for marine application. Approximately one million pounds of aluminum will be used in the hull, framing, superstructure and furnishings of the ship.

Alcoa's Dr. Walker said: "Alcoa is proud to be associated in this venture with Willard Bascom and his associates at Ocean Science and Engineering. We share with him the conviction that Alcoa Seaprobe will be an important oceanographic tool, enabling us to uncover many new secrets of the seas, and to develop more of their tremendous potential for the betterment of man." Dr. Walker praised the craftsmen at Peterson Builders and said the "ship will truly be a monument to their skills."

The ship will have a 20-man crew and accommodate a scientific party of 30. It will have a speed of 10 knots and will be powered by two 800-kw diesel-electric generators. Her propulsion system will have two vertical-axis cycloidal propellers.



**HILLMAN'S NEW HEADQUARTERS:** Hillman Barge & Construction Company have moved into their newly erected office building (shown above) at the Brownsville, Pa. shipyard. This represents one phase of a planned growth program to consolidate, coordinate, and streamline all of the operations of the Brownsville shipyard. The ground level offices include a reception area, the general accounting department, industrial relations and personnel departments, supply department, superintendents, and marine repair department. The second floor is comprised of executive offices, a large conference room, engineering offices, estimating and steel control department, as well as offices of the Hillman Transportation Company. Structural features of the new two-story all metal and all electric facility include 11,000 square feet of floor space, with fire resistant construction. All offices have individually controlled heating and air-conditioning, and the latest in telephone and communication equipment. The surroundings are attractively landscaped and have ample parking areas for employees and visitors.



## SNAME Los Angeles Section Completes Active Season



Attending the September meeting in San Pedro were left to right: (standing) **Frank Nickels**, papers chairman; **Robert A. Rourke**, chairman; **David Logan**, secretary-treasurer; (seated) **C.R. Schaeffner**, Ingalls West; **Sheldon Mazursky**, Ingalls West Div., Litton Systems, Inc., author, and **Thomas B. Wilson**, vice chairman.

The Los Angeles Metropolitan Section of the Society of Naval Architects and Marine Engineers has just completed a very active and interesting fall season.

Aboard the *Princess Louise* in San Pedro Harbor, on September 10, **Sheldon Mazursky** of Ingalls West Division AMTD of Litton Systems, Inc. presented "The Role of Life-Cycle Costing in the Contract Definition Process." This paper outlined methods used to arrive at a contract definition for the "perfect" ship that would perform the ideal service that the owner desired at a minimum upkeep cost for a required period of time.

During the weekend of October 9 and 10, the Los Angeles Section hosted the San Diego and Northern California Sections at the Santa Barbara Biltmore Hotel. Many of the attendees' wives accompanied them for this meeting, which welcomed all at a hosted cocktail party on Friday evening.

The technical session on Saturday presented "Marine Transportation and Mineral Slurries" by **Norman J. Thompson** and **Tom B. Thomas** of the Marcona Corporation; "DE-1052 Class Acoustical Data" by **Charles Jonson** and **Paul Mathews** of Todd Shipyards Corporation, and "Passage to Prudhoe" by **Herschel Chase** of Humble Oil Company. The papers were well received for their information about new methods of ore transportation, sea trial data collecting, and the S/S *Manhattan's* problems steaming through the ice in the Northwest Passage.



Shown above at the November meeting aboard the *Princess Louise* in San Pedro Harbor are left to right: **Frank Nickels**, papers chairman; **Marvin M. Wolff**, author; **Robert A. Rourke**, chairman, and **Thomas B. Wilson**, vice chairman. At this meeting Mr. Wolff presented a paper on "The Conversion of the *Queen Mary*."

Saturday afternoon the members and their wives relaxed while golfing, shopping and touring in the Santa Barbara area. At the Saturday evening dinner dance, the group enjoyed themselves with **I. Newton Perry**, Mr. Music of Santa Catalina Island, and his troupe.

At the November 19 meeting, Adm. **John J. Fee**, USN (ret.), of the Long Beach *Queen Mary* Project, and Capt. **Richard Fay**, Commander U.S. Naval Shipyard Long Beach, were guests of the Section to hear **Marvin M. Wolff** of Harco Engineering present a paper on "The Conversion of the *Queen Mary*."

The shoreside and on-board engineering problems were discussed with a comparison to the original specifications as written by John Brown and Sons, the builders, of Clydebank, Scotland. This interesting presentation drew a capacity attendance to the *Princess Louise* in San Pedro Harbor.

These well rounded and diversified discussions of marine technological problems will be continued through the winter and spring seasons. The Los Angeles Metropolitan Section will hear about "Ship Loading in a Seaway" by Prof. **D. Hoffman**, of Webb Institute, this month; "Technological Forecast of Marine Transportation Systems" by **H.P. Pomrehn**, of Bechtel Corporation, and **G. Moore**, of North American Aviation, in February; "Determination of Ship Response to the Propulsion Control System" by **J. Dunne**, Hydro-nautics Inc., in March, and "Air Cushioned Vehicle for Arctic Drilling" by **J. Graham** and **D. Knorr**, of Global Marine, in April 1971.

## Swiftships Delivers Aluminum Crew Boat

Morgan City's newest industry recently delivered the 65-foot crew boat *Sugar Wayne* to its owner Sug Rosson, Inc., also of Morgan City, La. Officially designated Hull 0010, the 65-foot all-aluminum crew boat went through acceptance trials recently. The *Sugar Wayne* seats 38 passengers in plush surroundings and is powered by a matched set of GM 12V71N diesel engines. It is air-conditioned and centrally heated for year-round comfort, and her electric power is drawn by a 20-kw 2-71 GM/Delco generator. Equipped with the latest in electronic gear, the *Sugar Wayne* has an 18-foot beam, clear aft deck area, engine entrance through the passenger compartment, and a speed of 25 miles per hour.

**Jerry Hoffpauir**, director of marketing for Swiftships, Inc., stated "The *Sugar Wayne*, which is our standard 65-foot crew boat, introduces into the crew boat industry a boat that will give speed, roominess, while at the same time being seaworthy."

## Sperry Marine Systems Div. Promotes Lopez And Goff

Sperry Rand Corporation's Sperry Marine Systems Division, Charlottesville, Va., has promoted **L.J. Lopez** to sales manager of its Eastern district office in Brooklyn, N.Y., and **Douglas S. Goff** to sales manager of its Southern district office in New Orleans, La.

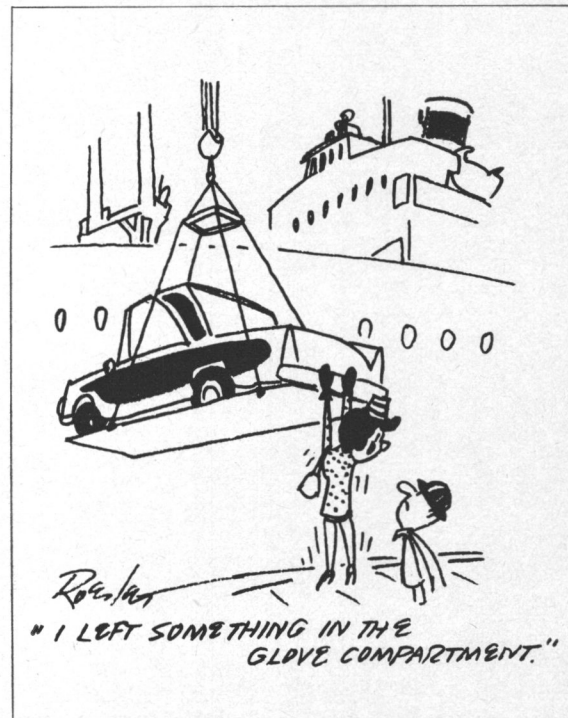
Both are newly-created positions and reflect Sperry's continuing efforts to place more responsibility and provide improved marketing services through its district offices. Mr. **Lopez** will be responsible for sales of Sperry's extensive line of marine navigation and control equipment along the Eastern Seaboard from Maine to Florida, and Mr. **Goff** will be responsible for the entire Gulf of Mexico area, including the lower Mississippi River.

Mr. **Lopez**, formerly a marketing representative in the Eastern district, has 28 years of marine experience with Sperry. In addition to his appointment, Sperry also announced that **G. M. D'Arco** and **A.J. Boyajin** have joined **F.L. Luciano** as marketing representatives in the Eastern office.

Mr. **Goff**, formerly marketing representative in the Southern district office has 20 years of marine experience with Sperry. In addition to his appointment, Sperry announced that **Henry F. Woods** would join **W.F. Pedneau** as a marketing representative in the Southern district office.

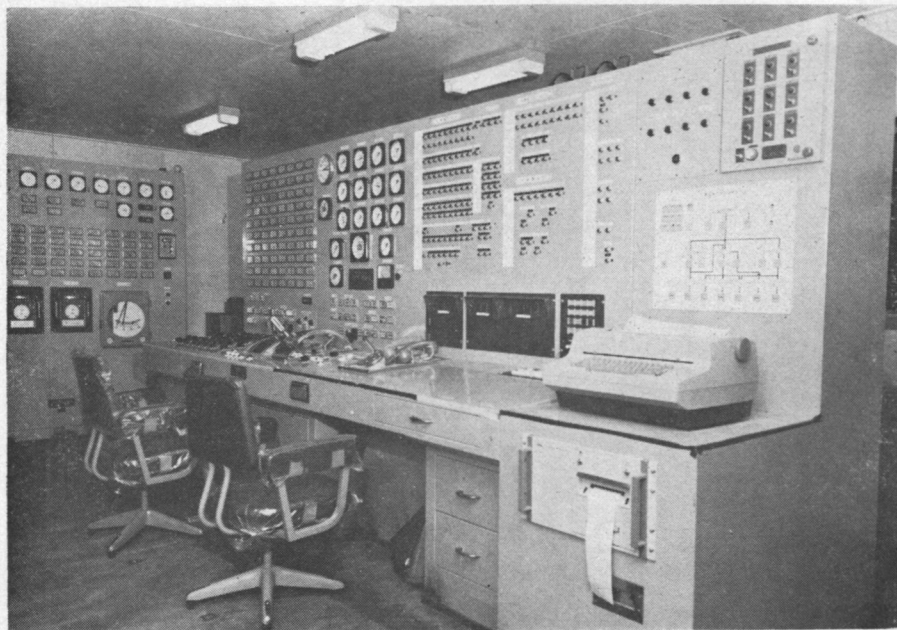


Authors and officers pictured above during the October joint meeting in Santa Barbara, left to right, are: **E.E. Scott**, meetings chairman; **Thomas B. Wilson**, vice chairman; **Norman J. Thompson**, Marcona Corporation, author; **H.I. Chatterton**, executive committee; **Herschel Chase**, Humble Oil Company, author; **Robert A. Rourke**, chairman; **Frank Nickels**, papers chairman; **Tom B. Thomas**, Marcona Corporation, author, and **David Logan**, secretary-treasurer.





## Mini-Computer Monitoring System For Machinery Operation Being Tested



The mini-computer installation on the Niihata Maru, shown above, will provide for centralized control of oil shipboard functions. It was developed by two Japanese firms.

Hitachi Shipbuilding & Engineering Co., Ltd. recently installed the first part of a centralized monitoring system utilizing a mini-computer on the 114,849-dwt ore-carrier Niihata Maru. The ship was built at the firm's Innoshima shipyard and is jointly owned by Yamashita Shinnihon Steamship Co., Ltd. and Sanwa Shosen Kaisha, Ltd.

This monitoring system combines various sub-systems, such as the main engine, navigation, cargo handling, etc., in one unit. At this time, only the machinery part of the unit was installed. The development of the machinery monitoring system is the result of a study performed by the YSH Committee, which consists of Hitachi Shipbuilding and Yamashita Shinnihon Steamship Co. Hitachi supplied the software for the system and Hoku-shin Electric Works, Ltd., furnished the hardware.

The machinery unit of the monitoring system is a new attempt to provide a fixed-memory-type mini-computer capable of calculating the minimum necessary performance, as well as detecting failures and

diagnosing causes. Its main function is data logging. The main characteristic of the localized computer system adopted is that it can employ a system corresponding to the financial requirements of the shipowner.

The unit will be tested aboard the Niihata Maru for about a year under various sailing conditions (condition of cargo, speed, steering, etc.), surrounding circumstances (weather, meteorological phenomena, etc.) and changes on the actual vessel (dirt in the engines and on the hull).

This system is well suited for shipboard use since it adopts the fixed-memory method which cannot be cancelled out by misoperation. Hitachi also feels that it is cheaper in price and easier to handle than the magnetic-core type.

The Niihata Maru has an overall length of 856 feet 4 inches, a beam of 131 feet 11 inches, a depth of 70 feet and a designed draft of 51 feet 3 inches. It is powered by a 23,200-hp Hitachi B & W 9K84EF type diesel engine which gave a trial speed of 17.57 knots.



The 114,849-dwt Niihata Maru, shown on trials, will test out the operation of the mini-computer as applied to the main machinery under all types of conditions.

## Jeffboat Names Three Vice-Presidents



Leo R. Toupin



Lon Pinaire



Ralph T. Goodwin Jr.

Jeffboat president, R.W. Naye, has announced the recent creation of three vice-presidencies and a restructuring of the Jeffersonville, Ind. based shipbuilding company into four major divisions. Simultaneously, Mr. Naye announced the names of the three men to fill the newly-created positions.

Leo R. Toupin, formerly director of personnel, has been named vice-president, administration. Mr. Toupin joined the company in 1967 as assistant director of personnel. Prior to joining Jeffboat, he served as labor relations supervisor for Titanium Metals Corporation of America in Henderson, Nev. In his new post Mr. Toupin will have charge of industrial relations, purchasing, accounting, and manpower and scheduling.

Named to fill the vice-president, engineering, slot is Lon Pinaire, formerly manager of research and development with the Tube Turns Division, Chemetron Corporation. Joining Jeffboat as vice-president of engineering, Mr. Pinaire brings 19 years of experience in the fields of both design and manufacturing engineering. At Jeffboat he will oversee production engineering, industrial engineering, plant engineering, maintenance and quality control.

Ralph T. Goodwin Jr., formerly sales manager for Jeffboat, moves into the position of vice-president, sales. He will head up sales and contract administration, estimating, advertising and public relations. Moving to Jeffersonville from New Orleans, La., Mr. Goodwin joined Jeffboat in 1966 as sales manager. Prior to his affiliation with Jeffboat, Mr. Goodwin served as regional sales manager for the Dravo Corporation.

Heading up the fourth major division at Jeffboat is James E. Nivin, who was elected a vice-president of the firm in 1968. As vice-president, production, he will oversee production, production planning and material control. A graduate naval architect, Mr. Nivin has been affiliated with Jeffboat since 1965. Prior to that he was naval architect and chief engineer for Maxon Construction Company, Tell City, Ind.

In announcing the new positions and appointments, Jeffboat president R.W. Naye noted that the positions were created with an eye to accomplishing full utilization of the plant and equipment modernization and expansion program just

completed at Jeffboat. Under the program, Project 70, Jeffboat has constructed new loading, storing, handling and treatment facilities for steel, as well as other major improvements throughout the yard. "These new management positions, combined with our recently completed expansion, will enable Jeffboat, already the largest barge producer in the nation, to continue to serve the waterways industry with top quality, on time, competitive production," Mr. Naye said. Jeffboat is part of the Inland Waterways Services Division of Texas Gas Transmission Corporation.

## ENCRON Names Powell For Northeast Area



Gordon Powell

The appointment of Gordon Powell as the Energy Control Corporation sales representative for the Northeastern United States area from Maine to North Carolina has been announced by Bruce Bettcher, ENCRON president.

Mr. Powell, long associated with the marine electronics industry, formerly represented a top quality line of marine electronic equipment in the Northeast area. In his capacity he will direct his efforts toward the sale of ENCRON Automatic Pilots.

Energy Control headquarters are located at 13290 S.E. 30th Street, Bellevue, Wash. 98005.

## Topping Elected To Litton Board

Dr. Norman H. Topping, chancellor of the University of Southern California, has been elected to the board of directors of Litton Industries.

Dr. Topping's election came during Litton's 17th annual stockholders' meeting in Beverly Hills, Calif. The 12 incumbent members of the board were also elected by Litton stockholders.



## L. Luckenbach Joins Todd Houston Division



Lewis Luckenbach Jr.

Arthur W. Stout Jr., general manager, Todd Shipyards Corporation (Houston Division), announced that **Lewis Luckenbach Jr.**, has joined the Todd Houston Division as sales representative for ship repair and new construction.

Mr. Luckenbach, formerly with the Todd Houston Division between 1950-61, has since been associated with Gas Resources Corporation and also served as vice-president of Medina Gas Gathering Corporation, both of Houston, Texas. For the past three and one-half years he was connected with Kohlmeier & Company, members of the New York Exchange, as a stockbroker and investment banker in Houston.

## Bender Welding Bids Lowest For Trawler

The apparent low bidder for the construction of an 86-foot stern trawler and scalloper for Cold Spring Fish and Supply, Cape May, N.J., was Bender Welding and Machine Co., Inc., Mobile, Ala., at \$313,800.

## AWO Publishes Booklet Giving Barge & Towing Industry Source Info.

The American Waterways Operators, Inc. has released a new publication listing sources of information on the barge and towing industry. Entitled "The Barge and Towing Industry Catalog of Publications, Films and Information Resources," the 24-page booklet was issued by AWO in the interest of creating a better public understanding of domestic water carrier operations, and to meet a growing demand on the part of students of transportation and others for a listing of such materials.

The booklet contains more than 140 individual listings which describe source materials and tells where and how they can be obtained. Materials from Federal, state, academic, national associations, and other sources are listed, as well as those offered by AWO. Also listed are libraries with barge and towing industry collections, and maritime publications featuring news on the industry.

In a foreword, **Braxton B. Carr**, president of The American Waterways Operators, Inc., points out that in assembling the new publication AWO has attempted to make it as comprehensive as possible.

Mr. Carr said the Association will seek to make the listing even more extensive by updating the publication periodically.

Copies of "The Barge and Towing Industry Catalog of Publications, Films and Information Resources" are available upon request to The American Waterways Operators, Inc., 1250 Connecticut Avenue, N.W., Suite 502, Washington, D.C. 20036.

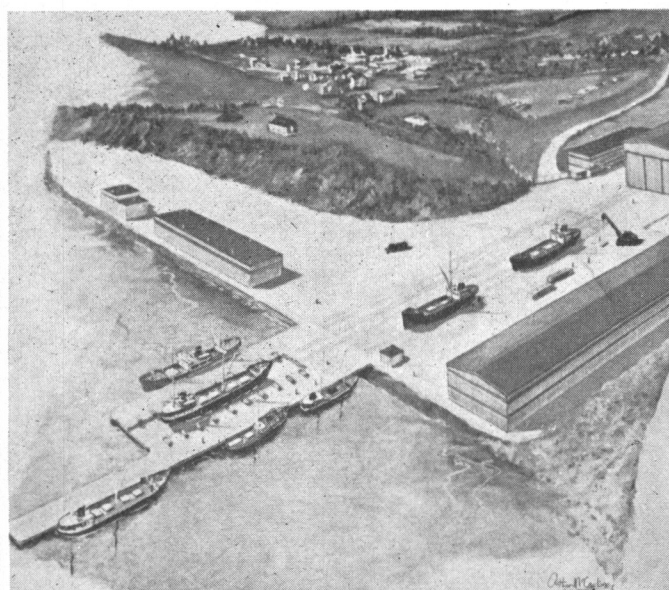
## Ingersoll-Rand Sells TurbOtech To Siemens

Siemens A.G., the large diversified German electrical and mechanical concern, has announced that it has acquired TurbOtech Inc. from Ingersoll-Rand Company, New York, N.Y. TurbOtech will operate as a subsidiary of Siemens and will continue to market and service, plus have a license to manufacture, Siemens advanced technology steam and heavy duty gas turbines for American installations.

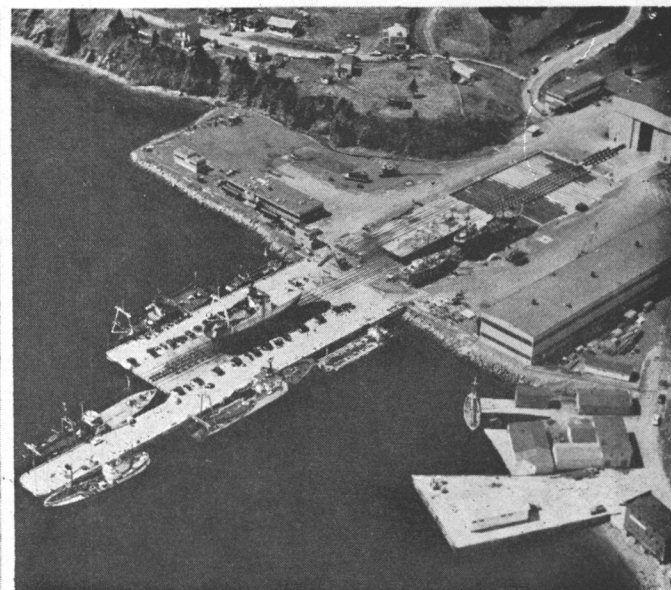
Siemens indicated the acquisition of TurbOtech is an additional step in their more direct efforts to further enter a number of American markets for their products. No price or terms of the purchase were disclosed.

TurbOtech headquarters will continue to be at 6 East 43rd Street, New York, N.Y. 10017.

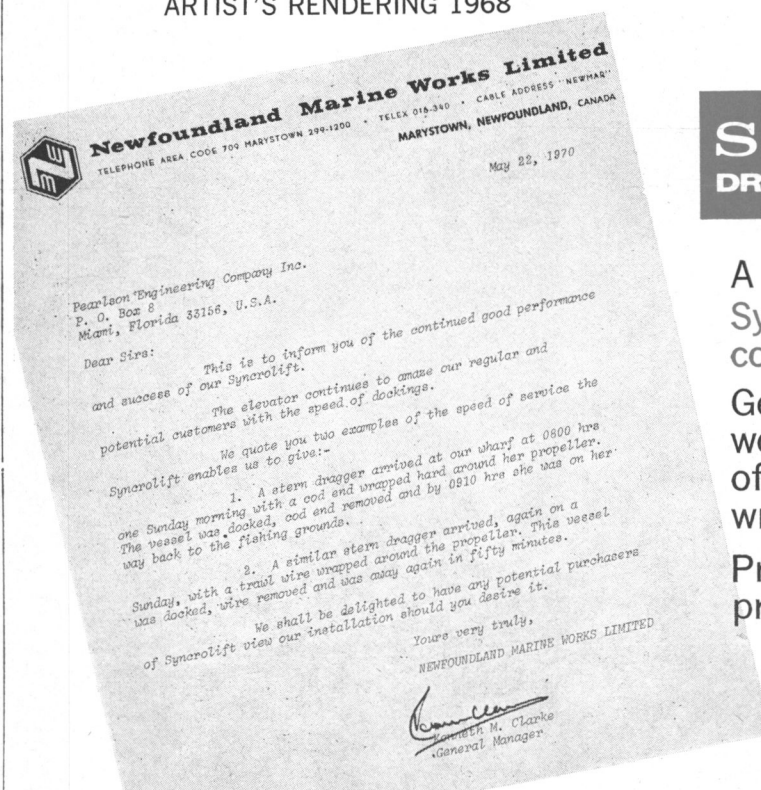
# ANOTHER MODERN SHIPYARD CONCEPT REALIZED WITH SYNCROLIFT®



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## TURBO GENERATOR SETS

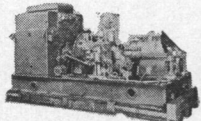
1



**WESTINGHOUSE  
440/3/60  
200 KW UNIT**

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

2



**700 KW NON-  
CONDENSING MARINE  
TURBO GENERATOR SET**

TURBINE: DRV-318-MRI — 850# — 850°TT — 24 pounds back pressure—10938 RPM. GEAR—Type S—432 — 10932/1200 RPM. GENERATOR: 700 KW — 440/3/60—1200 RPM.

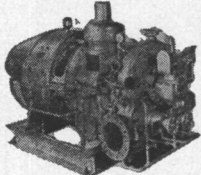
3



**75 KW 120 VDC  
GENERAL ELECTRIC  
TURBO GENERATOR SET**

TURBINE: 225 lb. W.P.—150° superheat—15 lbs back pressure—4962 RPM. GEAR: 4962—1800 RPM. GENERATOR: compound—75 KW—120 VDC—651 amps —1800 RPM.

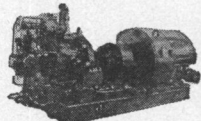
4



**WESTINGHOUSE  
60 KW 120 VDC  
M-20-EH**

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

5



**300 KW  
WORTHINGTON-MOORE  
CROCKER-WHEELER  
UNITS**

AP2 Ex-Medina Victory units. Worthington-Moore turbine—440 lbs—740°TT—28 1/2" vac.—type S4—5-stage—6097 RPM—serial 7547 & 7548. GEAR: 14x7—6097/1200. GENERATOR: Crocker-Wheeler 300 KW 120/240 DC—1250 amps—type 102-H—compound—973643—999759 — armature flange 8 1/4" — bolt circle 7" — 12 holes. Also new armature in stock (weighs 1840 lbs). Also have 2 units—generator 102 HP—300 KW—120/240—stab. shunt—1200 RPM.

6

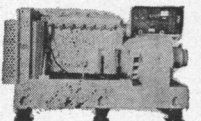


**VICTORY 300 KW  
WESTINGHOUSE TURBO  
GENERATOR SET**

440# — 740°F — 5930 RPM — 2A-9794-15-16-17 — coupling non-recessed on steam end of pinion—5 3/4". GENERATOR: Westinghouse 300 KW—120/240 DC—1250 amps—1200 RPM—C.B. 208.4.

## DIESEL GENERATOR SETS

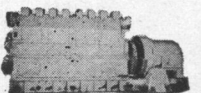
7



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

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

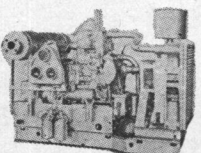
8



**350 KW 120/240 VDC  
DIESEL GENERATOR SET**

Ingersoll-Rand—heavy duty type S engine—8 cyl.—505 HP—10 1/2" x 12. GENERATOR: G.E. 350 KW—120/240—600 RPM—switchgear. Good condition—as removed from Grace Line ships.

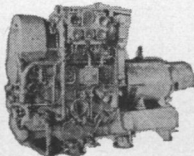
9



**NEW — UNUSED  
10 KW SUPERIOR  
GAB-2 DIESEL GEN.**

4 1/2" x 5 3/4" — BHP 16 — RPM 1200 — radiator cooled. GENERATOR: Delco 10 KW 120 VDC — 83.3 amps — 75" OAL — 57" OAW — 57" OAH. **\$1695.**

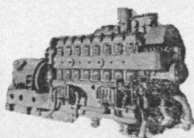
10



**GM 3-268A DIESEL  
GEN. SET**

3-Cyl. diesel engine — 6 1/2" x 7 — 1200 RPM — air or electric starting. GENERATOR: 100 KW — 440/3/60 — 1200 RPM. Good condition. From U.S.N.

11

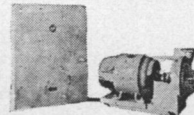


**200 KW G.M. 8-268A  
DIESEL GEN. SET**

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

## PUMPS

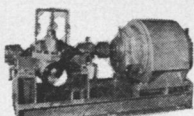
12



**RALPH CARTER CO.  
220 G.P.M. PUMP**

220 GPM—3" suction—3" discharge. 230 ft. head at 220 GPM. 2600 RPM. MOTOR: 20 HP—115 volts DC—149 amps — with Allen-Bradley control.

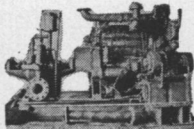
13



**400 GPM BRONZE  
FIRE & FLUSHING  
PUMP**

400 GPM at 150 lbs. 73 HP—440/3/60 — 3550 RPM

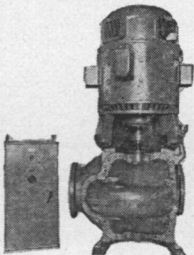
14



**GARDNER-DENVER  
BRONZE DIESEL  
DRIVEN FIRE PUMP**

6x5—1000 GPM—281' head—driven by BUDA 468-LD 6-cylinder diesel.

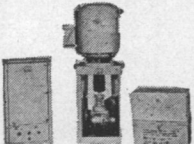
15



**VICTORY AP2 MAIN  
CIRCULATOR**

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

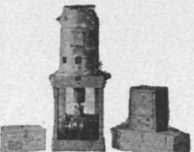
16



**NEW BLACKMER  
FUEL OIL TRANSFER  
PUMP**

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

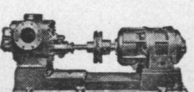
17



**UNUSED BLACKMER  
VERTICAL ROTARY  
PUMP**

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

18



**KINNEY MOLASSES  
PUMP**

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

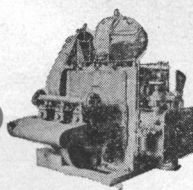
19



**R-2418 WATEROUS  
CARGO PUMP**

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

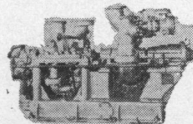
20



**UNUSED BOILER  
FEED PUMP**

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

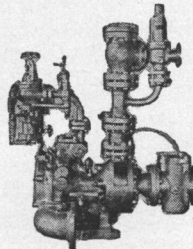
21



**UNUSED SIZE 4  
BUFFALO FEED PUMPS**

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

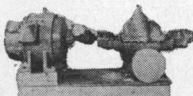
22



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

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

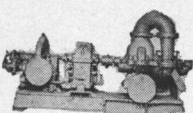
23



**UNUSED WARREN  
BRONZE PUMP**

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

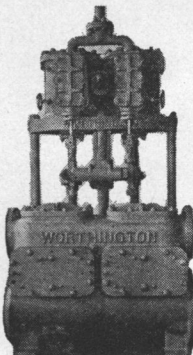
24



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

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

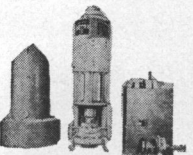
25



**BRONZE 14x14x12  
CARGO STRIPPING  
PUMPS**

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

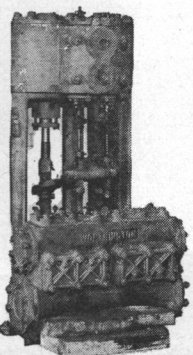
26



**NEW WORTHINGTON  
VERTICAL SUBMERS-  
IBLE BILGE PUMP**

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

27

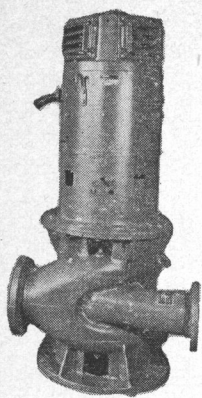


**T-2 TANKER  
BILGE, BALLAST  
AND FIRE PUMP**

Bronze — 10x7x10 — vertical duplex. Steam pressure 150 lbs. gauge — exhaust pressure 10# gauge — discharge pressure 100# gauge — 300 G.P.M.



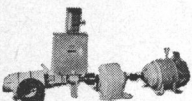
28



### NEW — UNUSED BRONZE VERTICAL LST BALLAST PUMP

1500 GPM—56' head or 25 lbs.—8" suction—6" discharge. MOTOR: Century 30 HP—230 VDC—110 amps—1750 RPM—40° rise—stab. shunt—BB drip proof—controls available.

29

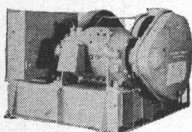


### EXCELSIOR MOLASSES PUMP—SIZE 5½"

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

## WINCHES AND WINDLASSES

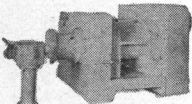
30



### AH&D SINGLE SPEED WINCHES

7250 lbs. @ 220 FPM—50 HP—230 VDC—with control. \$1750 as is.

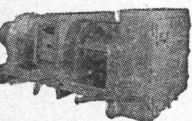
31



### VICTORY UNIT WINCHES

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

32



### MODEL U-6 DOUBLE DRUM WINCHES WITH GYPSIES

50 HP—230 VDC—reconditioned.

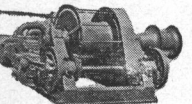
33



### WATERMAN STEAM DECK WINCH— COMPOUND GEARED

Compound-gear "Valle Type"—9½ x 10. 7000 lbs.—185 FPM—single geared. 12,800 lbs. 101 FPM—compound geared.

34



### WATERMAN STEAM DECK WINCH— SINGLE GEARED

Single-gear "Valle Type"—9½ x 10—10,720 lbs. @ 238 F.P.M.

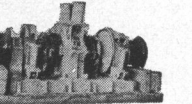
35



### HYDE NO. 7 WINDLASS

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

36



### NEW — UNUSED LINK BELT WINDLASS

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

37



### IDEAL WINDLASS— UNUSED

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

38



### UNUSED 70 HP McKIERNAN-TERRY WINDLASSES

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

39

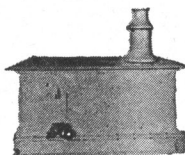


### 3-TON CLYDE DOUBLE DRUM WINCH

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

## MISCELLANEOUS

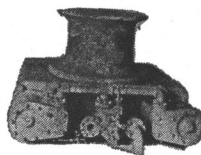
40



### UNUSED DOCK CAPSTAN

15 HP—220/440/3/60—3000 lbs @ 100 FPM. Gypsy 8"—waterproof box—floorplate.

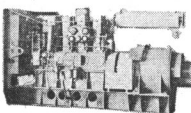
41



### HYDE 30" DOCK CAPSTAN

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

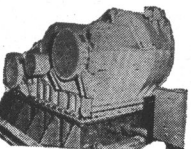
42



### LORIMER 75 KW 120/240 D.C. DIESEL GENERATOR SET

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

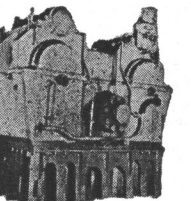
43



### DOUBLE INPUT — SINGLE OUTPUT DIESEL REDUCTION GEARS

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

44



### VICTORY AP2 — WESTINGHOUSE MAIN PROPULSION GEAR

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

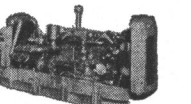
45



### GENERAL ELECTRIC LIGHTING M.G. SET

40 H.P.—230 volts D.C. input to 25KW—115 volts D.C. output—with 40 H.P. 230 volt D.C. controller.

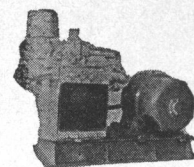
46



### DIESEL DRIVEN INGERSOLL-RAND AIR COMPRESSOR

I.R. Compressor—315 cu. ft. @ 125 lbs. Driven by International Harvester UD-18 diesel. Tank mounted on skid—radiator cooled—from Corps. of Engineers salvage vessel.

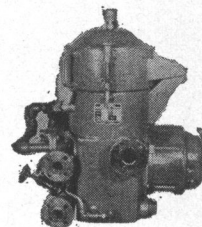
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### INGERSOLL-RAND MODEL 40 AIR COMPRESSOR

Two stage—135 CFM—7" x 6½" x 5"—110 lbs.—870 RPM—inner cooler. MOTOR: Allis-Chalmers 40 HP—230 VDC—145 amps—1750 RPM—Model EB121.

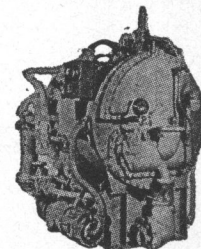
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### DeLAVAL PURIFIERS

Model 55-13—225 GPM. MOTOR: L.A.—Frame 224—2 HP—230 VDC—1750 RPM. Oil inlet & outlet 1"—water discharge 1½". Also available A.C. 440/3/60.

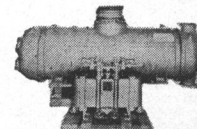
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### GRISCOM-RUSSELL EVAPORATOR

12,000 evap.—230 VDC pumps or 440 A.C. pumps. Complete with Weir automatic water valve.

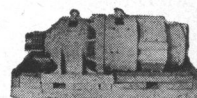
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### UNUSED 1135 SQ. FT. C.H. WHEELER CONDENSER

20" Ex. inlet—5/8" Cu-Ni tubes—with or without air ejector.

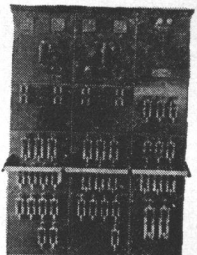
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### UNUSED GEARHEAD MOTORS

20 HP — 230 VDC — 30 RPM output.

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### UNUSED 20 KW SWITCHBOARD

20 KW 120 volt switchboard for two generators in parallel with distribution.

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## Adm. John M. Will Elected President Of Whitehall Club



Adm. John M. Will

The Whitehall Club, New York, N.Y., an important maritime and related transportation industry center in the port, has elected new officers for a term of two years.

Adm. John M. Will has been named president of the club. Admiral Will is also chairman of the board of American Export Isbrandtsen Lines, president of its affiliated First Atomic Ship Transport, as well as president of the New York Shipping Association.

Other elected officers are William B. Rand and Edwin Longcope as vice-presidents, Philip H. Stone as secretary, and William J. Hughes as treasurer.

## Capt. J.B. Cain Joins Western Gear Corp.



Capt. James B. Cain

Capt. James B. Cain, USN, much-decorated Navy ace of World War II, Korea, and Vietnam, has retired from the Navy after 30 years, and has joined the corporate staff of Western Gear Corporation.

Captain Cain accumulated some 8,000 hours of flying time. He commanded three squadrons, one air wing, and two aircraft carriers, the Yorktown and the Ticonderoga, during his long career. Credited with the destruction of nine enemy aircraft, Captain Cain was awarded 37 decorations. Recently he was director of the Navy's Carrier Aircraft Support Study, Naval Air Systems Command.

Captain Cain is joining the newly-formed Western Gear Development Center under the direction of vice-president Ronald C. Hinman.

## MarAd Postpones Date For Construction Bids

The Maritime Administrator has postponed the date of bids for construction of up to six 770-foot barge-carrying ships for Delta Steamship Lines, Inc., from December 16 to January 15, 1971.

## GATX Completes MTL Acquisition

General American Transportation Corporation (GATX), Chicago, Ill., announced the consummation of its acquisition of the ocean shipping business of Marine-Oswego-Trinity Group (MTL).

GATX has acquired all of the maritime interests of MTL, not including American Steamship Company, for a purchase price of

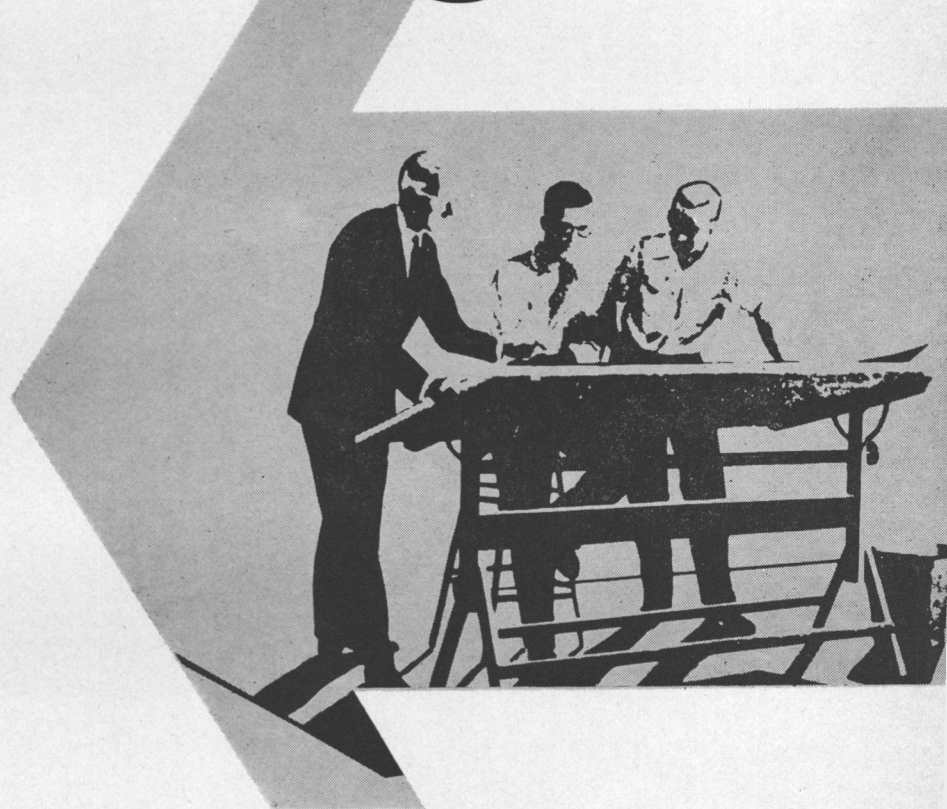
\$55 million and 300,000 shares of GATX common stock, as previously announced. The present management of MTL will be retained, including Dr. C.Y. Chen as president and Jerome Shelby as senior vice-president. C.T. Shen has become chief executive officer of American Steamship Co., but will also serve as a consultant to MTL.

In addition to operating ships for others, MTL owns and operates 34

vessels, aggregating approximately 1,120,000 deadweight tons, almost all of which are on long-term charter to major oil, chemical and steel companies.

GATX is a diversified services and manufacturing company, providing railroad tank cars and specialized freight cars for sale and lease, industrial equipment terminaling services, and financing services.

# from drawing board



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Maritime Reporter/Engineering News



## Commercial Marine Industry Show To Be Expanded In 1971

The growing commercial marine industry will be provided with an expanded market place at the Second Annual Commercial Marine Industry Show, April 1-3. New Orleans will be the site of the '71 exposition, which will be held in the huge Rivergate Exhibition Center, located in the International

Zone on the New Orleans waterfront.

The Rivergate is one of the nation's newest and most outstanding exposition halls, and covers six city blocks. Over 250 exhibitors will display the latest innovations in products and services appealing to ship builders, water transporters, cargo handlers, port authorities, boat owners and operators, ship repair and maintenance firms, off-

shore drillers, dredgers, harbor and work boat organizations, etc.

S.J. Gefen, president of the exposition, predicted that "the '71 Commercial Marine Industry Show will provide both buyers and sellers a great new market place in which to conduct extensive business and make a substantial profit. We are very pleased that our first show was an outstanding success and received such a great press. All our efforts are dedicated to making

the '71 show even better. We're enlarging the size of the show and are now actively engaged in creating many additional markets for our exhibitors."

The Commercial Marine Industry Show was designed to provide firms in the work boat, fishing boat, tugboat, barge and specialty marine fields, including offshore drilling, with an all-inclusive show place to introduce new products and services for the benefit of the general marine industry.

The exhibitor list in the first show read like a blue book of the marine industry. Over 350 different product lines were on display in the gigantic six-acre hall. The '71 show is expected to feature over 500 different product lines and services.

Information for exhibitors may be obtained from the Exhibition Director, Commercial Marine Industry Show, Gulf Life Tower, Suite 2229, Jacksonville, Fla. 32207.

## E. Scott Dillon Named To Head MarAd Office Of Ship Construction



E. Scott Dillon

E. Scott Dillon has been named chief of the Maritime Administration's office of Ship Construction, filling one of two posts long held by Ludwig Hoffmann.

Mr. Dillon joined the Maritime Administration in 1938 as an associate naval architect. He received a degree in civil engineering from the University of Illinois in 1932 and an LL.B. from George Washington University in 1948.

He is chairman of the Marine Technology Committee of the Society of Naval Architects and Marine Engineers and also a member of the Council of the American Society of Naval Engineers.

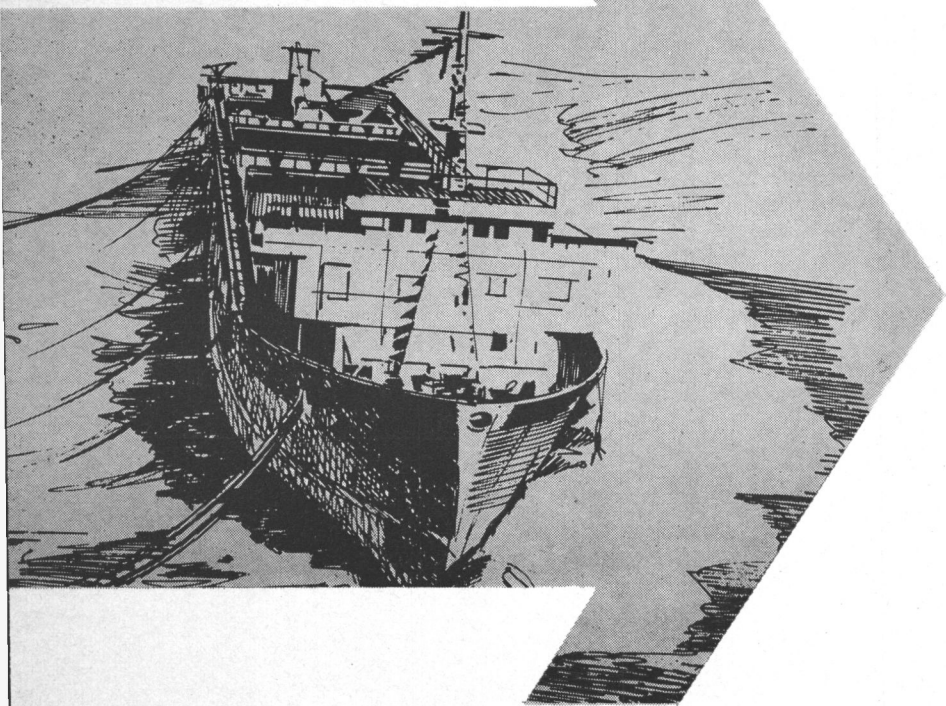
A holder of both the Department of Commerce Silver and Gold Medals, Mr. Dillon resides in Silver Spring, Md.

Mr. Hoffmann, who no longer holds both posts, is assistant administrator for operations.

## Norton, Lilly Names Three Vice-Presidents

H.E. Bilkey, president of Norton, Lilly & Co., Inc., has announced the appointment of the following officers: Richard J. O'Connor, vice-president, Mediterranean Services; Edward M. Sorenson, vice-president, Red Sea/India, Ceylon, Pakistan Services, and Joseph T. Lilly, vice-president, Australia-New Zealand Services.

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# Oil Burners In Marine Boilers

W.L. Sage and L.A. Kreidler\*

The continuing trend in the marine industry toward the use of higher shaft horsepower, a greater degree of automation and increased reliability-maintainability features has led to the current high-capacity boiler designs. Parallel to the need for high-capacity boilers has been the need for high-capacity oil burners capable of obtaining complete combustion, thus offering the advantages of increased boiler efficiency, improved reliability and reduced fire-side maintenance.

The basic requirement is to provide the required supply of liquid fuel at the correct temperature, viscosity and pressure to enable the burners to atomize and inject tiny particles of oil into suitably arranged air streams, which then produce flames of the correct shape and dimensions.

The concept of rapid and complete mixing of the fuel and oxidant implies the need for a highly turbulent zone adjacent to the burner. The degree and type of turbulence required depend on the type and methods of fuel and air admission. If the fuel is initially well dispersed into the air stream, then small-scale turbulence is desirable. If the fuel and air are not initially well mixed, then a more massive degree of turbulence is required. The inability to obtain uniform mixing establishes the lower limit on excess air required to obtain complete burning.

The primary function of the oil atomizer is to reduce the oil stream to small droplet size and to disperse these droplets uniformly in the combustion air stream. There are many approaches to accomplishing this objective; however nearly all require the oil to be highly fluid (low viscosity).

For many years, marine boilers relied upon various atomizers dependent primarily on fuel-oil pressure as the atomization source. Capacity with these pressure atomizers was limited

due to poor atomization at low pressure. To obtain the needed higher capacity, dual-fluid atomizers entered the marine field. The dual-fluid atomizers provide capacity ranges in excess of 30:1 because the additional fluid has the energy required for efficient atomization in the higher ranges. Since steam usually has the lowest cost per unit of energy, it is the preferred medium.

Ignition temperature of an oil droplet is defined as the maximum temperature it can have without transposing to a higher (burning) temperature. This is not a precise temperature for a specific fuel, but is somewhat dependent on environment.

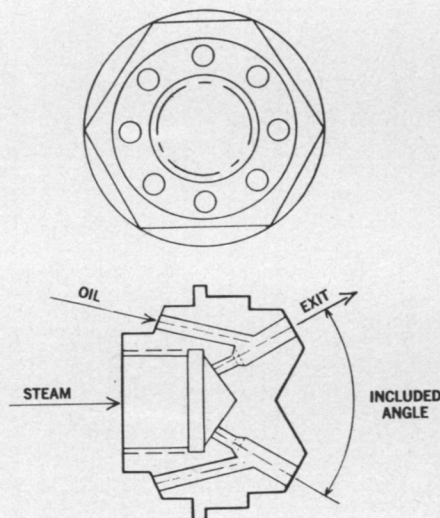


Figure 1—"Racer" sprayer plate.

Exact times for ignition and burning are difficult to obtain. In a typical marine furnace where temperatures in the burner region are in excess of 3,000°F. and the atomized droplets are less than 200 microns in diameter, the predicted times are well under the times employed in marine practice.

These lead to the conclusion that under conditions normally encountered, the one major item controlling combustion intensity is the speed at which the air and fuel droplets can be mixed.

Hence, the problem facing the designer is one of promoting sufficient turbulence to obtain the desired burning rates at a minimum of pressure drop. There are two commonly used methods of promoting turbulence: use of buff bodies and/or swirling flow. Both of these are also important in stabilizing ignition, i.e., igni-



Principals of the joint meeting held in the Downtown Athletic Club are left to right: (seated) **Joseph Thelgie**, chairman of the board of directors, Society of Marine Port Engineers; **L.A. Kreidler**, performance engineer, Power Generation Division, Babcock & Wilcox Company, Barberton, Ohio; **W.L. Sage**, research engineer, Research & Development Division, B&W, Alliance, Ohio; **Warren Signell**, SNAME New York Section chairman; (standing) **Charles W. Wilson**, secretary-treasurer, New York Section; **Henry M. Tiedemann**, chairman, papers committee N.Y. Section; **Daniel D. Strohmeier**, national president of SNAME, and **John Fox Jr.**, president, the Society of Marine Port Engineers, New York, N.Y., Inc.

tion just at or very near the burner is attained only by the recirculation of hot combustion gases.

For circular burners with pressure-type atomizers, the generally accepted approach is to use a disc stabilizer surrounding the oil gun with some degree of swirl imparted to the air. The degree of swirl imparted has considerable influence on the flame pattern. Little or no swirl produces a cigar-shaped flame, but a high degree of swirl creates a more widely flared flame with a central recirculating core.

Streamlining the burner configuration prior to exiting into the furnace is beneficial in reducing pressure drop. However, a streamlined exit is not effective in promoting turbulence or high burning rates.

The relationship between atomizer, air register and furnace configuration is a much overlooked factor and often leads to the condemnation of

otherwise satisfactory components merely because they were misapplied. Marine practice places many restrictions on boiler design. Often the boilers are custom designed to fit engine-room space contours. As a result the shape of the furnace and the burner location varies from one design to another. The proper matching of the atomizer and air admission to the furnace configuration to obtain complete combustion, avoid flame impingement and minimize excess air requirements becomes more of an art than a science.

The authors' firm initiated a burner-development program based on marine burner requirements. The Racer-type atomizer was selected for this test program, based on its past performance record. A cross section of the plate is shown in Figure 1. This type of atomizer provides a means of controlling oil distribution

(Continued on next page)

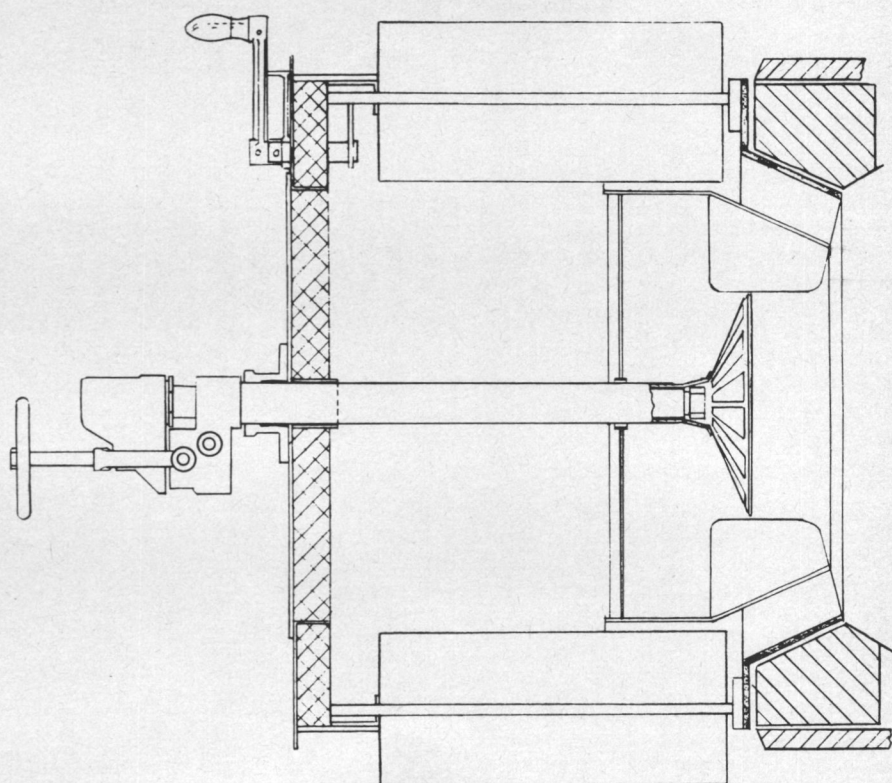


Figure 2—Basic burner design selected for test program with "Racer" atomizer.

\*Mr. **Sage**, research engineer, Research & Development Division, Alliance, Ohio, and Mr. **Kreidler**, performance engineer, Power Generation Division, Barberton, Ohio, Babcock & Wilcox, presented the paper condensed here before a recent joint meeting of the New York Metropolitan Section of The Society of Naval Architects and Marine Engineers and the New York Society of Marine Port Engineers.



into an air stream by varying the included angle between the jets and/or the number of exit holes. As the number of exit holes is decreased, the size must be increased to maintain capacity. This increase in size in turn gives greater penetration of the air stream.

The operating mode used in the test program is a well accepted method employed, i.e., constant stream pressure of 125-150 psig over the full load range, and reduction in air flow with decreasing power demand to obtain low excess air down to 25 percent rated power.

The burner selected was the circular type employing a centrally located atomizer. The burner was to maintain good performance over the entire load range without adjustment.

Firing tests were conducted in two sizes of water-jacketed tunnels. Both test tunnels were equipped with observation doors to permit flame viewing from all angles. The No. 6 fuel oil was pumped to pressure and preheated by a conventional steam heating system. Oil flow was measured and monitored by area meters.

The initial burner concept employed consisted of a radial vane air register and fixed vane discharge cone previously employed in marine practice. In order to obtain increased capacity an outer concentric cone was added. Early in the test program it became apparent that the air flow pattern was controlled primarily by the fixed vanes and that the movable air register was needed only to shut off air flow to an idle burner. This led to the basic burner design shown in Figure 2.

Results of the test program can be summarized as follows:

1. The discharge air-flow pattern from this type of burner configuration is determined by the angle of the fixed vanes.

2. Multiple air channels are more effective in promoting small-scale turbulence than a smaller number of larger openings.

3. The total flame volume for a given fuel input is determined primarily by the air side pressure drop.

4. Increasing the pitch angle of the fixed vanes increases flame flare and shortens flame length.

5. At low swirl intensity the flame stabilization is dependent on the disc stabilizer (impeller).

6. At high swirl intensity and at high burner rating, the flame stabilization is established by a recirculation of hot gases in the center core.

7. At very high swirl intensity, the flame shape is dependent on the furnace configuration and is practical only when the furnace offers a high degree of enclosure.

8. The number of exit holes in the sprayer plate and the included angle can be used to control oil distribution in the air stream. For a given capacity, decreasing the number of holes and increasing the size increases penetration into the air stream. Increasing the included angle also increases oil concentration in the outer air stream.

9. Greater swirl in the air stream requires an atomizer giving a greater degree of penetration.

10. If the air flow and atomizer spray pattern are properly matched, a burner of this configuration can be operated at very near theoretical air without producing soot or unburned combustible gases.

Based on theoretical considerations and this comprehensive test program, data has been developed to permit tailoring the flame pattern from a circular burner to conform to any given marine boiler furnace configuration.

In the past year marine burners based on these design principles have gone into service with initial reports indicating excellent performance.

Test facilities are currently intact, and future programs are planned to permit refinement of burner design. As results from shipboard performance of these burners are accumulated, test facilities will be available to permit further evaluations.

## Muller Shipping Corp. Makes Name Change

Wm H. Muller Shipping Corp. has announced that its warehousing unit in Rotterdam is changing its name from N.V. Maasveem to Wm. H. Muller & Co. (Warehouses) N.V. Heading the new company will be Jan van Barrle, general manager.



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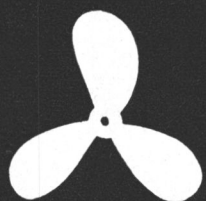
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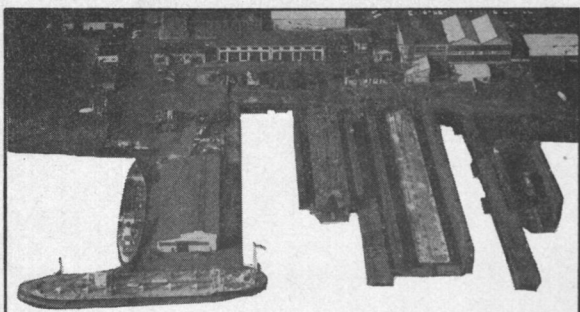
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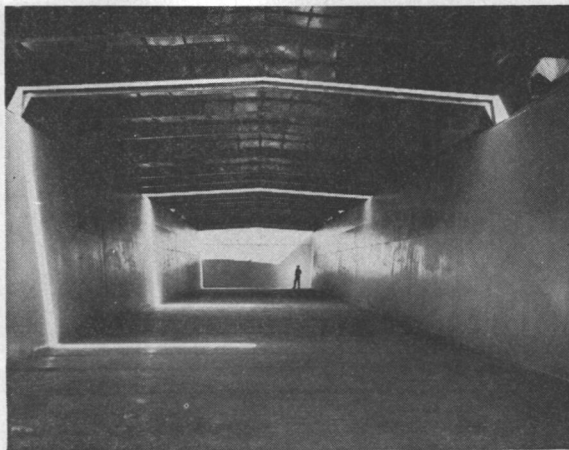
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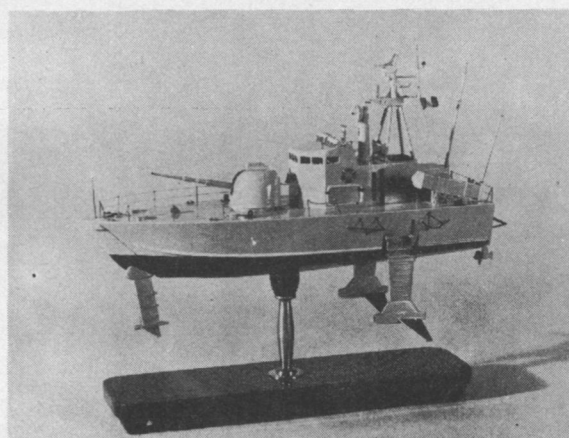


**CAVERNOUS INTERIOR** of this 200-foot-long covered hopper barge will hold up to 80,000 cubic feet of cargo. The 35-foot-wide, 12-foot-deep vessel is one of 20 such barges recently built by Dravo Corporation, Pittsburgh, Pa., for The Valley Line Company of St. Louis, Mo., a subsidiary of Chromaloy American Corporation. All are equipped with weathertight hatch covers for added cargo protection. One of the largest barge lines operating on the inland waterways, Valley Line services more than 11 million tons of cargo per year on the Mississippi River and its tributaries. The barges were built at Dravo's Neville Island boatyard in the Ohio River, near Pittsburgh.

### Boeing Affiliate Awarded Contract By Italian Navy To Build Prototype Hydrofoil

The Italian Navy has ordered the prototype of a new type of hydrofoil which can maintain high speed even in rough water. Called Alinavi, the boat features fully submerged foils.

The contract has been awarded to Advanced Marine Systems—Alinavi S.p.A., which was formed in 1964 by The Boeing Company of the United States, a corporation of the Italian IRI group, and the Italian ship builder Carlo Rodriquez. The organization's purpose is developing advanced commercial and military marine vehicles in Europe. Dollar value of the contract was not disclosed.



Model of the new Italian Navy missile-armed hydrofoil. Oblong containers at the stern of the vessel (starboard container not visible) will carry ship-to-ship missile system. Both anti-aircraft cannon and missile system are fully automatic.

The new craft designed by Alinavi for operations in the Mediterranean is an improved version of the Tucumcari hydrofoil gunboat. Designed and built by Boeing, the Tucumcari has been in service with the United States Navy since 1968 and is the fastest heavy-weather craft in the world.

The Alinavi craft will displace about 59 tons, be about 72 feet long and about 23 feet wide. It will have a maximum speed of 50 knots and will be able to maintain cruising speed of more than 40 knots in rough water conditions of the Mediterranean and Adriatic Seas, where wave heights of three to ten feet are common.

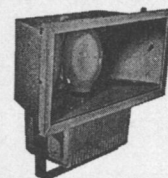
The hydrofoil will be armed with ship-to-ship missiles, and with an automatic anti-aircraft cannon, both of which will be controlled by an advanced fire-control system. The craft

will have a waterjet propulsion system for foil-borne operations at high speeds. The system will consist of a Rolls Royce Proteus gas turbine of 4,500 horsepower driving the waterjet pump. Hullborne propulsion will use a diesel engine and retractable propeller unit.

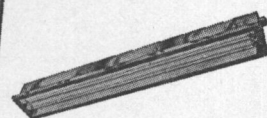
The craft will be built at the Italian firm, **Oto Melara's** plant in La Spezia, with delivery to the Italian Navy scheduled in 1973. Design and construction will be conducted by Italian technical and production personnel with technical assistance from Boeing.

The hydrofoil represents a new and powerful naval weapon system. Due to its speed, maneuverability, all-weather capability, and high fire power, a small number of these craft can defend an extensive coastline against attacks of much larger ships.

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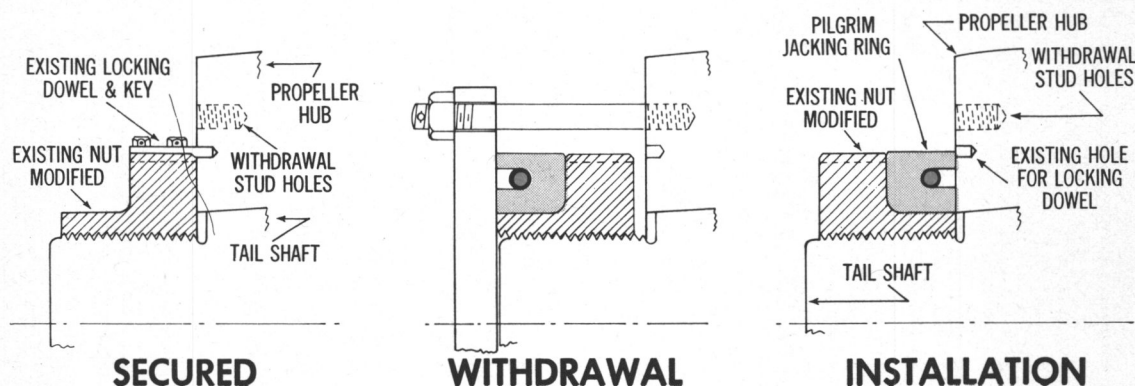
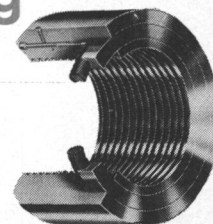


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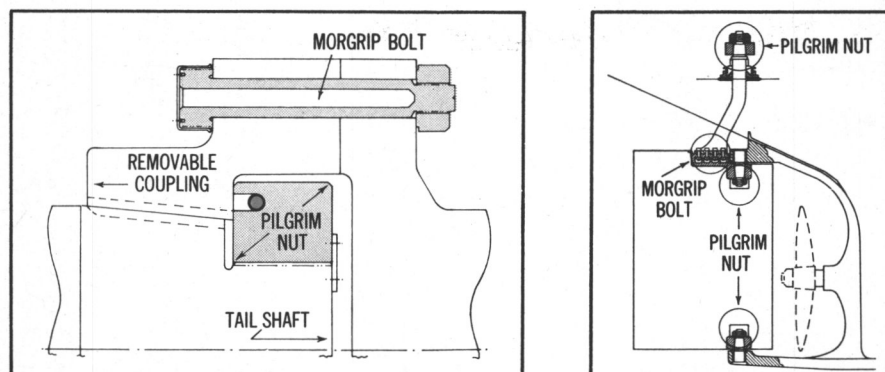
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## Three NKK Yards To Convert Marcona Ore Carrier Into World's Largest Slurry Ship

The world's largest slurry ship, 141,400 dead-weight tons, will be built from the hull of the San Juan Exporter, a 106,229-dwt ore carrier, by Nippon Kokan, Japan's only integrated shipbuilder-steelmaker.

Announcing the historic conversion, Hiroo Ikematsu, manager of NKK's New York shipbuilding department, said the vessel will be jumboized by increasing her length 132 feet 5-3/4 inches and her depth 8 feet 2-7/16 inches. The converted Exporter is scheduled for delivery in March 1972.

NKK will also install equipment systems which will enable the ship to load and discharge slurry iron ore. The Exporter was the world's largest ore carrier when delivered to her owner in 1967,

San Juan Carriers, Ltd., a division of Marcona Corp., San Francisco.

Jumboizing will involve three NKK shipbuilding and repair facilities. The original hull will be deepened at Asano Dockyard near Tokyo. The new hull portion will be built at Tsurumi Shipyard also in the Tokyo-Yokohama district. Conversion will be completed at the company's mammoth, ultra-modern Tsu yard in central Japan.

Slurry handling equipment will be installed at Asano. To be supplied by San Juan Carriers, equipment includes: seven pumps; two diesel engines for powering pumps which discharge slurry ore; 54 special Marconajet units which combine water with semi-solid slurry cargo for discharge by the pumping system; piping for slurry load and discharge, which features a remotely-controlled special valve system.

The world's first carrier-to-slurry-ship conversion was completed in March 1970 by Nippon

Kokan. The original vessel, the 48,968-dwt San Juan Merchant, built by NKK in 1967, was renamed Marcona Merchant. She is engaged in transporting slurry ore from the Marcona Mines in Peru to Japan and other countries, the same route to be assigned to the new San Juan Exporter.

## Enjay Chemical Appoints O.C. & K.R. Wilson, Inc.

Enjay Chemical Company has announced the recent appointment of O.C. & K.R. Wilson, Inc., long time (Est. 1843) steamship tanker and industrial supplier, as agent for Industrial Coatings and Marine Chemicals in the New York Metropolitan area.

David Wilson, president of the firm, stated the complete line of Rust Ban paints and marine chemicals, including degreasers, cleaners and Corexit oil dispersants, will be stocked in their warehouse at 32 North Moore Street, New York, N.Y. 10013.

## Raytheon Transfers Norwalk And West Coast Operations To New Plant In Manchester

Raytheon Company has commissioned its new Manchester Operation that will combine its former Marine Products Operation and Sorensen Operation. Located in a new 150,000-square-foot building on a 60-acre site along Interstate 93 in the southeast section of Manchester, N.H., the new plant is a fully integrated facility offering design, development, manufacturing and marketing functions for a range of electronic products.

The Manchester Operation produces marine radars, depth sounders, radio-telephones, radio direction finders, loran receivers, and automatic pilots; Sorensen power supplies; ultrasonic measurement systems and impact grinders; and precision electronic welders.

Key personnel formerly located at South San Francisco, Calif. and Norwalk, Conn. have transferred to Manchester where a cadre of production workers was trained in a leased training center during the final months of construction for the new plant.

Ralph M. Moschella, manager of the Manchester Operation, said the new plant would employ approximately 450.

The company's former plants at South San Francisco and Norwalk will be leased or sold.

Raytheon's Manchester Operation is located at 676 Island Pond Road.



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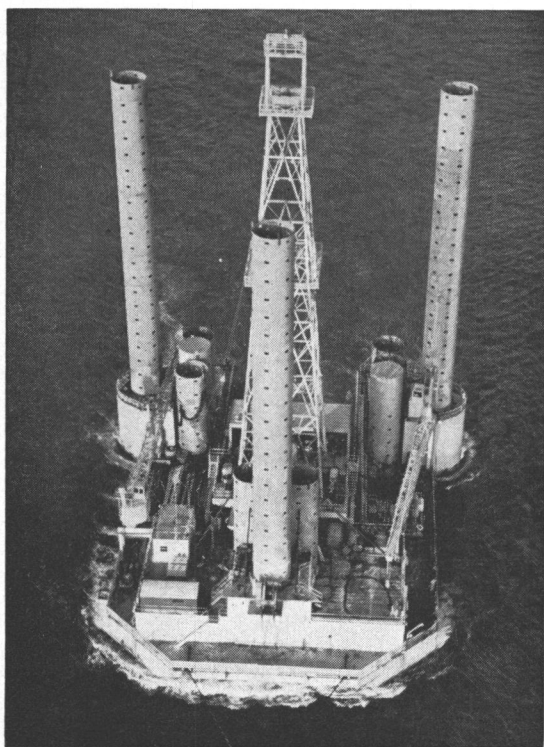
Bethlehem's newest shipyard is now under construction on a 79-acre tract in Singapore. Incorporated as Bethlehem Singapore Private Limited, the new yard will specialize in the design and construction of offshore oil drilling, production and storage equipment and facilities, as well as service and transport vessels, and will offer distinct advantages to firms active in offshore exploration and production in the Far East. Our Beaumont, Texas, yard, one of the world's leading designers and builders of specialized equipment for the offshore oil production industry, will

serve as its engineering consultant and will act as its United States sales representative.

The new Singapore yard, a joint venture with the Development Bank of Singapore, which holds a 30 per cent interest, will be operated by Bethlehem. It is scheduled to begin product fabrication shortly.

## Bethlehem Rigs Working in Indonesia

In July, 1970 at Singapore, Reading and Bates Exploration Company, Tulsa, commissioned the Bethlehem-built drilling tender *Dickson M. Saunders* (Ex-Pelican) and two Bethlehem-designed offshore mobile drilling rigs for work in Indonesian waters. The platform for the *Milton G. Hulme* was built by our Beaumont yard and towed around Africa 13,000 miles to Singapore where the locally-built mat was attached. A sister rig, the *J. W. McLean*, was wholly constructed in Singapore under Bethlehem supervision. These jack-up, mobile drilling platforms are each capable of working in 225-ft water depths and can drill to 25,000 ft. Their design was developed by Bethlehem and has been proved in more than a dozen other rigs built by Bethlehem and successfully operating in the Gulf of Mexico and off the Pacific Coast of South America.



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## Esso Signs Order For Three 22,500-Ton Tankers In Japan

Esso Tankers, Inc., an affiliate of Standard Oil Company (New Jersey) has signed a contract with Hitachi Shipbuilding & Engineering Co. Ltd., for the construction of three 22,500-dwt tankers in Japan, it was announced recently.

The tankers will be built at the Hitachi shipyard in Mukaishima for delivery in the last half of 1974, and they will be used in Esso's international tanker service.

Each tanker will have a length of 449 feet, a breadth of 77 feet and a 32-foot draft. The operating speed will be 15 knots with 8,600 brake horsepower.

## Northeast Marine Terminal Names Capt. Neitz President

The appointment of Capt. Russell W. Neitz as president of Northeast Marine Terminal Co., Inc. to succeed the late Albert E. Gurge has been announced by Lester Wolfe, chairman of the board.

Captain Neitz served in an administrative capacity with the company for the past 10 years as vice-president, operating the terminal at the foot of 39th Street in Brooklyn, N.Y. Prior to joining Northeast, he had served as a master in the Isthmian Steamship Co., general superintendent at Jarka Corporation, and also as superintendent at Universal Terminal & Stevedoring Corp.

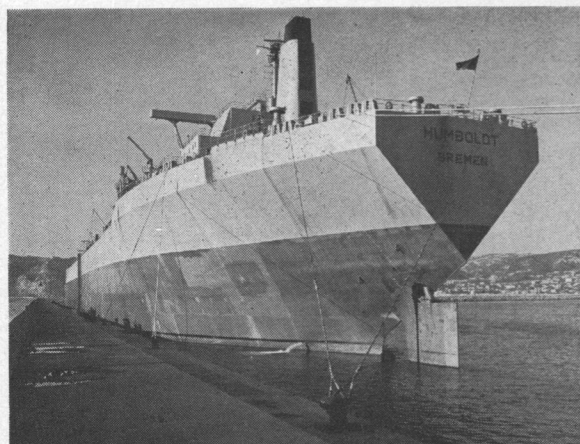
## MarAd Alters Requirements To Attract More Marine Officers

The Maritime Administration, deciding to make careers as merchant marine officers more attractive, is offering alternatives to the long-standing requirement that graduates of the U.S. Maritime Academy serve five years aboard ship following completion of their education.

MarAd henceforth will offer graduates of Kings Point four alternatives. One would be six months of service a year for three years, or four months a year for four years.

A third alternative would be three years of active duty in the uniformed services.

Finally, to encourage further educational effort, 30 days service a year as an officer aboard an active naval vessel for three years would be acceptable if the Academy graduate was in the meantime employed ashore in the maritime industry or engaged full time in graduate level work in the maritime field.



**LARGEST AT MARSEILLES:** The West-German tanker Humboldt (shown above) was at Marseilles from the 14th to the 19th of November for guarantee repairs, including work on her main Stal Laval turbine gearing. The repairs were carried out by Societe Provencale des Ateliers Terrin, who are service agents for Stal Laval. The Humboldt is the largest vessel yet to call at Marseilles. Built by the Norwegian shipyard Aker, she began operating in early 1970. She is approximately 1,070 feet long by 150 feet wide, and has a deadweight tonnage of 220,000. Her owners are the Schluessel Reederei of Bremen.

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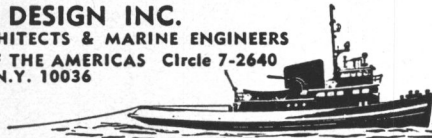
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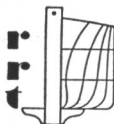
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**USMMA ALUMNI:** The San Francisco Chapter of the U.S. Merchant Marine Academy Alumni Association was addressed by national president **Robert Whitam** at a recent dinner meeting. President **Whitam** noted among other problems facing the Academy that although it has been the principal source of entrance level engineers to the merchant marine since 1946, current union restrictions are reducing employment opportunities for recent graduates. Shown above, left to right (seated): **Carl Otterberg**, '45, Columbia Steamship; **Frank Vitale**, '49, San Jose Chapter president, Stanford Medical Center; **Bob Whitam**, '46, National President USMMA Alumni Association, Babcock & Wilcox; (standing): **Russ Gorman**, '49, vice-president USMMA Alumni Association, Chevron Shipping; **John O'Loughlin**, '43, San Francisco Chapter president, Anchor Equipment, and **Jim Flaherty**, '44, Western regional governor, MESCO.

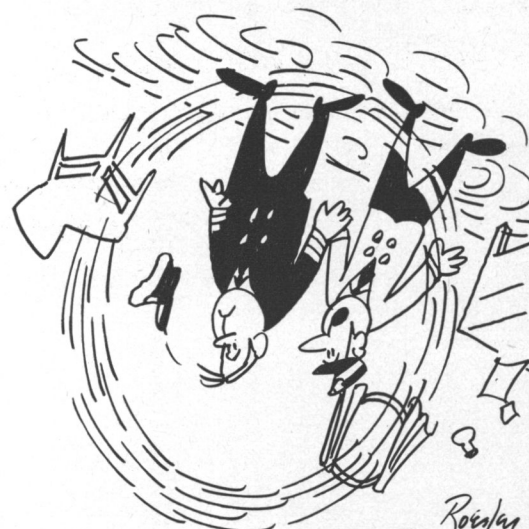
**California Ports Association Elects Thorley President**

The California Association of Port Authorities has elected its slate of officers for 1971. **Thomas J. Thorley**, general manager of the Port of Long Beach has been named president.

CAPA members voted **Miriam E. Wolff**, port director of the San Francisco Port Commission, first vice-president; **Don L. Nay**, port director of the San Diego Unified Port District, second, vice-president, and **Richard N. Compton**, secretary of the Board of the Port of Oakland, treasurer.

Mr. **Thorley** has selected **Frank J. Pard**, executive secretary to the Long Beach Board of Harbor Commissioners, as CAPA secretary for this year. **C.R. Nickerson** of San Francisco is executive secretary of the association.

Primary goal of the group during 1971, according to Mr. **Thorley**, is to complete a careful analysis of tariff charges of the ports in the state of California, and to ascertain what rate adjustments may be necessary.



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## Int'l Exhibitors Booked In Containerization And Shipping Expo In 1971

Strong international representation is expected in the Port of New Orleans Containerization and Shipping Exposition, May 19-21, 1971.

John Mullis, exposition director, said four exhibitors from West Germany are already booked in the exposition even though the event

is five months off. He identified the West German exhibitors as the German Federal Railroads, Hapag Lloyd and the ports of Bremen and Bremerhaven. Mr. Mullis said additional German exhibitors are expected to participate as well as exhibitors from a number of other European and Asian nations.

The exposition, first of its kind to be held in the Deep South, will be held in the city's giant River-

gate, one of the nation's largest and most modern exposition and convention centers.

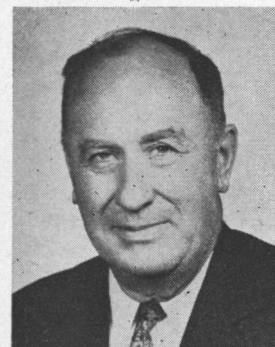
Mr. Mullis said early registration indicates that participation in the exposition will include manufacturers of containers and container handling equipment, transportation firms, a number of ports, ship builders, manufacturers of electric components and various other suppliers to the maritime industry.

A feature of the exposition will be an exhibit dealing with CENTROPORT, USA, a \$400-million master plan for development of the Port of New Orleans over the next 30 years. The port modernization program includes a \$64-million container terminal already under construction.

The exposition will also include a technical congress featuring leaders in containerization and shipping, as well as Government officials. Sessions will be conducted each morning at the Rivergate prior to the opening of the exposition.

Further information can be obtained by writing Mullis Productions, Inc., 1840 Gulf Life Tower, Jacksonville, Fla. 32207.

## Whitman To Head New Transport Firm



James H. Whitman

The formation of a new company to encompass the international transportation activities formerly handled by Getz Bros. & Co., Inc., San Francisco, has been announced by J.W. Van Gorkom, president of Trans Union Corporation.

The new company will be known as Tucor Services Inc. and will be a wholly-owned affiliate of Trans Union Corporation. It will be headquartered in San Francisco. James H. Whitman, formerly vice-president of transportation, will be president of the new company. Tucor Services' activities include representation of many international steamship companies and airlines, stevedoring, leasing, movement of household goods, travel, public warehousing and marine supplies. Creation of the new company is in response to the continued growth of the company's transportation activities and the desire to establish a company fully oriented toward international transportation services, Mr. Van Gorkom said.

Mr. Whitman has served in his former position since 1958. He joined Getz Bros. in 1954 as assistant vice-president.

With the exception of service in World War II, he was associated with the Dollar Steamship Company and its successor, American President Lines, since 1930. He served a variety of positions including general agent of the company's European, African and Middle East operations, general agent of the Philippine activities and finally as assistant vice-president in the San Francisco office. During World War II, Mr. Whitman served as lieutenant colonel in the Army Transportation Corps in Africa and Italy.

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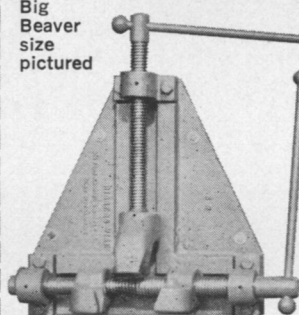
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## SES Manager Named VP-Bell Aerospace Division Of Textron

A. Bruce Horton Jr., general manager of the New Orleans Operations of the Bell Aerospace Division of Textron, has been appointed a vice-president of the company, it was announced by William G. Gisel, president.

Mr. Horton, a veteran of nearly 25 years of engineering and manage-

ment experience in United States space and defense programs, is responsible for the company's operations in New Orleans, La., where Bell Aerospace is engaged in the development of a high-speed Surface Effect Ship (SES) that will skim over the seas at speeds of 80 knots (92 mph) or more. (See Maritime Reporter/Engineering News issue of July 1, 1970). This unique 100-ton research craft is scheduled to begin a test and evaluation pro-

gram in Lake Pontchartrain and the Gulf of Mexico during 1971.

Mr. Horton, who attended the University of South Carolina and the United States Naval Academy at Annapolis, joined Bell in 1948 after graduation from Massachusetts Institute of Technology with a master of science degree.

From 1965 to 1967 Mr. Horton was manager of Bell's Arizona Operations which employed more than 400 scientists, engineers and

technicians for the operations of the U.S. Army's Electromagnetic Environmental Test Facility and Drone Test Range extending across southern Arizona and the Mexican border to the Arizona-California state line.



A. Bruce Horton Jr.

Before his assignment to the company's New Orleans Operations Mr. Horton served for the past two years as executive director of engineering at Bell's main plant and company headquarters near Niagara Falls, N.Y.

Bell, a division of Textron Inc., has pioneered in the United States in the development of Surface Effect Vehicles, which skim above the surface on a cushion of air. This relatively new field of transportation technology combines aerospace engineering with shipbuilding skills to produce advanced marine systems for naval and maritime applications.

## Seamount Acquires Marine Trailers, Inc.

Acquisition of the New York-based firm of Marine Trailers, Inc. by Seamount Corporation for an undisclosed amount of cash and notes payable over five years has been announced by Seamount Corporation. Marine Trailers repairs and maintains refrigerated cargo containers and trailers used by the shipping industry. It performs its services on piers in the New York metropolitan area and in San Juan, Puerto Rico. The company also leases containers, trailers and related equipment.

Seamount, also headquartered in New York City, includes divisions of naval architects, consulting marine engineers, containerized and break-bulk cargo solicitation and vessel management for both tankers and dry cargo vessels.

## Professional Knot Tying Illustrated In New Book

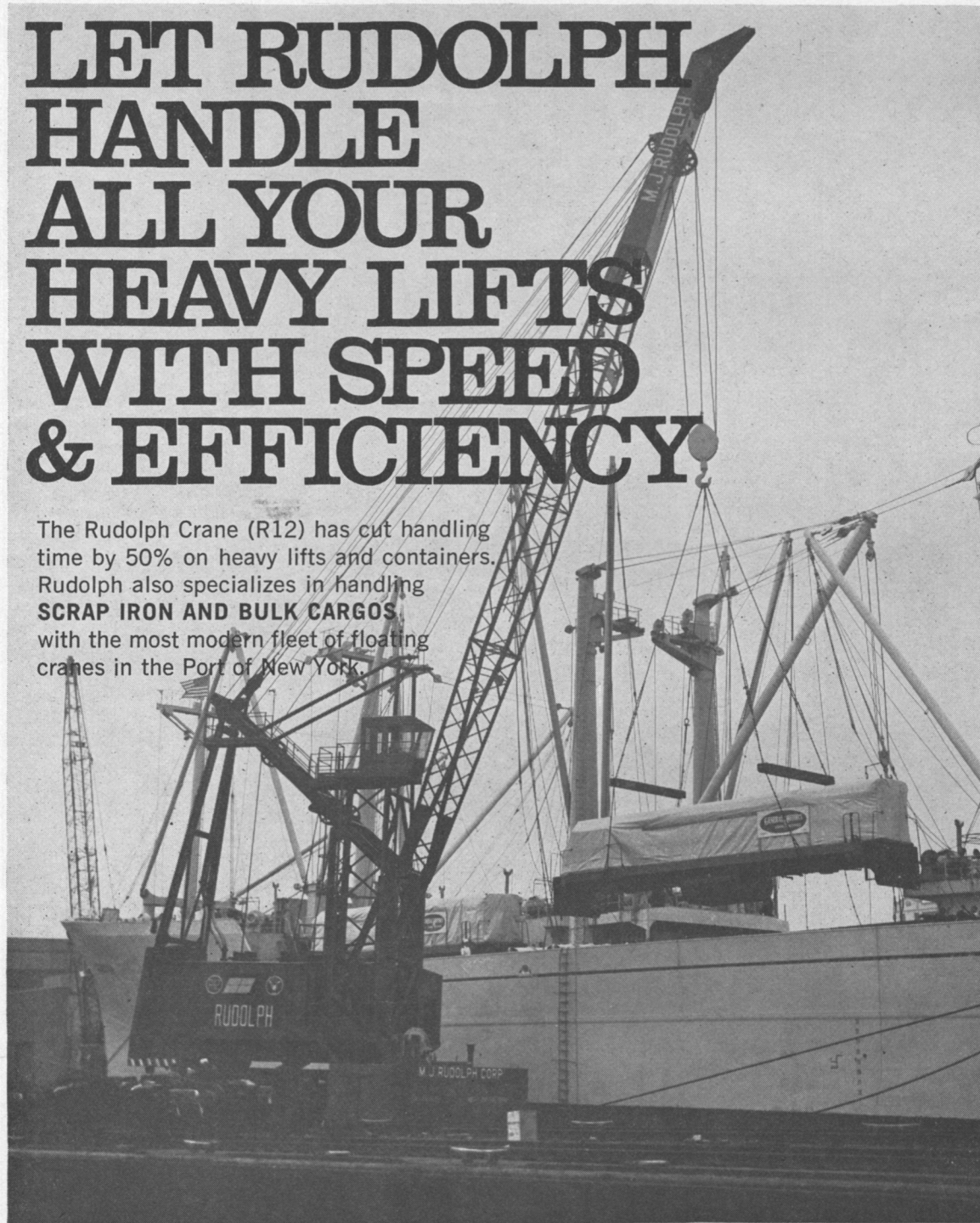
John de Graff, Inc., 34 Oak Avenue, Tuckahoe, N.Y. 10707, has published a new book, "Knots and Lines Illustrated." This new work, authored by Paul and Arthur Snyder, is up to date on knots used today, where to use them and how to tie them. The tying of each knot is explained by a sequence of action photographs which show the movements of each hand to make a professional job.

Some of the applications described in the book include: picking up a mooring, heaving a line, handling winches, making up neat coils, and line stowage.

Authors of the book, which is priced at \$6.95, are both experienced sailors.

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## Ronald Javello Named Director NYC Council On Port Development



Ronald F. Javello

Ronald F. Javello has been appointed executive director of the New York City Council on Port Development and Promotion, according to an announcement by D. Kenneth Patton, administrator of the Economic Development Administration.

Mr. Javello will direct the activities of the council, which is committed to the expansion of seaborne commerce and development of marine facilities in the Port of New York, Mr. Patton explained. He will serve as liaison between the city's Economic Development Administration, its Department of Ports and Terminals and council members, who include a wide spectrum of the maritime industry. Included in the council are leaders in New York City shipping, stevedoring, freight forwarding, trucking, shipyard and towboat companies, as well as maritime labor leaders, he added.

A graduate of the United States Merchant Marine Academy at Kings Point, N.Y., Mr. Javello has had a long and varied career in the maritime industry. In addition to sailing on American-flag ships, he has worked for a stevedore firm, a naval architectural company, foreign shipping company, and a shipbuilding and drydock company.

## Worldwide Marine, Ltd. Announces Formation Of Diesel Division



Lynn R. Akers

Lynn R. Akers, president of Worldwide Marine, Ltd., Miami, Fla., importers of custom-built luxury North Sea trawler yachts, has announced formation of the Kelvin Marine Diesel Division to handle commercial and pleasure boat diesel sales and service from Maine to Alabama.

Kelvin marine diesels, which will be offered in 60 to 400 shaft horsepower ranges, are a division of English Electric Diesels, Limited.

Prime U.S. distributor is Mid-Continent Supply Co., Fort Worth, Texas. Mid-Co maintains a large central warehouse for engines and engine parts in Houston, with other distribution points located strategically throughout the United States.

Worldwide Marine and Mid-Co plan early installation of complete Kelvin marine diesel facilities in Miami and other points following the population of Kelvin engines.

## Cramer Elected Pres. Water Transportation Accounting Officers

It has been announced that Arthur C. Cramer, assistant treasurer of American Foreign Steamship Corp., has been elected president of the Association of Water Transportation Accounting Officers for 1971. The executive vice-president is Michael J. Esposito, who is vice-

president of American Export Isbrandtsen Lines.

Other elected officers are: James W. Lipscomb, treasurer of Columbia Steamship Co.; Thomas B. O'Brien, assistant treasurer of Farrell Lines, and Lloyd J. Fitzpatrick, comptroller of Lykes Bros. Steamship Co. All have been named regional vice-presidents of the Association. John P. Mooney, auditor of Farrell Lines, was elected secretary-treasurer.

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## Largest Ship Built In Finland Launched At Wartsila Shipyard



Principals at the launching of the M/S Pacific at the Wartsila Shipyard, Turku, Finland, are from left: **Axel A. Johnson**, president of Axel Johnson Group; **Tankmar Horn**, president of Wartsila Group; **Mrs. H.P. O'Hagan**, who christened the largest vessel yet built in Finland, and Mr. **O'Hagan**, chairman and president of Seaboard Shipping Co. Ltd., Vancouver, British Columbia.

On December 3, the Johnson Line of Sweden launched the M/S Pacific, a 29,000-ton vessel specially constructed to carry cars from Europe to the Pacific Coast of the United States and Canada and packaged lumber products on the return run. The launching took place at the Wartsila Shipyard in Turku, Finland, according to the announcement by Axel Johnson Corporation, North American general agent for Johnson Line.

The vessel was christened M/S Pacific by **Mrs. H.P. O'Hagan**, wife of the chairman of the board of Seaboard Shipping Co. Ltd., Vancouver, British Columbia, a principal shipper of forestry products to Great Britain and Continental Europe.

The M/S Pacific is the largest vessel of any type yet built in Finland. The Johnson Line's new Axel Johnson class of four container ships launched over the last 18 months were also built at the Wartsila shipyards.

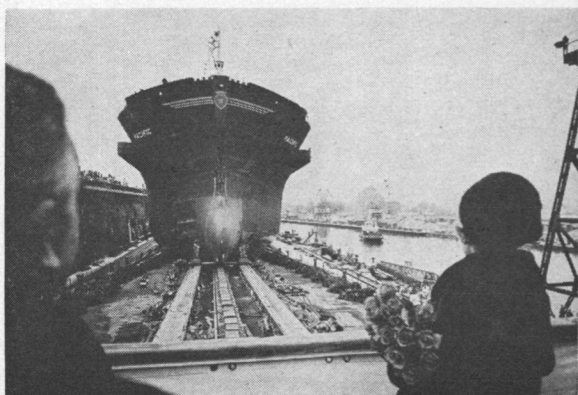
The design of the vessel provides for completely new methods for handling both cars and lumber. Cargo will be carried on special flats located in container-type cells.

The M/S Pacific is equipped with two 30-ton ASEA gantry cranes which can handle loads both on piers and aboard ship.

Dimensions of the new Johnson Line M/S Pacific are: length, 604.2 feet; beam, 92.66 feet; depth at side, 51.66 feet; draught, 34.44 feet, and deadweight, 29,000 tons. Speed with full loads is 16.5 knots.

Two Pielstick diesel engines, each developing 8,000 bhp at 520 rpm, drive two KaMeWa controllable pitch steering propellers. At sea, electric power is supplied by three Hedemora VA 8/12 diesel generator sets providing 2,000 kva.

After launching the M/S Pacific, the keel was



The Johnson Line's new car/bulk carrier M/S Pacific sliding down the ways (December 3, 1970) at Wartsila Shipyard, Turku, Finland.

laid for a second combination car/bulk carrier for the Johnson Line.

The M/S Pacific is the second Johnson Line vessel to bear this name. The first M/S Pacific was the first Swedish vessel to pass westbound through the Panama Canal in 1914, en route to San Francisco.

General Steamship Corporation Ltd. are U.S. Pacific Coast agents for the Johnson Line, and C. Gardner Johnson & Company are the agents in Vancouver, British Columbia.

## Brochure Describes Balancing Machine Customer Can Build

A new four-color brochure describes a 5,000-pound-capacity precision balancing machine you can build yourself.

The Mechanalysis Model B50F/S International Balancing Machine System consists of two modular suspension work supports—the "nerve center" of the balancing machine; a Mechanalysis Model 330 Analyzer/Balancer—the portable electronic unit used for in-place balancing and machinery analysis; kit with V-blocks, end-thrust, belts and pulleys; and a complete set of piece detail drawings for your own field fabrication of the balancing stand. By supplying your own drive motor with this 225# air-freight package, you have a premium-quality, high-capacity balancing machine at minimum cost.

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The brochure points out that customer training is offered at no charge periodically throughout the United States, Canada, United Kingdom, Western Europe and South Africa.

For more information, write IRD Mechanalysis, Inc., 6150 Huntley Road, Columbus, Ohio 43229.



**JOINS BAKER-WHITLEY FLEET:** The completely converted tug America (shown above) has reentered the Baker-Whiteley Towing Co. fleet, according to **L.A. Talbot**, president of the firm. The America joined Baker-Whiteley's Holland, Progress, Columbia, Resolute and Britannia after her trial run, which was performed to the complete satisfaction of Baker-Whiteley's representatives, General Motors, Falk Gear Corporation, Marine Design, Inc., and the American Bureau of Shipping. The Baker-Whiteley fleet is berthed at the foot of Broadway in the Fells Point area of the Port of Baltimore. Baker-Whiteley is the Port's oldest towing company, having been founded in 1878. The latest entry to the fleet was converted in its entirety under plans and the joint supervision of the naval architect firm of Marine Design, Inc. of New York City and the American Bureau of Shipping, in conjunction with Baker-Whiteley's port engineer, **William H. Davis**. In describing the revamped tug, Mr. Davis said that the America is powered with a General Motors turbocharged engine, Model 12-645-E5 with a Falk reduction gear, developing 2,300 brake horsepower. Steering is provided by a Tenfjord hydraulically-powered steering gear. Power for auxiliaries is supplied by two General Motors 75-kw generators. It is equipped with a Danforth-White Constellation compass, a Decca radar, Raytheon depth finder and a Motorola radio-telephone.



**TTI DELIVERY:** The U.S. Coast Guard has formally accepted delivery of the Air Cushion Vehicle 01 (shown above) from Transportation Technology Inc. of Irving, Texas, following completion of overhaul and modification of the craft. This craft is the first of three similar ACVs which TTI is overhauling under a \$407,544 contract to the Coast Guard. Two of these craft will be used in a one-year evaluation of the air cushion vehicle in various Coast Guard missions in the San Francisco Bay area. The third craft being overhauled will also be "winterized" by TTI under the provisions of the contract. This craft will be heavily instrumented by Government personnel and following delivery will undergo an extensive series of engineering trials both in the Bay area and in Alaska as part of the ARPA Surface Effect Vehicle Program.

## London Chartering Brokers Appoint John F. Dillon, Inc.

John F. Dillon, Inc., has been appointed as sole time chartering representative in the United States for Seagroup Services, Ltd., London, general chartering brokers for Uninav, S. A. of Lausanne, Switzerland.

Engaged in international transportation, ship-owning and ship financing, Uninav, S. A. has entered into a joint venture with Federal Commerce and Navigation Co., Ltd., Montreal, in which the Swiss-based firm will be responsible for the time chartering of all tonnage required.

The Dillon concern is located at 400 Jericho Turnpike, Jericho, Long Island, N.Y.

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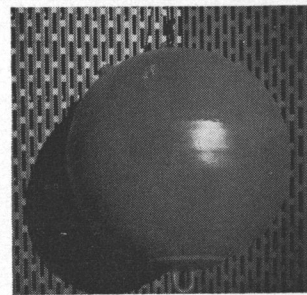
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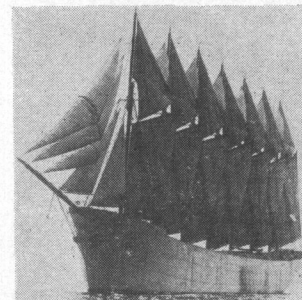
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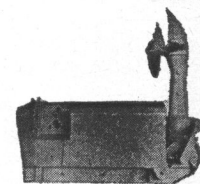
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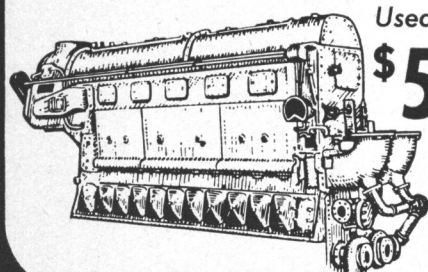
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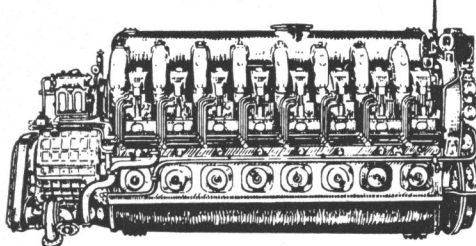
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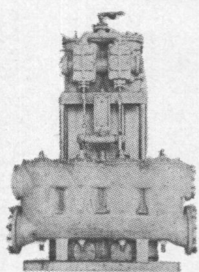
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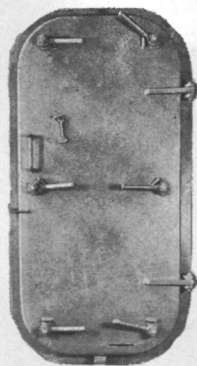
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S 193 Form A—10059/1200 RPM

#### Generator:

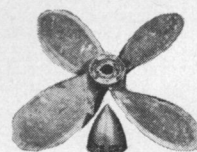
400 KW—120/240 V DC—Type MPC—1200 RPM

6 Available — Excellent Condition  
Suitable for Upgrading to 600 KW

### NICOLAI JOFFE CORPORATION

San Francisco Branch  
445 Littlefield Ave. (P.O. Box 2445)  
South San Francisco, Calif. 94080  
Phone (415) 761-0993

## PROPELLERS, TAILSHAFTS, RUDDERS



#### PROPELLERS

AP3—Victory—with ABS—  
located Baltimore.  
C-1MAV-1—with ABS—  
located Beaumont, Texas

#### TAILSHAFTS

C-3—reconditioned—with ABS—located Baltimore  
C-1MAV-1—with ABS—located Beaumont, Texas

#### RUDDERS

C-1MAV-1—new—unused  
VICTORY—reconditioned  
T-2 As removed from vessel. Good. Subject to  
your survey.

### THE BOSTON METALS COMPANY

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

# Motor Generator Sets

#### GENERATOR

MFR.	HP	VOLTS	RPM	TYPE	AMPS
Ideal Elec.	150	230	1200	D-28	534
Ideal Elec.	150	230	1200	D-28	534
Ideal Elec.	40	230	1800	D	145
U. S. Elec.	150	440	1200	SC	198
Reliance	93.6	115	1750	TDC	690
Burke	20	230	1880	M6115	79.6
(W)	3.5	230	1780	CC212.30B	13.8
(W)	3.5	220/440	1750	CC212.31B	10.45.2
Holtzer	2	115	1460	MG133	14
Gen. Elec.	85	440	1765	5K505Y5	108
Gen. Elec.	85	440	1765	5K505Y5	108
Ideal Elec.	40	115	1800	D	290
Ideal Elec.	40	115	1800	D	290

#### MOTOR

MFR.	KW	VOLTS	RPM	AMPS
Ideal Elec.	100	450	1200	160
Ideal Elec.	100	450	1200	160
Ideal Elec.	25	450	1800	40
Delco	100	120/240	1200	417
Reliance	62.8	230	1750	273
Burke	25 KVA	120	1880	120
(W)	1.4	2000	1780	0.7
(W)	1.4	2000	1750	0.7
Holtzer	190	24	1460	70
Gen. Elec.	60	110	1765	545
Gen. Elec.	60	110	1765	545
Ideal Elec.	25	450	1800	40
Ideal Elec.	25	450	1800	40



**National  
Metal**  
AND  
STEEL  
CORP.

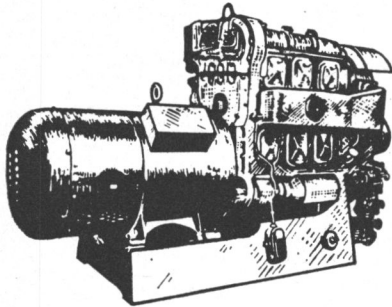
691 New Dock Street, Terminal Island, California 90731 Area Code (213) 775-3321 Telex: TWX 213 548-0990



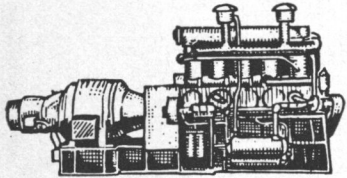
## MARINE DIESEL GENERATORS

**SUPERIOR**, 10 KW, 120 Volts DC.  
**HERCULES DOOC**, 10 KW, 120 DC, Radiator cooled.  
**CATERPILLAR**, radiator cooled, 15 KW, 120/240 Volts DC.  
**GM**, 4-71, 60 KW, 220/440 AC.  
**HERCULES**, DJXC, 25 KW, 120 DC.  
**CUMMINS A1**, 30 KW, 120 DC.  
**MURPHY**, Model ME 66, radiator cooled, 75 KW, 120/240 Volts DC.  
**CATERPILLAR DIESEL ENGINE**, Model D13000, 167 HP, 900 RPM, with Louis-Allis Generator, 85 KW, 220 AC.  
**LORIMER F5SS**, 75 KW, 120/240 DC, radiator cooled.

**GM-3-268A**, 100 KW, 240/120 Volts DC.  
**SUPERIOR**, Model 1DB-8 100 KW, 450/3/60.  
**GM**, 8-268, 300 KW, 260/345 DC.



**GENERAL MOTORS** Model 3-268A, 152 BHP, 1200 RPM, with 100 KW Generators, 450 Volts AC, 3 phase, 60 cycles.  
**GM 8-268A**, radiator cooled, air start with Fairbanks-Morse Generator, 300KW, 440/3/60, complete with switchboard.  
**FAIRBANKS-MORSE**, 38 E 5 1/4, 300 KW, 260/345 DC.



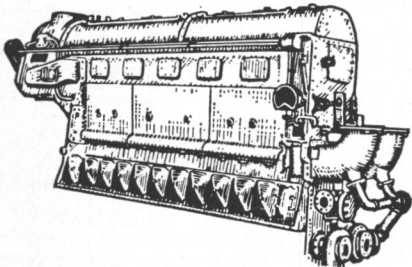
**LORIMER** 100 KW, 450/3/60 Volts DC.  
**BUDA 6DHG691**, 60 KW, 120 Volts DC.  
**SUPERIOR GBD-8**, 100 KW, 240/120 Volts DC.

**FAIRBANKS-MORSE**

## MARINE DIESEL ENGINES

matched pair . . . Model 38D8 1/8

1 Port  
 1 Starboard  
 Used condition  
 1800 HP, 800 RPM,  
 2 cycle, 8 1/2" bore,  
 10" stroke, Air Start,  
 Complete with  
 Westinghouse  
 Reduction gears  
 2,216:1 ratio, with  
 Hydraulic Coupling



**4-COOPER-BESSEMER**  
**MODEL LS-8-DR**  
 1300 HP  
 277 RPM  
 Direct  
 Reversing,  
 Turbo charged.

## AIR COMPRESSORS

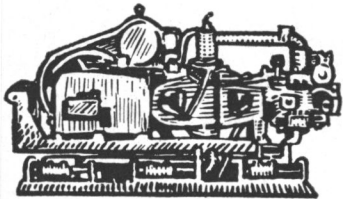
**INGERSOLL-RAND**, 50 CFM, 150 PSI, 20 HP, 440/3/60.

**INGERSOLL-RAND**, 150 CFM, 600 PSI, Model 75, with Westinghouse Motors, 75 HP, 230 DC.

**INGERSOLL-RAND**, 50 CFM, 600 PSI, Model 30, with Westinghouse Motors, 15 HP, 230 DC.

**CHICAGO-PNEUMATIC**, 161 CFM, 100 PSI, 40 HP, 230 DC.

**WESTINGHOUSE** Air Brake, 246 CFM, 140 PSI, with 50 HP Motors, 440/3/60.



**WORTHINGTON**, 175 CFM, 125 PSI, with 50 HP Motors, 440/3/60.

**JOY**, Class WG82, 2-stage rated 100 CFM at 300 PSI, water cooled, size 7" x 3 3/4" x 7" with Reliance motor, 30 HP, 220/440/AC/3/60.

**STEAM AIR COMPRESSORS** Westinghouse Air Brake Co., Size 9 1/2 x 9 x 10 Vertical.

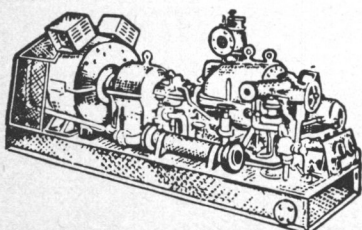
## TURBINE GENERATORS

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

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

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

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



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

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

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

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

**2-G.E. DORV** Turbines, with G.E. Generators, 200 KW, 440/3/60.

### CLYDE 17-DE-90 WHIRLEY

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

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

**Whip:** 10 tons @ 125 FPM—2 part line

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

**Motors:** Each leg (4 tot.) 7 1/2 HP, 230 DC.—

**Power:** Diesel electric (DC)

**RED  
HOT BUYS**  
from

**ZIDELL** EXPLORATIONS, INC.

if it's on a ship we probably have it!

**NEED IT NOW?**



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**Ralph E. Ingram**

Telex:  
**36-701**

3121 S.W. Moody  
 Portland, Ore. 97201  
 (503) 228-8691

### Submarine Type PROPULSION MOTORS AND GENERATORS

**ELLIOTT MOTORS**, 1362 HP, 415 Volts DC, 2585 Amperes, Design 28AN02.

**ELLIOTT GENERATORS**, 1122 KW, 720 RPM, 415 Volts DC, 2705 Amperes, Design 37C02.

**GENERAL ELECTRIC MOTORS**, 1375 HP, 415 Volts DC, 2600 Amperes, Type MCF.

**GENERAL ELECTRIC GENERATORS**, 1100 KW, 750 RPM, 415 Volts DC, 2650 Amperes, Type MCF.

### ELECTRIC MOTORS 230 VOLTS D.C.

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

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

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

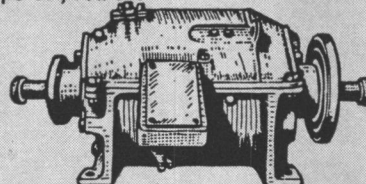
**2—55 HP, Electro-Dynamic**, FR 25-SL, 550 RPM, Compound Wound, Single Ball Bearing. Originally for high pressure Air Compressor.

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

**1—65 HP, WESTINGHOUSE**, 560 RPM, Type CK, Form 10, 260 Ampere, B.B., D.P., Compound Wound.

**2—220 HP, G.E.**, 1800 RPM, Type CDM—1348S, Model 25G 339, 775 Ampere, B.B., D.P., Stab. Shunt.

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



### 52—WESTINGHOUSE 50 HP

230 Volts DC, 600 RPM, Type CK, Frame 9, Compound Wound, 181 Amperes, Double Shaft, Totally Enclosed—Waterproof, Horizontal, Approximate Weight 2000 lbs.

### CARGO HOISTER BLOCKS

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

**\$34.50 each**



**\$39.50 each** with pull test certificates.

### ESCAPE SCUTTLES

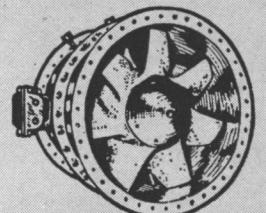
**18" Steel**  
**Quick Acting**

Complete with coaming. Wheel control from above and below.

**\$95.00 ea.**, F.O.B. Portland



### AXIAL FLOW FANS



LaDel,  
 STURTE-  
 VANT  
 etc.

**Rebuilt—Guaranteed**

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

### STEERING STANDS

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

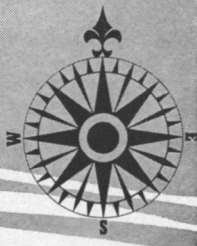
**\$225.00 each**



**ALSO SEE ZIDELL'S 5 PAGE SPREAD  
 IN ALTERNATE ISSUES OF MARITIME REPORTER**



# BARGES ON THE SPOT



## FOR CHARTER Steel Deck Barges

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

## ALSO AVAILABLE:

Hopper—Offshore—Oil and Spud Barges

## FOR SALE

205' x 40' x 10' Inland Deck Barge

# McDONOUGH MARINE SERVICE

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NEW ORLEANS, LOUISIANA 70126/504-949-7586

BRANCH OFFICE: P. O. BOX 233 CHANNELVIEW, TEXAS 77530  
PHONE HOUSTON 713-622-9977

## PONTOONS

Have available for immediate shipment 200 Pontoons following dimensions: 32' long x 7 1/2' wide x 15" deep fabricated from 3/16" steel plate. All in excellent condition and attractively priced.

## POLLOCK INDUSTRIES, INC.

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# Turbine Generator Sets

MFR.	KW	RPM	STEAM PRESSURE	REDUCTION GEAR	RPM
General Electric	400	9977	525/575	S-172	1200
Westinghouse	500	9018	525	—	1200
Westinghouse	200	9989	410	—	1200
Terry	300	5965	440	SM	1200
De Laval	250	5650	440	—	1200
General Electric	300	5645	440	S-162	1200
General Electric	250	10,000	525/618	—	1200

Call Collect Area Code (213) 775-3321



# National Metal AND STEEL CORP.

691 New Dock Street, Terminal Island, Calif. 90731  
Telex: TWX 213 548-0990

## G.E. TURBINE ROTOR

For G.E. DORV —618N  
Serial 70717 GEI 17716

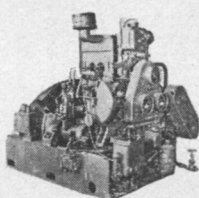
Steam conditions: 525 P.S.I.—350°F superheat or  
buy complete 450 KW turbo generator set with  
S-193 reduction gear. Will upgrade to 600 KW.

## PRICED TO SELL

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## UNUSED 10KW SUPERIOR DIESEL GEN. SETS



GENERATOR: Deleo 10-  
KW — 120 volts DC —  
83.3 amps—1200 RPM.  
ENGINE: Superior diesel  
— 2 cylinder — 4 1/2 x  
5 3/4 — 15 HP—heat ex-  
changer cooled.

## PRICED TO SELL!

While They Last

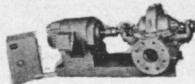
**\$1395**

ONLY 9  
UNITS LEFT

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## UNUSED AURORA PUMP



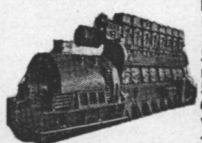
**\$877.77**

300 GPM—37' head—5 HP—  
120 volts DC Centrifugal Pump.  
Bronze — size 5x4 — flanged.  
MOTOR: Reliance—super T.D.C.  
Electric Motor—5 HP—120 VDC  
— 36.8 amps — 1790 RPM —  
Frame L216A—with control by  
Cutler-Hammer. Excellent con-  
dition. Latest USN surplus.

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## UNUSED 500 KW 120/240 VOLT D.C. BALDWIN/ALLIS CHALMERS DIESEL GENERATOR SET



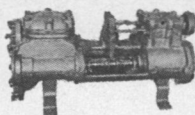
ENGINE: Baldwin-DeLaverne 725  
HP—12-2/3"x15 1/2"—8 cyl.—500  
RPM — air starting. Dry weight  
34050 lbs. GENERATOR: Allis-Chal-  
mers 500 KW—120/240 V.D.C.—  
500 RPM—550 RPM overspeed.  
60°C rise—class B insulation—3-  
wire—25% unbalance—2083 amps  
—stab. shunt—open—drip-proof—  
self-ventilated—8 poles.

## THE BOSTON METALS COMPANY

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539-1900 (301) 355-5050

## UNUSED WORTHINGTON BRONZE-FITTED HORIZONTAL MARINE DUPLEX PUMPS

Type VC—7 1/2 x 5 x 6—4" suction—3" discharge 1 1/2"  
steam—2" exhaust. Liquid pressure to 250 lbs.—steam  
and pressure 200 PSI. Capacity 100 GPM—100 PSI  
@ 80 strokes/minute. OAL 48 1/4"  
20"x23"—weight 930 lbs. Suitable  
for port feed, general service,  
evaporator feed, fuel oil and  
other pressure service.



**\$775 each**

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## HAZARDOUS DUTY DEEP WELL PUMP

4x4—for cargo oil, water, gasoline,  
bilge, etc. MOTOR: Westinghouse—  
U.L. approved for hazardous duty—3  
H.P.—220/440/3/60—3450 R.P.M.  
—9 foot shaft. 300 G.P.M. @ 60'—  
4 units available.

**\$447.50 each**

## THE BOSTON METALS COMPANY

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## 30KW MG LIGHTING SETS

FOR C-3, C-4 VESSELS

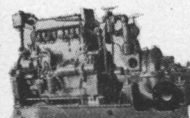
Unused—62.5 HP 2 hours; 50 HP 24 hours. 230  
VDC 186 amps 1750 input. Output: 30 KW 24  
hours—37.5 2 hours—120 VDC—250 amps—  
1750 RPM. With spare armature and parts.

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## DIESEL FIRE & GENERAL SERVICE PUMP

500 PSI @ 100 lbs—with self-priming attachment



Mfg by John Reiner & Co.—DP-60  
—diesel engine 4 cyl. Continental—  
electric starting—42 HP—1800  
RPM. PUMP: 500 GPM—100 PSI—  
4" suction—4" discharge. Unused.

## THE BOSTON METALS COMPANY

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## UNUSED 10x9x12 VERTICAL SIMPLEX FUEL OIL TRANSFER PUMPS



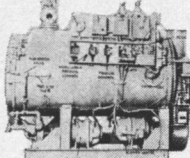
Furnished on some T2 tankers.  
160 GPM Bunker C—viscosity 70  
to 700 SSF 122°F @ 100 lbs  
discharge press. WP steam 150#  
—exhaust 10#. 1 1/2" Steam in-  
let—1 1/2" exhaust. 4" pump suc-  
tion—3 1/2" discharge.

**\$1250**

## THE BOSTON METALS COMPANY

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## CYCLOTERM SELF-CONTAINED AUX. BOILERS



Oil burning 0 2500 lbs/hr. Design  
pressure 125 lbs—WP 100 lbs—2-  
pass. Complete with self-contained  
motor-driven blower 5HP—440/3/  
60—Fuel Oil Service pump 3 HP—  
440/3/60. Burner is pressure atom-  
izing type.

**\$795.00 each**

YOUR INSPECTION INVITED

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## 14" ALL-BRONZE PORTLIGHTS with deadlights

## THE BOSTON METALS COMPANY

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# Guaranteed ready to use

The items advertised on this page are ready for your use. Most have been completely reconditioned, many are ABS certified, all have been carefully inspected to assure their serviceability. If it's listed here, you can depend on it . . . today . . . when you need it. Call Jeff Feder for fast answers on your replacement needs.

## C3 RUDDER

Reconditioned with A.B.S. Certificate  
Ingalls Hull #267

## STEERING UNIT PUMPS

Hele-Shaw Pump, Size 11P12, RPM 850  
Pressure 1000, Westinghouse Motor  
Type CS 440 Volt, 35 HP 880 RPM  
49 Amps, 3 Phase 60 Cyl.

## TOPPING WINCHES

Lakeshore Type T Model 5D  
Single Speed, General Electric 5 HP,  
Model 5AR254960, 440/3/60,  
1100 RPM

## CARGO WINCHES

Single Drum, Single Speed,  
General Electric, COM-1830-AEY,  
230 Volt DC Motor

## GENERATOR SETS

General Electric, 440 Volt AC/230 Volt  
DC, G.E. Model 6PC2096A1,  
Motor Type K, Frame 405S, 1770 RPM

## FUEL OIL PUMPS

Quimby Pump, Size 2½, RPM 1150,  
GPM 15, Press 325, General Electric,  
Model 5KF364PPI, 440 Volt 7½/3¼ HP,  
1160/580 RPM

## C-4 S1A TURBINE

Bethlehem 17,500 SHP  
Low Pressure, Complete  
Falk Reduction Gear, 17,500 Shaft HP,  
102 RPM Output, Complete with spares

## GENERAL ELECTRIC

Rebuilt Starter Boxes, 440 Volts,  
From 2 HP to 50 HP

## MAIN CONDENSATE PUMPS

Ingersoll Rand, Type 2 VHM, 180 GPM,  
Westinghouse Motor, 440 Volts 25 HP,  
1750 RPM 32-5 Amps

## T-2 NEW • UNUSED

General Electric, 6000 HP, AC Motor  
New-unused, Type TSM-HL-80,  
Synchronous Type, 2300 Volts, 60  
Cycles, 3 Phase, 1160 Amps 90 RPM

## MAIN PROPULSION TURBINE ROTORS

Reconditioned with A.B.S. Certificate

## C-2 SB1 BRONZE PROPELLER

## C-2 SB1 RUDDERS

## 5, 10 AND 30 TON BOOMS

## CARGO WINCHES

Nine pair, Single Drum, Single Speed,  
General Electric, COM-1830-AEY,  
230 Volt DC Motor

## GENERAL ELECTRIC 300 KW. DC

### TURBO GENERATOR

Generators: 300 KW DC, 120/240 Volts,  
1200 RPM, 1250 Amps, Type MPC,  
Model 24G869, 3 Wire,  
Compound Wound

Turbines: Type DS 60-25, 5636 RPM,  
440 PSI, 40 F.

Reduction Gears: Ratio: 5636/1200 RPM  
Completely rebuilt, A.B.S. Certificate

## GENERATOR SETS

General Electric, Seven Each,  
440 Volt AC/230 Volt DC,  
G.E. Model 6PC2096A1, Motor Type K,  
Frame 405S, 1770 RPM

## CIRCULATING PUMPS

Warren Main, Type 24 MFP,  
18,000 GPM, 690 RPM, 16 Foot TDH,  
Vertical with 150/38 HP  
440/3/60 Motor with Spare Parts

Call Collect Area Code (213) 775-3321



# National Metal

AND  
STEEL  
CORP.

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Area Code (213) 775-3321 Telex: TWX 213 548-0990

## CONDENSATE PUMP

Warren Main, Type 4-2CVP-10,  
325 GPM, 50 RPM, 180 Foot TDH,  
Vertical with 25 HP, 440/3/60 Motor

## SUPERHEATER HEADERS

For Port-Boiler, CE Type V2M (two each)  
For Starboard-Boiler,  
CE Type V2M (two each)

## BOILER HEADERS

For Port-Boiler, CE Type V2M  
(three each)  
For Starboard-Boiler (three each)

## TURBINES

Dorv 325/525 KW, G.E. 325/300 KW  
Worthington 300 KW  
Main Turbine Rotor for T-2 (6000 HP)

## ANCHOR WINDLASS

Manufactured by Webster Brinkley Co.  
Model WNE-5 Vertical Type 2¾ Die  
Lock Chain. Two Wildcats.  
Two Capstans

Electric Powered 75 HP 230 Volt DC  
Motor with controls and motor brakes

Capstans designed for 10"  
circumference rope 90 FPM  
under load of 20,000 lbs

Each wildcat and capstan can be  
operated simultaneously or  
separately

Electrical and Mechanical spares  
included

Fairbanks Morse Model 38D 1/8  
1600 HP diesel engines with common  
Farrell-Birmingham gear 2.677:(270  
RPM). Complete with all accessories,  
including heat exchangers, air  
compressors, air tanks, mufflers,  
filters, strainers, etc. Bearings and  
auxiliary generator sets also  
available

Few hours since engines fully rebuilt at  
cost of approximately \$125,000  
Engine logs available



## AXIAL FLOW FANS



**NEW — UNUSED — 115 V.D.C.**

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

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

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

**LARGE AXIAL FLOW FANS  
30000 C.F.M.**

A304W5—25 HP—440/3/60, 30000 C.F.M. @  
3" static; 40000 C.F.M. @ 1" static, I.D. 44 1/4"

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With Extended Legs for Welding to Deck  
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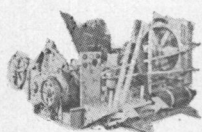


Clear opening 10" x 14"—  
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With torque converter & free  
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Twin Disc Torque Converter;  
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Union Carbide Corp., Linde Div., 270 Park Ave., N.Y., N.Y. 10017

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York, N.Y. 10019  
Refineria Panama, S. A. 277 Park Ave., New York, N.Y. 10017  
The West Indies Oil Co., Ltd., St. John's Antigua, W. I.

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Fawick Airflex Div. Power Transmission Systems, 9919 Clinton Rd.,  
Cleveland, Ohio 44111  
Wichita Clutch Co., Inc., Wichita Falls, Texas 76307

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Carboline Co., 328 Hanley Industrial Court, St. Louis, Mo. 63144  
Enjay Chemical Company, 60 West 49th St., New York, N.Y. 10020  
Farbail Company, 90 West St., N.Y., N.Y. 10006  
Intercoastal Corp., 2320 Edgewater Ave., Baltimore, Md. 21222  
Patterson-Sargent, P.O. Box 494, New Brunswick, N. J.  
Porter Paint Co., Louisville, Ky. 40201

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Lighter Aboard Ship, Inc., 225 Baronne St., New Orleans, La. 70112  
Paceco, Div. Fruehauf Corp., P.O. Drawer E, Alameda, Calif. 94501  
RPC Corp., Marine Sales, 200 Park Ave., New York, N.Y. 10017  
Star Iron & Steel Co., 326 Alexander Ave., Tacoma, Wash. 98421  
York Trailer Ltd., Corby, Northants, England

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W. W. Patterson Co., 830 Brocket St., Pittsburgh, Pa. 15233  
Pro Par Div. Fruehauf Corp., 10940 Harper Ave., Detroit, Mich. 48232  
Seasafe Transport AB, Torstensonsgratan 3, S 114 56 Stockholm,  
Sweden

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Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913  
Kongsberg Systems, Inc., 10 De Angelo Dr., Bedford, Mass. 01703  
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of  
Sperry Rand Corp.

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Corrosion Dynamics, 1100 Walnut St., Roselle, N.J. 07203  
Intercoastal Corp., 2320 Edgewater Ave., Baltimore, Md. 21222  
Radiator Specialty Co., 1400 Independence Blvd., Charlotte, N.C.  
28205

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Hoffman Rigg & Crane Service, 560 Cortlandt St., Belleville,  
N.J. 07109  
Kocks Pittsburgh Corp., Four Gateway Center, Pittsburgh, Pa. 15222  
Lidgerwood Mfg. Co., (Superior Lidgerwood Mundy Corp.), 1010  
Third Ave., New York, N.Y. 10021  
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg,  
West Germany  
Paceco, Div. Fruehauf Corp., P.O. Drawer E, Alameda, Calif. 94501  
Hensen-Rotterdam, P.O. Box 5040, Rotterdam, Holland  
Star Iron & Steel Co., 326 Alexander Ave., Tacoma, Wash. 98401

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Lockstad Co., Inc., 179 W. 5th Street, Bayonne, New Jersey 07002  
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696  
Pyrate Mfg. Co., Inc., 222-17 Northern Blvd., Bayside, N.Y. 11361

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Blackburn Marine Equipment, 6105 England St., Houston, Tex. 77021  
Duchess Baker Mfg. Co., Superior, Wis.  
Lidgerwood Mfg. Co., (Superior Lidgerwood Mundy Corp.), 1010  
Third Ave., New York, N.Y. 10021  
Markey Machinery Co., Inc., 79 S. Horton St., Seattle, Wash. 98134  
Nashville Bridge Co., P.O. Box 239, Nashville, Tenn. 37202  
Red Fox Machine & Supply Co., P.O. Drawer 640, New Iberia, La.  
70560  
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Western Gear Corp., Heavy Machinery Div., Everett, Wash. 98201

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Kiene Diesel Accessories, Inc., P.O. Box 216, Franklin Park, Ill. 60131

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Caterpillar Tractor Co., Industrial Div., 100 N.E. Adams St., Peoria,  
Ill. 61602  
Colt Industries Inc., Power Systems Div., Beloit, Wisc. 53511  
Electro-Motive Division General Motors, La Grange, Illinois 60525  
Fiat, Turin, Italy, U.S.A. 375 Park Ave., New York, N.Y. 10022  
Goltan Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231  
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Walz & Krenzer, Inc., 20 Vesey St., New York, N.Y. 10007

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Galbraith-Pilot Marine Corp., 600 4th Ave., Brooklyn, N.Y. 11215  
L. F. Gaubert & Co., 700 So. Broad St., New Orleans, La. 70150  
Merrin Electric, 162 Chambers St., New York, N.Y. 10007  
Oceanic Electrical Mfg. Co., Inc., 148 Perry Street, N.Y. 10004

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Aqua-Chem, Inc., 225 N. Grand Ave., Waukesha, Wis. 53186  
Bethlehem Steel Corp., Shipbuilding, 25 B'way, N.Y., N.Y. 10004  
Mechanical Equipment Co., Inc., 861 Carondelet St., New Orleans,  
La. 70130

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Nashville Bridge Co., P.O. Box 239, Nashville, Tenn. 37202  
Robvon Backing Ring Co., 675 Garden St., Elizabeth, N.J. 07207

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Valad Elec. Heating Co., 71 Cortlandt St., Tarrytown, N.Y. 10591

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Bird Johnson Co., 883 Main St., Walpole, Mass. 02081  
Vickers, MGO Div., Troy, Mich. 48084

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Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Brklyn, N.Y. 11231  
**LININGS**  
Ameron Corrosion Control Div., Brea, Calif. 92621

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**MACHINERY MONITORS**  
IRD Mechanalysis, Inc., 6150 Huntley Rd., Columbus, Ohio 43229

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Hydro Drive Corp., 4420 - 14th Ave. N.W., Seattle, Wash. 98107  
Philadelphia Gear Corp., Schuylkill Expressway, King of Prussia,  
Pa. 19406  
Western Gear Corp., Industrial Products Div., P.O. Box 126, Belmont,  
Calif. 94003

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Dynel Electronics Corp., 75 Maxess Road, Melville, N.Y. 11746  
Edo Western Corp., 2645 So. 2nd St., W. Salt Lake City, Utah 84115  
ITT Decca Marine, Inc., 386 Park Ave. South, New York, N.Y. 10016  
ITT Mackay Marine, 133 Terminal Ave., Clark, N.J. 07066  
Marquardt Corp., 16555 Saticoy St., Van Nuys, Calif. 91406  
National Marine Service, 1750 So. Brentwood Blvd., St. Louis, Mo.  
Radiomarine Corp., 20 Bridge Avenue, Red Bank, N.J. 07701  
RCA Service Co., A Division of RCA, Marine Communications and  
Navigation Equipment Service, Bldg. CHIC-225, Camden, N.J. 08101  
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of  
Sperry Rand Corp.

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Beaver Tool & Machine Co., P.O. Box 94717, 525 S.E. 29th St.,  
Oklahoma City, Okla. 73109  
Nicolai Joffe Corp., P.O. Box 2445, 445 Littlefield Ave., So. San  
Francisco, Calif. 94080  
Kearfott Marine (Div. of The Singer Co.) 21 West St., New York,  
N.Y. 10006

Chas. Lowe Co., 6340 Christie Ave., Emeryville, Calif. 94608  
Merrin Electric, 162 Chambers St., New York, N.Y. 10007  
Pacific Coast Eng. Co., P.O. Drawer E, Alameda, Calif. 94506  
Stow Mfg. Co., 225 Shear St., Binghamton, N.Y. 13902  
Vokes Filter Div. (Cardwell Machine Co.), Cardwell and Castle-  
wood Rd., Richmond, Va. 23221

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

**MARINE INSURANCE**  
Adams & Porter, Cotton Exchange Bldg., Houston, Texas  
Midland Insurance Co., 29 Broadway, New York, N.Y. 10006

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Natale Machy. & Tool Co., Box 95, Carlstadt, N.J. 07022

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De Laval Turbine, Inc., 853 Nottingham Way, Trenton, N.J. 08602  
General Electric Co., Gas Turbine Dept., Schenectady, N.Y. 12305  
Murray & Tregurtha, Inc., 2 Hancock St., Quincy, Mass. 02171  
Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014  
Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523  
Western Gear Corp., Precision Products Div., P.O. Box 190, Lyn-  
wood, Calif. 90262

**MARINE RADIO COMMUNICATIONS EQUIPMENT**  
Collins Radio Co., M/S 416-118, Dallas, Texas 75207  
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011  
ITT Decca Marine, Inc., 386 Park Ave. South, New York, N.Y. 10016  
ITT Mackay Marine, 133 Terminal Ave., Clark, N.J. 07066  
E. F. Johnson Corp. Waseca, Minn. 56093  
Paul J. Plishner, 45 West 45 St., New York, N.Y. 10036  
Radiomarine Corp., 20 Bridge Avenue, Red Bank, N.J. 07701  
Raytheon Marine Products Operation, 213 East Grand Avenue, South  
San Francisco, California 94080  
RCA Service Co., A Division of RCA, Marine Communications and  
Navigation Equipment Service, Bldg. CHIC-225, Camden, N.J. 08101

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Breit Engrg. Inc., 441 Gravier St., New Orleans, La. 70130  
Commercial Radio Sound Corp., 652 First Avenue, N.Y., N.Y. 10016  
Crandall Dry Dock Engrs., Inc., 238 Main St., Cambridge, Mass. 02142  
Cushing & Nordstrom, 50 Trinity Place, New York, N.Y. 10006  
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J. J. Henry Co., Inc., 90 West St., New York, N.Y. 10006  
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Marine Applications Co., Inc., P.O. Box 167, Mineola, N.Y. 11502  
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Marine Design Inc., 1180 Ave. of Americas, N.Y., N.Y. 10036  
Marine Design Associates, P.O. Box 2674, Palm Beach, Florida  
Maritech, Inc., 38 Union Sq., Somerville, Mass. 02143  
Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jack-  
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Metritape, Inc., 77 Commonwealth Ave., West Concord, Mass. 01782  
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Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida  
33156  
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T. W. Spoetgens, 156 West 8th Ave., Vancouver 10, Canada  
Philip F. Spaulding & Associates, 65 Marion St., Seattle, Wash. 98104



R. A. Stearn, Inc., 100 Iowa St., Sturgeon Bay, Wisc. 54235  
 Richard R. Taubler, 44 Court St., Brooklyn, N.Y. 11201  
 H. M. Tiedemann & Co., Inc., 74 Trinity Pl., New York, N.Y. 10006  
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 Alan Winkley, 6420 Colby St., Oakland, Calif. 94618

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 Peck Equipment Co., 3500 Elm Avenue, Portsmouth, Virginia 23704

**OILS—Marine—Additives**  
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 Ethyl Corp. Marine Div. Perolin Co., New York, N.Y. 10001  
 Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019  
 Humble Oil & Refining Co., Humble Building, Houston, Texas 77002  
 Mobil Oil Corp., 26 Broadway, New York, N.Y. 10004  
 Refineria Panama, S. A., 277 Park Ave., New York, N.Y. 10017  
 Shell Oil Co., 50 W. 50 St., New York 10020  
 Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017

**PAINT—Marine—Protective Coatings**  
 Ameron Corrosion Control Div., Brea, Calif. 92621  
 Devoe & Reynolds, Subsidiary Celanese Coats Co., 224 E. Broadway, Louisville, Ky. 40201  
 Enjay Chemical Co., 60 West 49th St., New York, N.Y. 10020  
 Farboil Company, 90 West St., New York, N.Y. 10006  
 Intercoastal Corp., 2320 Edgewater Ave., Baltimore, Md. 21222  
 International Paint Co., 21 West St., New York, N.Y. 10006  
 Mobil Chemical Company, Metuchen, N.J. 08840  
 Wooten-Sargent, P.O. Box 494, New Brunswick, N. J.  
 Woolsey Marine Industries Inc., 201 E. 42nd St., New York, N.Y. 10017

**PETROLEUM SUPPLIES**  
 Independent Petroleum Supply Co., 1345 Ave. of Americas, New York, N.Y. 10019  
 Refineria Panama, S. A., 277 Park Ave., New York, N.Y. 10017  
 Shell Oil Co., 50 W. 50 St., New York, N.Y. 10020  
 Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017  
 The West Indies Oil Co., Ltd. St. John's, Antigua, W. I.

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 Ameron Corrosion Control Div., Brea, Calif. 92621  
 Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231  
 Philadelphia Resins Co., 20 Commerce Dr., Montgomeryville, Pa. 18936  
 Rotocast Plastic Products, Inc., 6700 N.W. 36th Ave., Miami, Florida 33147

**POLLUTION CONTROL**  
 Enjay Chemical Co., 60 West 49th St., New York, N.Y. 10020  
 Hemisphere Marine Chemicals Co., Inc., 300 Main St., Orange, N.J.

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 Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004  
 Bird-Johnson Co., 883 Main Street, Walpole, Mass. 02081  
 Coolidge Propeller Co., 1608 Fairview Ave. E., Seattle, Wash. 98102  
 Federal Propellers, 1501 Buchanan Ave. S.W., Grand Rapids, Mich. 49502

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 Coffin Turbo Pump/FMC Corp. 326 So. Dean St., Englewood, N.J. 97631  
 Colt Industries, Inc., Fairbanks Morse Pump & Electric Div., 3601 Kansas Ave., Kansas City, Kansas 66110  
 Goulds Pumps, Seneca Falls, N.Y. 13148  
 Worthington Corporation, Harrison, New Jersey 07029

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 York Corp., Grantley Road, York, Pa. 17405

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 Columbian Rope Co., 309 Genesee St., Auburn, N.Y. 13022  
 Jackson Rope Corp., 9th & Oley, Reading, Pa. 19604  
 Tubbs Cordage Company, P.O. Box 709, Orange, Calif. 92669  
 Wall Rope Works, Inc., Beverly, N. J. 08010

**RUBBER PRODUCTS—Dock Fenders, Hose, Life Preservers**  
 Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004  
 Yokohama Rubber Co. Ltd., P.O. Box 46, Shiba, Tokyo 105, Japan

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 Electric Tachometer Corp., 68th & Upland Street, Phila., Pa. 19142  
 Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011  
 Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

**SCAFFOLDING**  
 Patent Scaffolding Co., 11-11 - 34th Ave., Long Island City, N.Y. 11106

**SEALS**  
 Goltin Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231

**SEARCHLIGHTS**  
 Portable Light ITT, 67 Passaic Ave., Kearny, N.J. 07032  
 Snelson Oilfield Lighting Co., 1201 E. Doggett St., Fort Worth, Texas 76104

**SEWAGE DISPOSAL**  
 Seapax, Inc., 3645 Warrensville Center Rd., Cleveland, Ohio 44122  
 Youngstown Welding & Engineering Co., 3708 Oakwood Ave., Youngstown, Ohio 44509

**SHAFT REVOLUTION INDICATOR EQUIP.**  
 Electric Tachometer Corp., 68th & Upland Sts., Phila., Pa. 19142

**SHIPBREAKING—Salvage**  
 The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202  
 National Metal & Steel Corp., 1251 New Dock St., Terminal Island, Cal. 90731  
 Northern Metal Co., Minor & Bleigh Sts., Philadelphia, Pa. 19136  
 Peck Equipment Co., 3500 Elm Ave., Portsmouth, Va. 23704  
 Zidell Explorations, Inc., 3121 S. W. Moody St., Portland, Ore. 97201

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

**SHIPBUILDING STEEL**  
 Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh, Pa. 15219  
 Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042  
 Bethlehem Steel Corp., 25 Broadway, New York, N.Y. 10004  
 Huntington Alloy Products, Div. International Nickel Co., Inc., Huntington, W. Va. 25720

**SHIPBUILDING—Repairs, Maintenance, Drydocking**  
 Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042  
 Astilleros Espanoles, S.A. Zurbarano, 70, Madrid 10, Spain  
 Beilhard Murdoch S. A., Kattendijkdok Westkaai 21, Antwerp, Belgium  
 Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004  
 Blount Marine Corp., P.O. Box 360, Warren, Rhode Island 02885  
 Conrad Industries, P.O. Box 790, Morgan City, La. 70380  
 Detyns Shipyards, Inc., Route 2, Box 180, Mt. Pleasant, So. Carolina 29464  
 Dillingham Corp., P.O. Box 3288, Honolulu, Hawaii 96801  
 Dravo Corporation, Neville Island, Pittsburgh 25, Pa.  
 Equitable Equipment Co., Inc., P.O. Box 8001, New Orleans, La. 70122  
 General Dynamics, Electric Boat Division, 99M Eastern Point Road, Groton, Conn. 06340  
 General Dynamics, Quincy Division, Quincy, Mass. 02169  
 Gotaverken American Corp., 39 Broadway, New York, N.Y. 10006  
 Grognard Shipyards, P.O. Box 829 Colbert, Marseilles, France.  
 Gunderson Bros. Engrg. Corp., 4700 N.W. Front St., Portland, Oregon 97208  
 Halter Marine Services, Inc., Route 6, Box 287H, New Orleans, La. 70126  
 Harbor Boat Building Co., 258 Cannery St., Terminal Island, Calif.  
 Havre de Grace, Havre de Grace, Md.  
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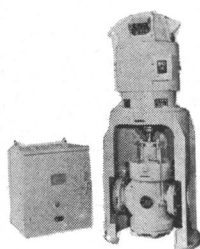
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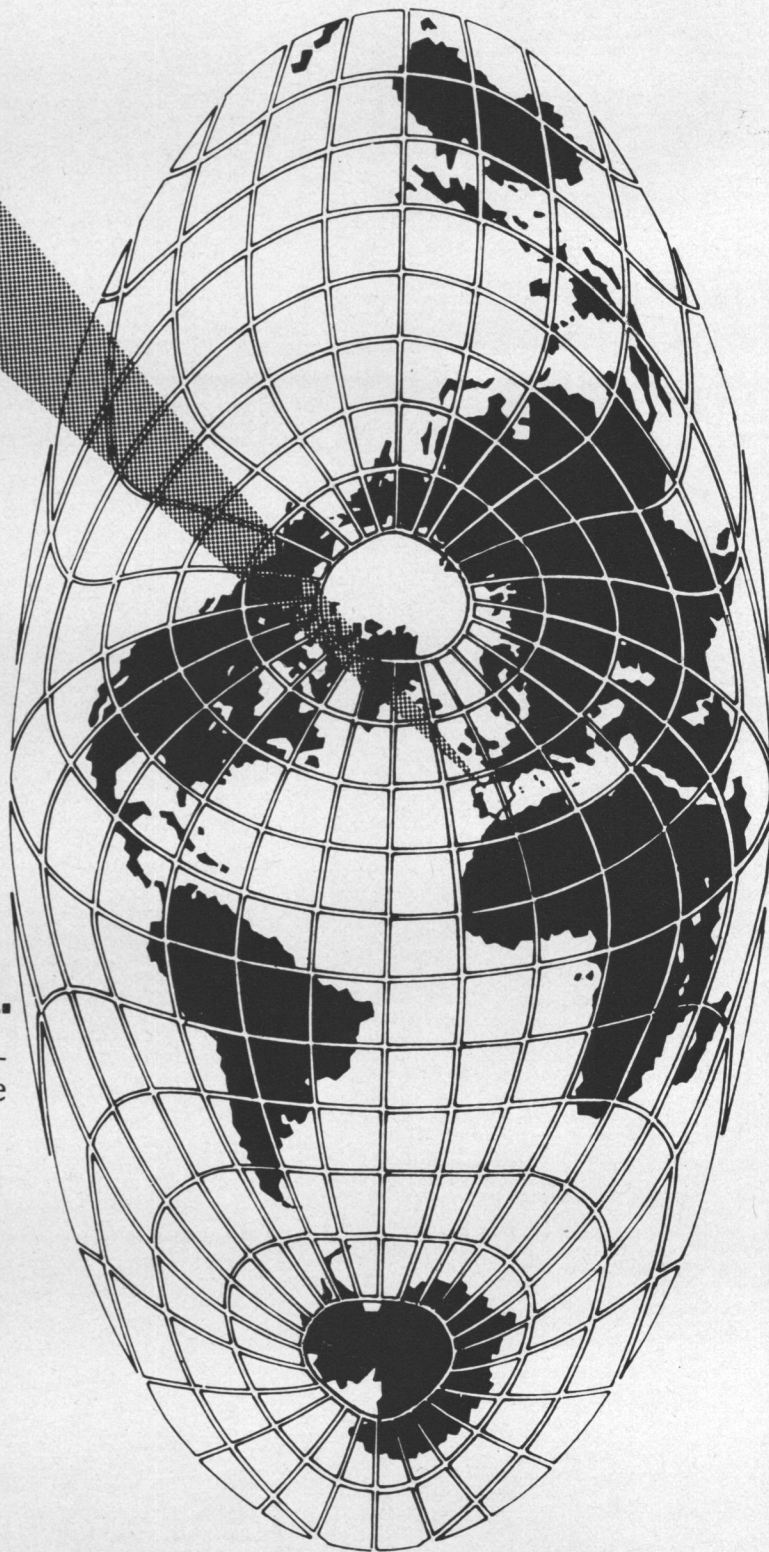
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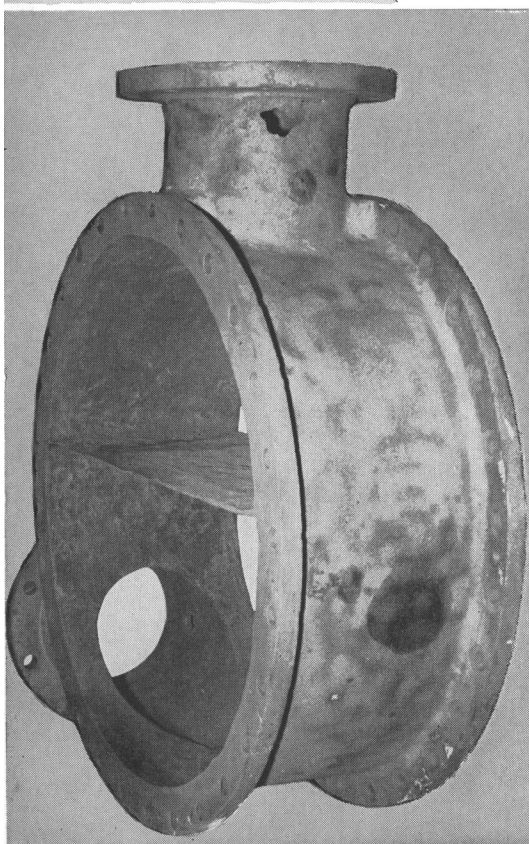
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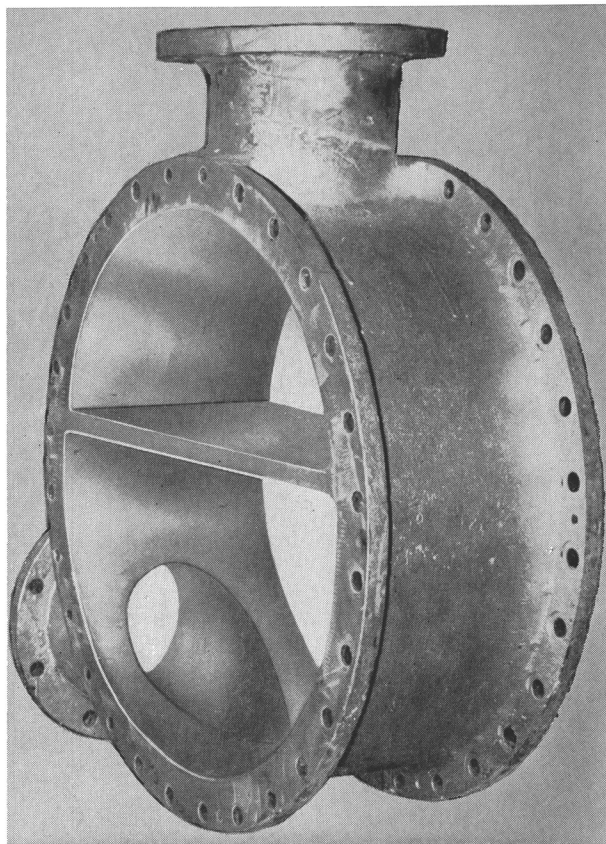
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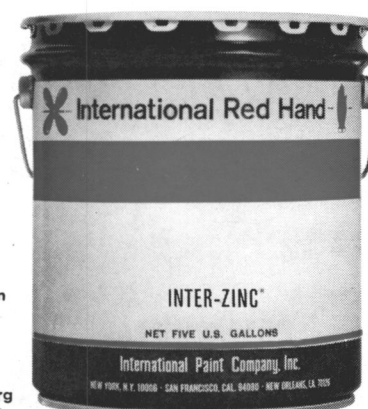


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