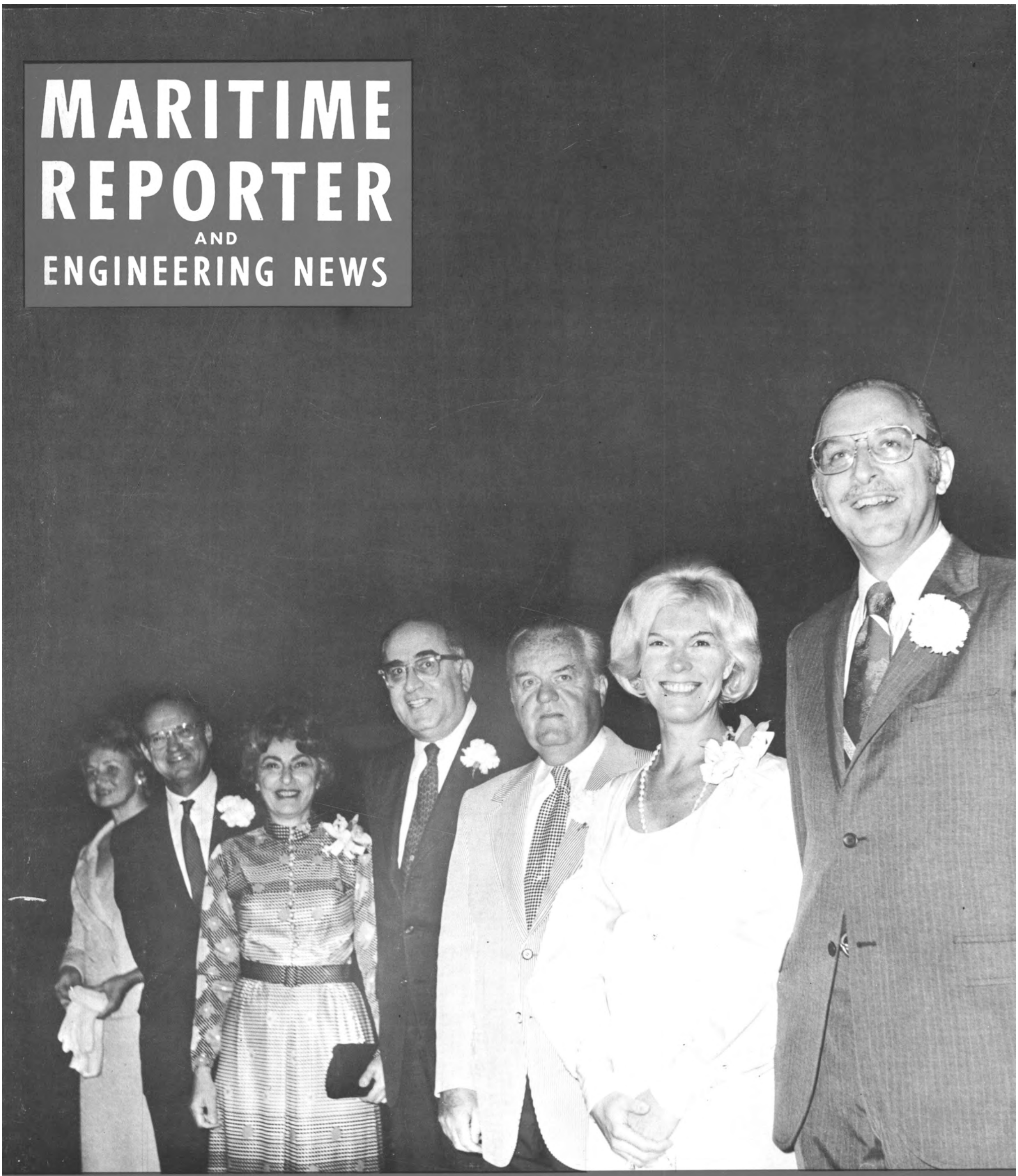
MARITIME REPORTER
AND
ENGINEERING NEWS



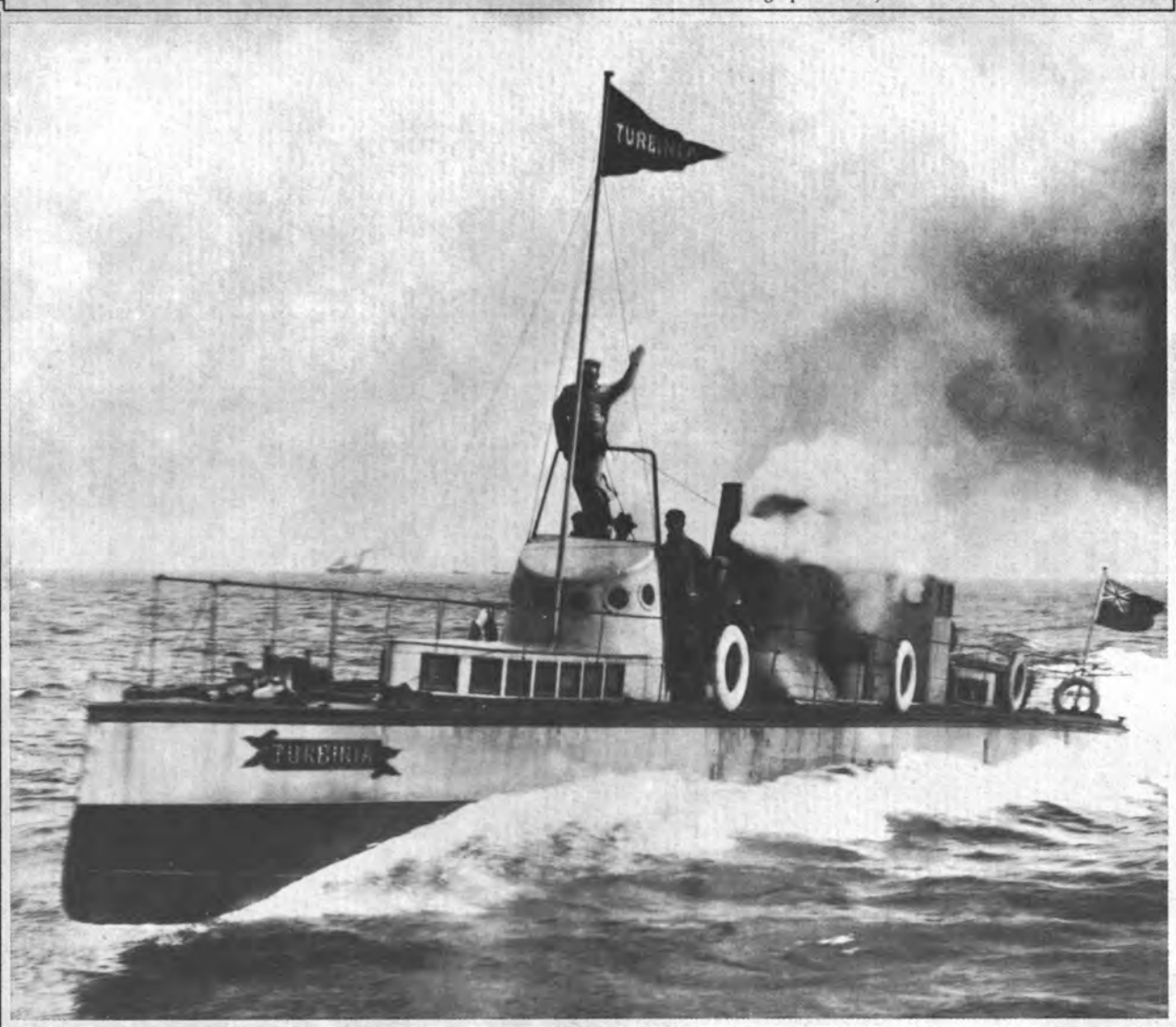
SNAME Annual Spring Meeting
Hosted By Southeast Section

(SEE PAGE 13)

Receiving Line At SNAME President's Reception

JUNE 1, 1973

Photograph courtesy of The Science Museum, London.



"What is it? Where did it come from?"

The year was 1897. The occasion, the naval review celebrating the DIAMOND JUBILEE OF QUEEN VICTORIA.

Suddenly there dashed out among the assembled ships a small craft scooting along at the then incredible speed of 34½ KNOTS.

From the astounded naval officers came cries of, "What is it? Where did it come from?"

It was the "TURBINIA," the first ship powered by turbine engines. It had been built at Wallsend on the Tyne in 1894, with engines invented by SIR CHARLES PARSONS, and taken secretly to COWES for its surprise appearance in the naval review.

The "TURBINIA" was only 100 ft. long with a 9 ft. beam, and although it was a sensation, it was some time before Parsons could persuade commercial ship owners to take an interest in his invention.

Turbine driven ships today are a far cry from the "TURBINIA" and their complicated engines call for precise lubrication.

Popular with ship owners and engineers are Gulf Harmony turbine oils. These premium quality oils are especially designed for the lubrication of turbine bearings and gears and for auxiliary machinery aboard turbine driven ships. They are fully inhibited with anti-rust, anti-oxidant and anti-foam additives.

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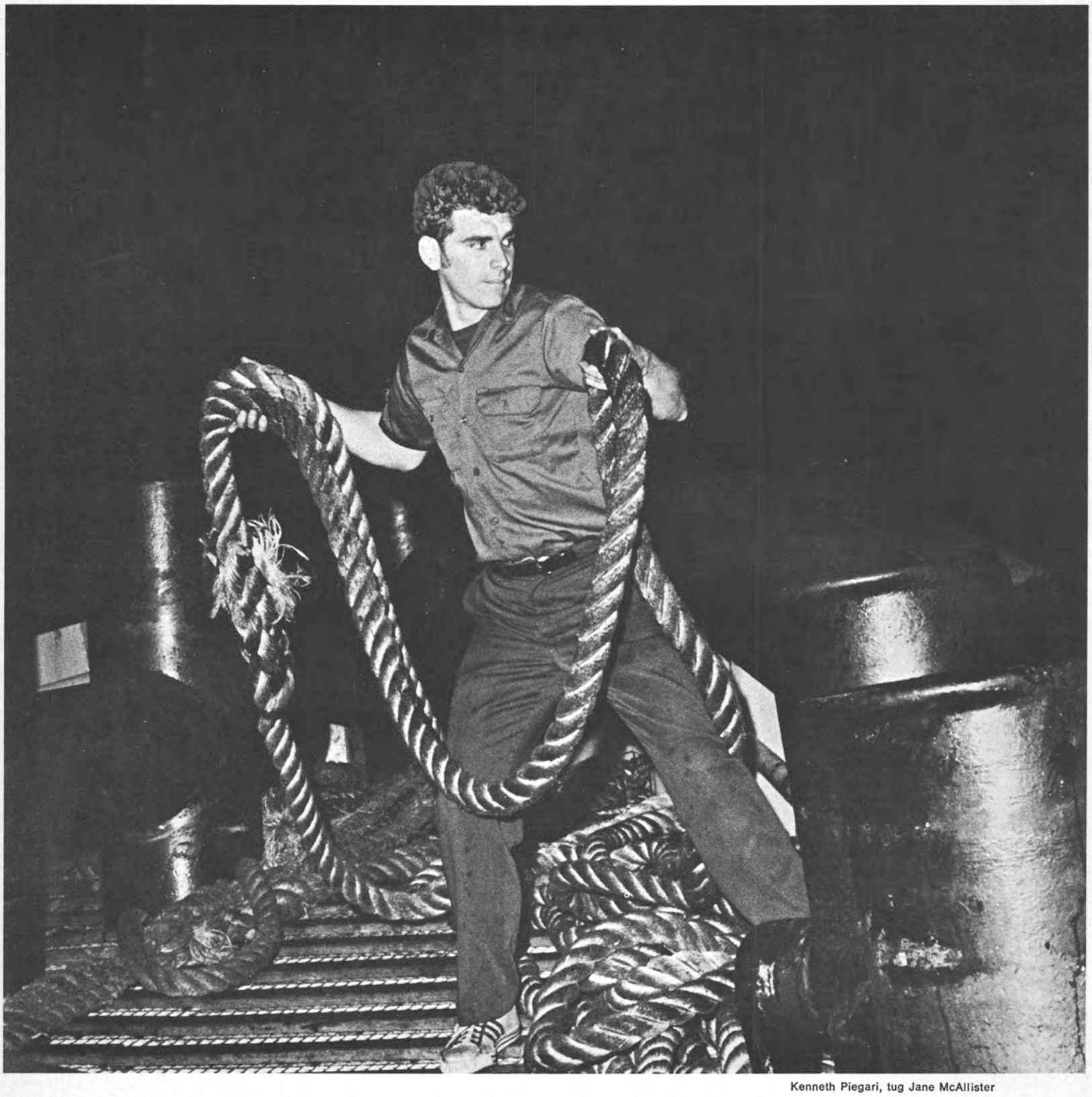

Kenneth Piegari, tug Jane McAllister

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McAllister

Fraser Shipyards To Add 120 Feet To Lakes Bulkers

Two Great Lakes bulk carriers owned by Oglebay Norton are to be lengthened by the addition of midbodies, the Cleveland, Ohio-based company has announced. The vessels are the Armco and Reserve, both built in 1953. Contracts for the project have been awarded to Fraser Shipyards, Inc., Superior, Wis.

Addition of the midbodies, each 120-feet long, will increase the length of the vessel to 767 feet. Carrying capacity of the ships will be hiked from the present 20,700 gross tons to 26,500 tons.

Oglebay Norton's Great Lakes fleet is operated by its Columbia Transportation Division. The fleet consists of 18 vessels, including bulkers, self-unloaders, crane and crane-conveyor units.

Equitable To Build Offshore Supply Vessels For Otto Candies, Inc.

Equitable Equipment Company, Inc., New Orleans shipbuilder, has been awarded a contract by Otto Candies, Inc., Des Allemands, La., to build three 175-foot offshore supply ships. The three vessels will be built at Equitable's Madisonville, La. shipyard. The estimated total cost for the new supply vessels is $3.6 million.

The supply ships will have overall dimensions of 175 feet by 30 feet with a 14 foot depth, and are built to American Bureau of Shipping Class Maltese Cross, A-1 Maltese Cross, AMS specifications, and to the certification requirements of the U.S. Coast Guard. Each ship will be powered by two General Motors EMD diesel engines.

Each of the supply ships will be equipped with a diesel-driven bow thruster unit.

Equitable is a wholly owned subsidiary of Trinity Industries, Inc.,

Alter Co. Asks Title XI For Variety Of Vessels

Alter Co., 2333 Rockingham Road, Davenport, Iowa 52808, has applied to the Maritime Administration for Title XI mortgage and loan insurance in connection with three towboats, one harbor boat, and 75 hopper barges. The three towboats are to be 4,200 hp, 5,600 hp,and 6,500 hp, respectively; some of the hopper barges will be 195 feet long, and others 200 feet long. All of the vessels will be built by Dravo at a total estimated cost of $12.6 million.

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HUD

from sea to shining sea ...at 14.2 knots

"Balboa" owner chooses Waukesha diesels for converted 1000 ton tuna seiner

The 190-ft. long "Balboa," out of Mayaguez, Puerto Rico, fishes tuna in both the Atlantic and the Pacific. She is a converted U.S. Naval vessel and most of the imaginative redesign is the work of owner John Mauricio.

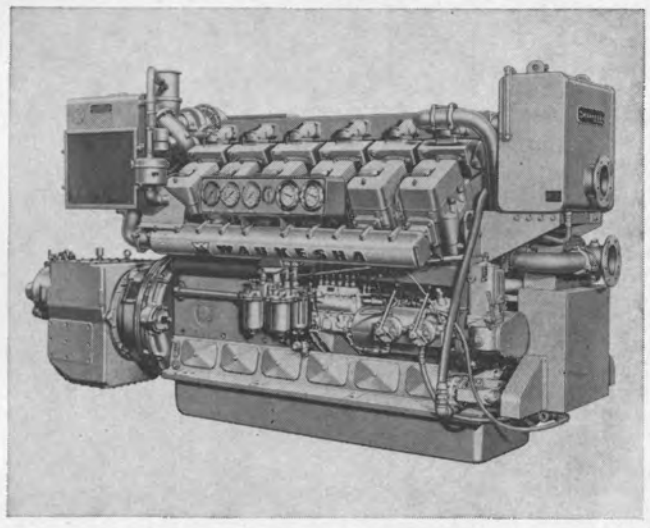
She is Waukesha-powered all the way.

Two Waukesha VHP L5792 supercharged and intercooled diesels, each rated 1421 continuous horsepower at 1215 rpm, power the twin screws. With her 4-blade, 92 x 92 inch screws turning at 243 rpm at full power, the "Balboa" cruises at speeds up to 14.2 knots.

Two Waukesha VC L1616 diesels provide 350 kw each for ship's service power. A Waukesha VC H1077 drives the bow thruster and supplies 250 kw emergency power. The skiff engine is a VC H1077 rated 230 horsepower at 2000 rpm.

Mauricio likes the reliability and performance of his Waukesha engines and says "there is a great advantage in matching propulsion and ship's service electric sets to get maximum parts and service interchangeability. We're pleased with our decision to go with Waukesha."

For complete information on Waukesha marine engines, see your Waukesha authorized distributor.



VHP Series V12 diesel engine, Model L5792 DSIM, turbocharged and intercooled, rated 1421 continuous horsepower at 1215 rpm. Waukesha offers three diesel families — from 85 to 1776 hp for propulsion; 47 to 1100 kw for ship's electrical service.

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McAllister Subsidiary To Build Ferries For Orient Point-New London Service

Artist's rendering of the vessel under way. With twin-diesel power, her 20-mph speed will enable her to make the 14-mile Orient Point-New London run in less than an hour.

Designs for the first of a fleet of modern ferries to be built for entry into Orient Point-New London service by next summer have been released by New London Freight Lines.

The company is prepared to construct up to five of these vessels, at an estimated cost of over $1.5 million each, in forthcoming years as traffic warrants, according to **Gerard McAllister,** executive vice president of McAllister Brothers, Inc., New York towing company that is parent to NLFL.

The new ferries will have capacity for 40 cars and 400 passengers, and with cruising speeds of 20 mph, they will make the 14-mile run across Long Island Sound in less than an hour.

Design of the first ferry, which is now out for bid at several shipyards, calls for a vessel of 217 feet, with a 42-foot beam and a 9-foot 9-inch draft when fully loaded. Power will be furnished by two 1,025-hp GM diesel engines.

A bow thruster will add maneuverability and speed up docking operations, and the latest automated navigational, communications, and safety devices will increase efficiency.

A passenger lounge for 300 persons and a snack bar are features of the vessel, which will be manned by a crew of seven union-member officers and seamen.

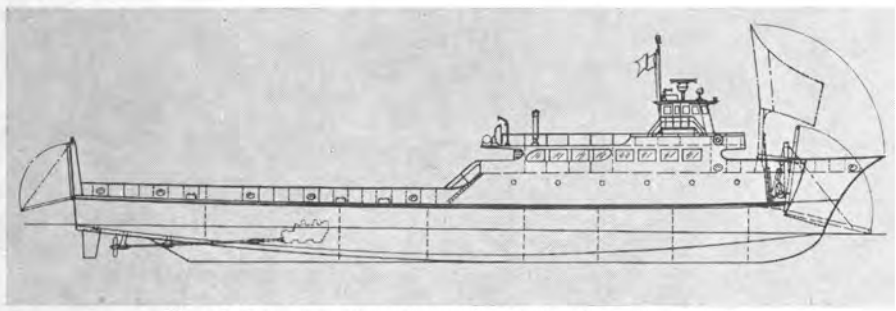
Robert A. Simons, naval architect of Paramus, N.J., is the designer.

In discussing NLFL's 16-year operation of the ferry service, Mr. **McAllister** said: "Until very recently, our studies indicated that investment in new boats could not be economically justified if based only on seasonal and weekend traffic demand. Additionally, we were faced with the threat of a bridge over our ferry routes.

"Last summer, we were forced to retire one boat due to age, just at a point when traffic increased dramatically.

"We believe, however, that we have reached a midcourse position. Traffic seems destined to remain high. It appears unlikely that a bridge will be built for many years to come. Legislation we supported that gives the Metropolitan Transit Authority jurisdiction over ferry terminals would, if passed, give hope for much-needed port-modernization at Orient.

"With these prospects in view, we believe our function as the only ICC-authorized carrier in the area is to expand and modernize the ferry service that links these two growing areas and to give the public fast, dependable, and frequent cross-Sound transportation," Mr. **McAllister** concluded.



The designer's outboard profile of the first of a series of ferries to be operated by New London Freight Lines.

MarAd Approves States Steamship Lease-Back Sale

The Maritime Administration has announced that it has granted approval to States Steamship Co. to sell and lease-back a roll-on/roll-off vessel being built by Bath Iron Works Corporation of Bath, Maine. The ship, which is being sold to Wilmington Trust Co., Wilmington, Del., would, on delivery from construction, be chartered for a 25-year period by States.

The sale price of the vessel is estimated at $23,467,000, and States will operate the ship on its U.S. Pacific-Far East service at an average semi-annual charter hire of approximately $743,435. States will be required to reimburse its capital reserve fund for all amounts paid out of the fund in connection with construction of this vessel.

Newport Yard Awarded $1,966,000 Contract By NSSC For 2 LCUs

The Naval Ship Systems Command, Washington, D.C., has awarded a contract in the amount of $1,966,000 to Newport Ship Yard, Inc., Newport, R.I. to build two steel self-propelled LCUs. The specifications of these modified versions of World War II LCTs are: overall length, 134.9 feet; beam, 29 feet, and a draft of 6 feet. Displacement will be 200 tons light, 375 tons loaded, and the power will be four 250-bhp diesel engines with Kort nozzle propellers. U. S. Navy-designed CASDOS (Computer Aided Structural Detailing of Ships) computerized system will be used. The vessels will accommodate a crew of 12 to 14, and will have cargo capacity for three M103 or M48 tanks.

The U.S. Navy is administering the contract for Saudi Arabia, and the LCUs, to be constructed at Newport Ship's new Fleet Landing site, will be delivered to the Navy and then to Saudi Arabia.

Kinsman Marine Transit Requests Title XI For Two Bulk Carriers

Application for Title XI mortgage and loan insurance has been received by the Maritime Administration from the Kinsman Marine Transit Co., Cleveland, Ohio, in connection with two 19,000-dwt self-unloading bulk carriers, each to be 630 feet long and have a speed of 16 mph. Kinsman's parent company, American Ship Building Co., will build the carriers at an estimated cost of $29.4 million.

United States Salvage Association Elects Robert Gross

Robert E. Gross

Robert E. Gross has been elected president of the United States Salvage Association, Inc., international marine surveying and technical organization with headquarters at 99 John Street, New York City. Mr. **Gross** succeeded retiring president **John R. Lindgren.**

The Association's new president has been in its employ for almost 21 years. He returned to New York last year as executive vice president, from the European area office in London, which he had headed for a decade as principal surveyor. During that time, he supervised Association activities at many major marine casualties overseas. In 1967, he was the first American surveyor to board the stranded tanker Torrey Canyon, representing the interests of United States underwriters.

A native of Lewistown, Pa., and a 1936 engineering graduate of the former Pennsylvania State Nautical School, Mr. **Gross** has devoted his entire career to marine engineering, surveying and claims work. He served at sea in merchant and naval vessels from 1936 to 1945, and was then employed by the U.S. Maritime Commission and Maritime Administration until 1952, aside from a year as assistant port engineer to the now-defunct American-flag Sword Line.

Joining the United States Salvage Association in 1952, he worked as a surveyor in the New York and Houston offices until his appointment as resident surveyor in charge of the Chicago office at the start of 1956. After seven years in this post, he was reassigned to London, in charge of all European, North African, and Middle Eastern operations.

Mr. **Gross** belongs to The Society of Naval Architects and Marine Engineers, and the Maritime Association of the Port of New York. He is an associate member of the Association of Average Adjusters, and serves on the special ship operations committee of the American Bureau of Shipping. His club memberships include India House and the Drug and Chemical Club.

Todd Promotes Clifford E. Jones To Chief Eng'r-Facilities

John T. Gilbride, president of Todd Shipyards Corporation, has announced the promotion of **Clifford E. Jones** to chief engineer-facilities upon the retirement of **John J. Connors.** On May 1, 1973, Mr. **Connors** ended his 36 years of association in the Todd organization.

Mr. **Jones** has been employed by Todd in their corporate office engineering department for over 27 years. His most recent duties have been as assistant to Mr. **Connors,** involving the planned integration of physical additions, betterments and rearrangements of Todd's seven shipyard complexes.

Over the years, Mr. **Jones** has worked as a draftsman, assistant plant engineer (Brooklyn), and corporate facilities engineer. Special assignments have included program proposals for assorted naval ship programs. He has been active in the facilities modernization program, including the design of the 40,000-ton-capacity drydock at Alameda, Calif., expansion of the facilities at Los Angeles, Calif., Seattle, Wash., and currently programmed for Galveston, Texas.

Mr. **Jones** is a graduate of the Mechanics Institute, New York, N.Y., specializing in structural design and construction superintendence. He has supplemented this training with management and industrial engineering courses at Rutgers University, New York University, and the American Management Association.

Clifford E. Jones

A veteran of the U.S. Navy, Mr. **Jones** is a native of New York City. He is a member of The Society of Naval Architects and Marine Engineers, U.S. Naval Institute, American Society of Certified Engineering Technicians, and the Institute for the Certification of Engineering Technicians.

Inert Gas Systems $500,000 Contract Awarded To Todd-CEA

Todd-CEA, Inc., New York subsidiary of Combustion Equipment Associates Inc., has been awarded a contract valued at nearly $500,000 to furnish inert gas systems for three new 265,000-dwt VLCC tankers being built by Bethlehem Steel Corporation at Sparrows Point, Md., for Maritime Fruit Carriers. Bethlehem has options for six additional inert gas systems.

The Todd-CEA systems will reduce potential fire hazards and related possibilities of oil spillages by filling empty tank space above cargo oil with inert gas.

The inert gas will be flue gas from main propulsion boilers. A scrubber aboard each tanker will cool and clean the gas with seawater, after which main and auxiliary fans will distribute the gas to the various cargo tanks via a network of ducts.

The inert gas systems are part of an overall program of improving pollution control standards on American-built ships, and conform to the latest recommendations of Inter-Governmental Maritime Consultative Organization (IMCO).

Marine Insurance Seminar In Houston Sept. 30-Oct. 1-2

The 8th Annual Houston Mariners Club Marine Insurance Seminar will be held at the Houston Oaks Hotel, located in Galleria Post Oak, Houston, Texas, on September 30, October 1-2, 1973.

Program details with forms for pre-registration will be mailed in the near future, and anyone wishing to receive information on the seminar should write the chairman, **John Barnes,** Wm. H. McGee & Co., Inc., 3334 Richmond Avenue, Houston, Texas 77006.

Avondale New Orleans Yard Launches Destroyer Escort Honoring Navy Lieutenant

The Destroyer Escort Moinester (DE-1097) named in honor of the late Lt. (jg) **Robert W. Moinester,** United States Naval Reserve, who served with great heroism during the Vietnam War, was launched in New Orleans, La., on May 12 at Avondale Shipyards, Inc., a subsidiary of Ogden.

Christening the vessel was **Mrs. Robert Moinester,** mother of the late Lieutenant **Moinester.** Serving as matron of honor was **Mrs. Wayne W. Emme.**

Principals of the launching included **R. Lamar Woodfin,** vice president and general manager, Industrial Division, Avondale Shipyards, Inc.; Capt. **J.W. Lisanby,** USN, Supervisor of Shipbuilding, Conversion and Repair, 8th Naval District; Rear Adm. **R.C. Gooding,** USN, Commander, Naval Ship Systems Command, and as principal speaker, Capt. **Dempster M. Jackson,** USN, Office of Anti-Submarine Warfare Programs, Office of Chief of Naval Operations. Comdr. **Sam Hill Ray,** SJ, USNR (ret.), Chaplain, Navy League of the Greater New Orleans Area, gave the invocation.

Robert W. Moinester was born July 15, 1943, in Brooklyn, N.Y., the son of **Robert** and **Gertrude Mahoney Moinester.** He enlisted in the United States Naval Reserve on July 21, 1965, and completed training at the Naval Amphibious Base, Coronado, Calif., before joining the United States Naval Supply Activity, Danang, Republic of Vietnam. He perished February 1, 1968, while heroically leading men of the Navy, Marine Corps and Army, whom he had organized into a platoon for house-to-house clearing operations against enemy infiltrators in the city of Hue. At that time, Lieutenant **Moinester** was the Officer-in-Charge, Hue Ramp, Hue Detachment, United States Naval Support Activity, Danang.

Principals at the Moinester launching (left to right): Capt. **Dempster M. Jackson,** USN, Office of Anti Submarine Warfare Programs; **Mrs. Robert Moinester,** sponsor of the Moinester (DE-1097); **R. Lamar Woodfin,** vice president and general manager, Industrial Division, Avondale Shipyards, Inc., and Rear Adm. **R.C. Gooding,** USN, Commander, Naval Ship Systems Command.

The Moinester (DE-1097) shown shortly after side launching at the New Orleans Main Yard of Avondale.

The Moinester (DE-1097) is designed for a length overall of 438 feet; extreme beam of 46 feet 9 inches; full load displacement of 4,200 tons; maximum draft of 15 feet 1 inch; a speed in excess of 27 knots, and accommodations for 17 officers and 228 men. She will carry bow-mounted long-range sonar and variable depth sonar. Her armament will include one 5-inch .54 caliber rapid-fire gun; an antisubmarine rocket (ASROC) system, and two antisubmarine homing torpedo launchers. The escort ship will have space and weight reservations for a self-defense missile weapons system.

ITEL Corporation Names Thomas S. Tan President SSI Container Subsidiary

Thomas S. Tan has been promoted to president of SSI Container Corporation, San Francisco, Calif., a subsidiary of ITEL Corporation, it was announced by **Peter S. Redfield,** ITEL president. Prior to his appointment, Mr. **Tan** had been executive vice president and chief executive officer of SSI Container.

SSI Container provides intermodal cargo containers and chassis to maritime companies to supplement those owned by the shipping companies themselves. Its equipment is leased from more than 80 depots at various locations throughout the world.

Mr. **Tan** has been with SSI Container prior to its acquisition by ITEL in 1968, serving as vice president of ICO (Inter-Container) before that company was bought by ITEL and renamed SSI Container.

He is a graduate of St. John's University, Shanghai, China, with a bachelor of arts degree in economics.

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Southeast Section SNAME Hosts Spring Meeting:

The Wonderful World Of Small Ships

Florida's new and wonderful World of Disney welcomed the authors, guests and members of The Society of Naval Architects and Marine Engineers to the recent Spring Meeting. Hosted by the Southeast Section, this national Spring Meeting's theme, "The Wonderful World of Small Ships," brought out 17 related technical papers and a total attendance of over 500 members and guests.

Events began with an Early Bird Reception on Sunday evening. Society president **Phillip Eisenberg** formally convened the meeting on Monday morning with his welcome and report. This was followed by two technical sessions offering seven papers.

At noon on the first day there was a luncheon for members and their guests, including ladies and children. The guest speaker was Gen. **William E. Potter,** USA (ret.), senior vice-president of Walt Disney World Company. He spoke on the planning, development of construction and the operation of Walt Disney World, using slides to illustrate his talk.

The social event of Monday evening was the President's Reception, hosted by Mr. **Eisenberg,** for the registrants and their ladies.

Two technical sessions were held on Tuesday morning, with five technical papers being presented. That afternoon, a special tournament on Disney World's Magnolia Course challenged the golfers, and a V.I.P. tour of Disney World entertained 250 members and their guests. A luau and spectacular water show at the Polynesian Village topped off the evening's activities.

Wednesday's technical sessions included the presentation of the final group of five papers. The Spring Meeting concluded with an Awards Luncheon, at which time **Daniel D. Strohmeier,** a past president of the Society, and **E.B. Williams** were named Honorary Members of the Society.

The 1973 Spring Meeting was planned by and carried to an outstanding completion by special committees set up by the Southeast Section, ably assisted by all the Section's members. **Jean E. Buhler,** chairman of the Steering Committee, and **Raymond T. Greene,** chairman of the Southeast Section, coordinated the many technical and social aspects of this fine meeting.

The Finance/Budget Committee was chaired by **Edward L. Teale,** who was assisted by **Frank C. DeGrim** and **John R. Newell.** The Registration Committee consisted of **William L. Lane** as chairman and **Frank O. Bethard** and **Harold F. Robinson.**

RECEIVING LINE at President's Reception, left to right: **Mrs. Jean E. Buhler,** Mr. **Buhler,** chairman of the Spring Meeting Steering Committee; **Mrs. Phillip Eisenberg,** Mr. **Eisenberg,** president of the Society; **Raymond T. Greene,** chairman of the Southeast Section; **Mrs. Robert G. Mende,** and Mr. **Mende,** secretary of the Society.

The Social Events/Protocol Committee was chaired by **George H. Hodges. Irvin J. Stephens** planned the golf tournament.

The Technical Sessions/Papers Committee **Robert W. Hobbs** as chairman and **Peter C. Ball, Rudolph F. Matzer, James S. Nelson** and **V.H. Van Bibber.**

Edward C. Godfrey served as chairman of the Arrangements Committee, ably assisted by **Douglas L. Pearlson, Harold F. Robinson** and **E.B. Williams.** The Publicity Committee included **Charles S. Smith** and **Frank C. DeGrim.**

Technical Papers

Technical sessions were conducted in the Contemporary Hotel at Disney World. As is customary, each paper was presented by at least one of its authors, with a presiding officer and a moderator at each session. The individuals, papers and a brief highlight of each paper were:

Paper A, entitled "Development of a High Speed Rescue Boat" by Lt. **P.B. Fontneau** and Comdr. **E.L. Jones,** U.S. Coast Guard Headquarters, Washington, D.C., and **W. Buote** of Potter & McArthur, Inc.

This paper describes the development of a unique, experimental 26-foot motor rescue boat (MRBX) for the Coast Guard. The design incorporates a stepped planing hull forward with a hydrofoil supporting the stern while under way. A 250-hp water-jet propulsion system powers the boat to a design speed of 22 knots. It is difficult to compare the performance of the MRBX to other generic craft. It would be expected to be faster than a displacement hull of the same power and proportions and slower than a similar planing boat but superior in seakeeping characteristics. The test and design data confirm this.

Paper B, originally scheduled, was not presented.

Paper C, entitled "Some Considerations in Power Cruise Design" by **George E. Meese** of George E. Meese Naval Architects & Marine Engineers.

This paper covers a study of economic and design factors which appeared in four-berth cruiser design during the years 1920-1960. The 40-year period is divided economically into three eras by the Depression and by World War II. The first era includes the lush early 1920s, when financial empires built on individ-

(Continued on next page)

SOCIETY PAST PRESIDENTS, left to right: **John R. Newell, James J. Henry,** Rear Adm. **Albert G. Mumma,** USN (ret.), and **Daniel D. Strohmeier.**

AMERICAN BUREAU OF SHIPPING representatives at the Spring Meeting, left to right: **Ralph C. Christensen, Mrs. Christensen, Robert T. Young,** and **Mrs. Young.**

SNAME Spring Meeting—

(Continued from page 13)

ualism were flourishing. The second era, from 1930 to 1942, immediately followed the financial crash of 1929. The third era, from 1946 to 1960, covers the postwar years with the tremendous rise in the popularity of boating. This 40-year period brought forth some interesting changes in the design. Perhaps the biggest factor in these changes was the developments made possible by World War II. These new developments made possible a well constructed boat in the price range of the middle-income family.

Paper D, entitled "Evaluation of the Trim of a Planing Boat at Inception of Porpoising" by **John C. Angeli,** naval architect, Birmingham, Mich.

Planing boats porpoise in smooth water when the angle of attack, or trim of the planing surface exceeds a critical value that depends on the speed, on the configuration of the hull, and on the location of the center of gravity. The purpose of this paper is to provide designers with a straight-forward method for the evaluation of the critical trim corresponding to a given set of conditions. Numerical applications show that the trims so computed agree with experimental results within acceptable limits.

Paper E, entitled "High-Speed Propeller Design" by **Robert F. Kress,** Michigan Wheel Company.

Established criteria for the design of high-speed propellers, including both successful empirical techniques and acceptable analytical or theoretical principles, are discussed, specifically noting similarities of both approaches and the significant departures from flat-face ogival blade sections. Lifting-line and lifting-surface calculations for non-cavitating designs and semi-empirical procedures for trans-cavitating and fully cavitating propellers are presented, indicating that, especially for the latter operating regime, many aspects of propeller design still remain an art.

Paper F, entitled "Experimental Performance of a Partially Submerged Propeller in Inclined Flow" by **Richard Hecker,** Naval Ship Research and Development Center, Bethesda, Md.

Although new types of engines and various forms of propelling machinery have been developed over the past several years, the screw propeller remains the most common device for propelling marine vehicles. As the design speeds of marine vehicles increase, the drag associated with those appendages required to support the propeller becomes a large portion of the total drag. The partially submerged propeller offers an attractive method for reducing the appendage drag while maintaining a reasonable efficiency. It must be recognized that in many instances the propeller submergence will vary as the vehicle speed changes; thus, the performance of these propellers must be considered over a wide range of submergences.

CERTIFICATE OF APPRECIATION being presented by President **Eisenberg** (left) to **Jean E. Buhler.**

HONORARY MEMBERSHIP CERTIFICATE being presented by President **Eisenberg** (left) to Past President **Daniel D. Stohmeier.**

HONORARY MEMBERSHIP CERTIFICATE being presented by President **Eisenberg** (right) to **Edgerton B. Williams.**

Paper G, entitled "Inclined-Shaft Propeller Performance Characteristics" by **J.G. Peck** and **D.H. Moore,** Naval Ship Research and Development Center, Bethesda, Md.

Most small naval craft utilize commercially available propellers on incined shafts as thrusters. Information on the forces generated by inclined-shaft propellers is scarce. In order to help the designer of small craft, an experimental program was undertaken to evaluate commercially available propeller performance when inclined to the oncoming flow. The results of these experiments support the previous assumption that a propeller on an inclined shaft may produce more forward thrust than the same propeller on a horizontal shaft.

Paper H, entitled "An Experimental Study of a High Performance Tunnel Hull Craft" by **K.H. Harbaugh,** Naval Ship Research and Development Center, Langley Field, Va., and **D. L. Blount,** Naval Ship Engineering Center, Norfolk, Va.

Through the application of an efficiency factor derived for this paper to relate the various design factors, the best performance was achieved with the deep tunnels in combination with the propellers of maximum diameter. This performance was comparable to the conventional shafting arrangement showing that the tunnel-hull propulsion arrangement can be competitive in terms of propulsive efficiency. A large improvement in the navigational draft can be expected through the use of the deep tunnels. The draft of the deep-tunneled hull was 36 percent less than the hull with no tunnels. Although there were no visual signs of flow separation at model speeds, this does not imply that there will be none at full-scale speeds.

The presiding officer for these papers was Rear Adm. **Albert G. Mumma,** USN (ret.), past president of the Society. He was assisted by Prof. **Harry Benford,** University of Michigan, as moderator for Papers A, C and D, and **Jack Hadler** as moderator for Papers E, F, G and H.

Paper J, entitled "The Ugly American-Boat" by **Karl Brocken,** industrial design consultant.

Naval architecture, whether of boats or ships, is an intricate art. The naval architect must be a jack-of-all-trades and a master of most of them. On the other hand, the practice of what we currently call industrial design is not at all intricate but requires taste, a clear sense of the appropriate and the practical, and a peculiar instinct for the arresting and the dramatic in appearance. The industrial designer will, by and large, have more time to think about pure aesthetics and practical ergonomics than will any other kind of designer just because he is a specialist in these things. He is the guy who can take the fresh but sophisticated look at what the naval architect has composed.

Paper K, entitled "The Naval Architect and His Patent" by **Morton Amster** and **Alfred B.**

SESSION 1, left to right: seated, Rear Adm. **Albert G. Mumma,** presiding officer; Prof. **Harry Benford,** moderator, and author **George E. Meese** (Paper C). Standing: authors Lt. **P.B. Fontneau** (Paper A), Comdr. **E.L. Jones** (Paper A), **W.A. Buote** (Paper A), and **John C. Angeli** (Paper D).

SESSION 2, left to right: seated, author **D.L. Blount** (Paper H), Rear Adm. **Albert G. Mumma,** presiding officer; **J.B. Hadler,** moderator; and author **K. Harbaugh** (Paper H). Standing: authors **R.F. Kress** (Paper E), **J. Peck** (Paper G), **D.H. Moore** (Paper G), and **Richard Hecker** (Paper F).

SESSION 3, left to right: seated, **Robert Hobbs,** moderator, and **John R. Newell,** presiding officer. Standing: authors **Douglas Van Patten, Karl Brocken** (Paper J), and **Morton Amster** (Paper K).

SESSION 4, left to right: seated, Comdr. **Richard Brooks,** USCG, moderator, and **John R. Newell,** presiding officer. Standing: authors **Richard Rybacki** (Paper M), **Christopher Llana** (Paper N), and **G. James Lippmann** (Paper L).

SESSION 5, left to right: seated, **James J. Henry,** presiding officer, and **Owen Oakley,** moderator. Standing: authors **Chester Holtyn** (Paper P), **D.L. Gregory** (Paper Q), and **G.F. Dobay** (Paper Q).

SESSION 6, left to right: seated, **James J. Henry,** presiding officer, and Capt. **Richards T. Miller,** USN (ret.), moderator. Standing: authors **N.A. Svensen** (Paper S), **Frank C. Vibrans** and **John B. Woodward III** (Paper R).

Engelberg of Amster & Rothstein of New York.

The frustration which the innovator encounters is due to a lack of the fundamental knowledge that some form of protection is available and how it can be obtained. The purpose of this paper is to broadly survey the types of protection available, the general scope and limitations of these types of protection and the manner in which rights are obtained and enforced. The layman who has attempted to act as his own expert in this field will tell you that it is not much different than acting as your own doctor—and the results often can be just as painful.

Paper L, entitled "Small Craft Standards" by **G. James Lippmann,** American Boat and Yacht Council, Inc.

The business of small boats has been enduring a maturing process for a great many years. Recently, the rate of progress has increased markedly with the introduction of many of the large industrial giants into the industry, bringing with them mass-production techniques and the many associated sophisticated systems. A satellite of this rapid growth is the development of standards. The goals of such standards are to protect the public and offer guidelines to advise of safe practices. It is necessary for everyone from the designer to the user to become involved with the standards-writing organizations.

Paper M, entitled "The Coast Guard Boating Safety Product Assurance Program" by Comdr. **Richard I. Rybacki** and Lt. Comdr. **James M. Shackett,** U.S. Coast Guard Office of Boating Safety.

This paper describes the work of the Coast Guard's Product Assurance Branch in the area of boating safety. It discusses the two major functions or programs of the branch—insuring industry's compliance with standards and regulations, and administrating the defects notification and analysis program. In describing the compliance program, this paper gives a synopsis of the pertinent regulations and standards with which the boating industry must comply.

Paper N, entitled "The Coast Guard's Stanards Program and Its Impact on Small Boat Design" by Comdr. **Richard B. Brooks** and Lt. (jg) **Christopher B. Llana,** U.S. Coast Guard Office of Boating Safety.

It should be apparent that the problem confronting the boating standards program is more complicated than it appears to be at first glance. It is the task of the Coast Guard to insure that accidents will not result from unsafe boats. The variables that must be contended with are manifold; water and weather conditions are uncontrollable; where and how fast a boat is used remains almost totally unregulated, and almost anyone can become a boat manufacturer. Hull form, size, and weight have a very great effect on boat behavior. It is impossible to have a separate standard for each type of boat and service. The Coast Guard is presently revising current standards and adding new standards in order to better fit the boat population.

The presiding officer for these papers was **John R. Newell,** past president of the Society, assisted by **Robert Hobbs** as moderator for Papers J and K, and Comdr. **Richard Brooks,** USCG, as moderator for Papers L. M and N.

Paper P, entitled "Alumability" by **Chester H. Holtyn,** Reynolds Metals Company.

What is Alumability? It's an enigma that has clearly shown its championship form in sectors of the marine industry, while maintaining an aura of space-age delicacy in others. It's a material with exceptional characteristics, and with proper design, and skilled fabrication promises the operator a vessel that will meet or surpass his performance requirements. Two decades ago, the concept of large aluminum hulls would have been dubbed Fantasyland. Today, it is Frontierland for those who pioneered it, Adventureland for those who persevered and progressed with it, and Tomorrowland for those who believe that it is the wave of the future.

Paper Q, entitled "The Performance of High-Speed Rudders in a Cavitating Environment" by **D.L. Gregory** and **G.F. Dobay,** Naval Ship Research and Development Center, Bethesda, Md.

The recent development of lightweight marine power plants provides the small naval craft with high-speed capability. To accommodate these higher speeds, the development of new propulsive devices is actively pursued. Equally important would be to take a critical look at the control devices, such as the rudders, for the safe operation of these craft. It is our understanding that some craft become uncontrollable at high speeds, especially in a turn. Rudder cavitation and/or ventilation may be the cause of this phenomenon. In order to gain some knowledge on the effect of cavitation on rudder performance, an experimental program has been undertaken at the Naval Ship Research and Development Center to evaluate six high-speed rudder shapes. The results to date are reported in this paper.

Paper R, entitled "Electric Power for Small Commercial Vessels" by **John B. Woodward,** University of Michigan, and **Frank C. Vibrans,** Nickum & Spaulding Associates.

The paper first reviews some of the problems of marine-electrical power systems that the designer should be familiar with. Here, the authors make a point of noting any considerations that are of special interest to the smaller craft. The next section reviews the electrical-design decisions that most generally face the small craft designer. In some instances, particular techniques or solutions are recommended. The climax of the paper is the description of two actual cases, both small ferries requiring about 20 kw of generating capacity. Each has its unique design problems that general advices do not anticipate. It is interesting to see how these designs conform to, or deviate from, the earlier discussions.

Paper S, entitled "What Every Shipyard Needs to Know about Heavy-Duty Gas Turbines" by **Niels-Alf Svensen,** General Electric Company.

In view of the growing interest in heavy-duty gas turbines for marine use, the author presents typical gas-turbine application data which provides the shipbuilder with a more knowledgeable and independent approach toward installation and use of these power plants. The paper develops basic structural considerations for foundations and highlights installation requirements for the five available sizes. Generic handling and assembly information is illustrated in terms of typical gas-turbine components. Maintenance and inspection activities are described in the appendix.

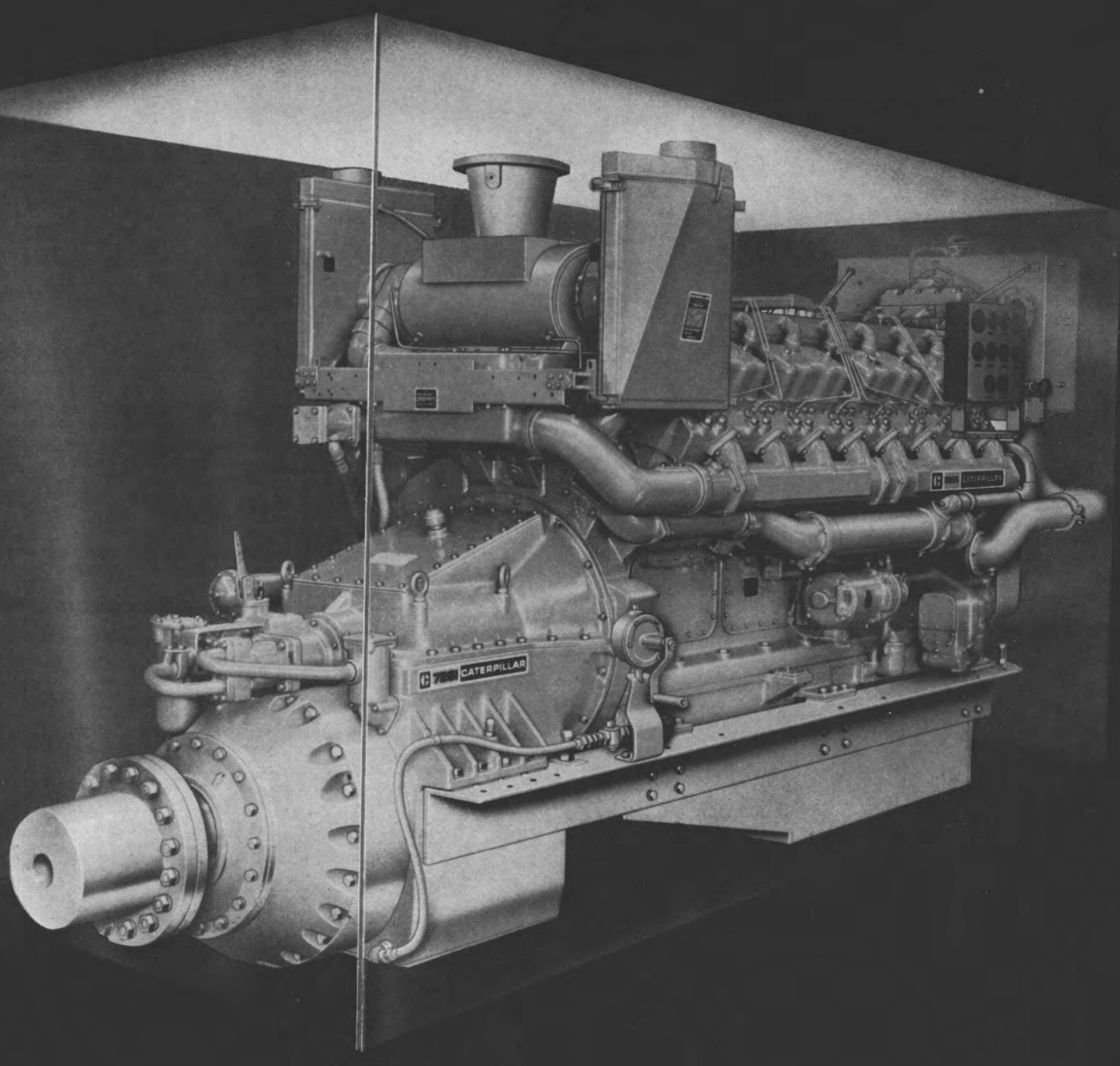
Paper T, entitled "New Power Systems and Their Potential for Marine Applications" by **Leonard J. Keller,** The Keller Corporation.

Power systems available today for marine propulsion are principally fossil-fuel-burning energy-conversion systems. Some rather recent developments, or recently revived developments, such as geothermal energy power systems and solar power systems offer virtually no hope for application to marine propulsion. The sail, steam, diesel engines, gas turbines, and gasoline engines continue to provide the power for moving vessels through the water. Except for the sail, these are fossil-fuel systems. Except for the sail and steam, they are internal-combustion engines. This paper discusses these latter engines in the light of recent developments.

The presiding officer for this final technical session was **James J. Henry,** past president of the Society, assisted by **Owen Oakley** as moderator for Papers P and Q and Capt. **Richards Miller,** USN (ret.), as moderator for Papers R. S and T.

Each paper was followed by very interesting discussions.

MORE THAN AN ENGINE...
MORE THAN A GEAR...



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D399	V-16	3928	1225	1091	1125	Cat 7261	2.89:1 to 4.22:1	3.18:1 to 3.84:1
D398	V-12	2946	1225	825	850	Cat 7251	2.95:1 to 4.34:1	3.24:1 to 3.95:1
						Cat 7261	2.89:1 to 3.50:1	3.18:1 to 3.84:1
D379	V-8	1964	1225	548	565	Cat 7241	2.00:1 to 5.88:1	2.00:1 to 5.88:1
						Cat 7251	2.95:1 to 5.11:1	3.24:1 to 5.11:1
D353	I-6	1473	1225	412	425	MG 521	2.19:1 to 4.09:1	2.19:1 to 4.09:1

CATERPILLAR

Norman Scott Named New President Of APL

The appointment of **Norman Scott** as president and chief executive officer of American President Lines, San Francisco, Calif., was announced by **Chandler Ide,** chairman of the board of the big steamship carrier, and president of Natomas Company, controlling stockholder of APL.

Mr. **Scott**, who has been vice president of Natomas, succeeds **Worth B. Fowler,** who was named vice chairman of the APL board.

The new APL president has had extensive management experience in ocean transportation with particular attention to executive responsibility for the development, implementation and management of large-scale container systems.

Mr. **Scott** joined Natomas in 1970 in charge of its transportation investments, serving as a director and vice president. He was formerly executive vice president of the Matson Navigation Company and prior to that, he was associated with Castle & Cooke, Inc. of Honolulu. He is a graduate of the United States Naval Academy.

Both APL and its wholly owned subsidiary, American Mail Line of Seattle, Wash., are completing major investment programs involving new and expanded containership fleets, terminals and shipping containers.

Mr. **Ide** said that comprehensive studies were being undertaken to evaluate opportunities for more efficient and effective management of the assets of both companies through closer coordination and possible integration of certain operations.

Norman Scott

"These management changes will strengthen the competitive position of our shipping companies," he said, "but contrary to recent erroneous reports, we have no thought of merging these subsidiaries, either together or into the parent company."

While AML is entirely a trans-Pacific carrier, operating 10 ships between the Pacific Northwest and Asia, APL has a fleet of 22 vessels serving three trade routes—trans-Pacific, Atlantic Straits between the East and West Coasts of the United States and Asia, and a west-bound round-the-world service. APL is the nation's oldest steamship line with an operating record dating back 125 years to California's gold rush days. Its world headquarters are in San Francisco.

Alcoa Appoints Branscome Sales Mgr. Commercial Marine

Donald L. Branscome

Donald L. Branscome has been named manager-commercial marine and process industry sales for Aluminum Company of America, Pittsburgh, Pa.

Mr. **Branscome** received bachelor's and master's degrees in civil engineering from Oklahoma State University, and joined Alcoa in 1957 as a sales development engineer at New Kensington, Pa. He held various sales and marketing positions before being named manager of sales to nonintegrated fabricators and the process industries, his most recent position.

Charles Peyton Named President Of Exxon International Division

Charles O. Peyton

Exxon Corporation has announced the appointment of **Charles O. Peyton** as president of Exxon International Company, its international supply, marine transportation and wholesale marketing division. Mr. **Peyton** was also elected a vice president of Exxon Corporation.

Mr. **Peyton,** now vice president-public affairs, will be succeeded by **Stephen Stamas,** currently deputy manager of Exxon Corporation's public affairs department. Mr. **Stamas's** successor will be **C.K. Roberts,** now executive assistant to **C.C. Garvin Jr.,** Exxon president. The changes are effective June 1.

In his new position, Mr. **Peyton** succeeds **James F. Dean,** who is moving to the post of executive vice president of Exxon's European coordinating affiliate. In taking over the presidency of Exxon International, Mr. **Peyton** will be returning to the company he left in January 1970, to become manager of the Exxon public affairs department. In May 1970, he was elected vice president-public affairs.

A native of Shreveport, La., Mr. **Peyton** was graduated from Louisiana State University in 1942 with a degree in chemical engineering. That same year, he joined the Exxon organization as an engineer at its Baton Rouge refinery.

After holding several technical, sales and management positions, he joined Exxon International in 1961. He became a vice president and general manager of its supply department in 1962, and subsequently of its tanker department. Mr. **Peyton** was elected a director in 1966 and executive vice president and director in 1969.

Mr. **Stamas** was born in Salem, Mass. In 1953, he received an A.B. degree from Harvard College. Two years later, Oxford University awarded him a B.Phil. degree and in 1957, he received a Ph.D. degree from Harvard University.

He served in the U.S. Bureau of the Budget, and with the Development Loan Fund in Washington from 1957 until 1960.

Mr. **Stamas** joined Exxon in 1960 as an international financial analyst in the treasurer's department and moved to London three years later, where he held several positions in the financial and Government relations fields. He returned to New York in 1967 as manager of the petroleum planning division in the supply department of Esso International.

He left the corporation in 1968 to serve as Deputy Assistant Secretary for Financial Policy in the Department of Commerce, returning the following year as chief economist in Exxon's corporate planning department. In May 1970, Mr. **Stamas** joined the public affairs department as manager of operations, and was named deputy manager of the department in June 1971.

Mr. **Roberts** is a native of Tyler, Texas. He attended the University of Texas, receiving a bachelor of business administration degree in 1950, a bachelor of laws degree in 1951, and a master of laws degree in 1953.

After service in the Army, he joined the law department of Exxon USA in Houston. Mr. **Roberts** held positions in the law, refining and public affairs departments of Exxon USA until May 1972, when he was named executive assistant to the president of Exxon Corporation.

SNAME Chesapeake Section Holds Election Of Officers And Hears Paper On Recent Trends In Hull Machinery

Pictured during the April meeting, left to right: **Robert Mende,** SNAME national secretary; **Phillip Eisenberg,** SNAME national president; **Irving W. Smith,** author; **Seth Hawkins,** NSRDC, vice chairman, Chesapeake Section; **David Smith,** Masters, Mates and Pilots Union, discusser; **Richard Schubert,** MarAd, moderator; Capt. **Richards Miller,** Westinghouse, member, executive committee; **John Heffernan,** Bethlehem Steel Corp., chairman, papers committee.

The Chesapeake Section of The Society of Naval Architects and Marine Engineers held the seventh meeting of its 1972-73 technical program on April 12, 1973, at the Walter Reed Army Medical Center Officers Club in Washington, D.C.

Following the social hour and dinner, which were enjoyed by approximately 90 members and guests, vice chairman **Seth Hawkins** opened the meeting by welcoming those in attendance, especially noting the presence of the president of SNAME, **Phillip Eisenberg,** and the SNAME national secretary, **Robert Mende.** Mr. **Eisenberg** made a few remarks to the membership, commenting on the success of the annual spring meeting at Walt Disney World, Fla., noting the fine turnout of Chesapeake Section members at that meeting and the number of authors who were from the Chesapeake Section. Mr. **Mende** commented on the revised schedule of events for the forthcoming annual meeting of the Society in New York on November 15-17, and received an endorsement from the membership concerning these changes.

Ronald Kiss, secretary-treasurer, then introduced several changes in the bylaws of the Section to reflect recent changes in the fiscal year of the Society. These changes were approved by unanimous vote.

Nils Salvesen of the nominating committee presented the slate of candidates for Section office during the next program year. Nominated were **Seth Hawkins,** chairman; **William Hunley,** vice chairman; **Ronald Kiss,** secretary-treasurer; and **George Levine,** member executive committee. A vote of the membership indicated overwhelming approval of the nominating committee selections.

Mr. **Hawkins,** vice chairman, then noted that **Reuven Leopold** had been selected as chairman, membership committee, and the goal set for his committee was to be the No. 1 Section in new membership.

At this time, Capt. **Richards Miller,** USN (ret.), was introduced for the purpose of discussing the First SNAME/Chesapeake Section Sailing Yacht Symposium that is being scheduled for January 19, 1974, and in the near future "A Call for Papers" will be issued.

After completing the Section business, vice chairman **Hawkins** introduced the moderator of the technical session, **Richard Schubert,** Manager, Marine Engineering, Office of Ship Construction Maritime Administration. Because the term "Hull Machinery" encompasses several distinct and separate requirements for ship's deck machinery, cargo loading and unloading systems, steering gear, etc., Mr. **Schubert** introduced this paper as a highly complex area of marine engineering and naval architecture which often does not obtain the importance that it deserves.

He introduced the author, **I.W. Smith,** Manager, Hull Machinery, Office of Ship Construction, MarAd, as a graduate engineer with over 30 years of marine experience and a co-author of the chapter "Hull Machinery" in the SNAME publication, Marine Engineering. Mr. **Smith** opened his discussion by stating that the paper attempts to illustrate and describe several of the new and unique installations of items of hull machinery on both domestic and foreign ships. By use of visual aids, Mr. **Smith** discussed (a) the novel features of the Lykes SEABEE barge-handling system, (b) the container crane operation of the LASH ships, (c) split-hull barge crane, (d) a pallet handling system for a refrigerated cargo ship, (e) a catenary unloader for a bulk ship to handle wood chips, and (f) a single steering gear for twin rudder application.

A question and answer period was opened to the membership before the prepared discussions were read. Prepared comments by **Archer Nickerson,** Mr. **Smith's** co-author of the chapter in Marine Engineering, were read. In addition, **David R. Smith** of the Master, Mates and Pilots Union, provided a valuable insight into the practical operations of the Lykes SEABEES on which he had served as a deck officer for a voyage. It was a concensus of opinion that this paper and discussion highlighted many of the special and unique problems faced by the designers and users of hull machinery.

Fruehauf Corporation's Jacksonville Shipyards Buys Bellinger Yard

Fruehauf Corporation has further expanded its maritime activities with the acquisition of Bellinger Shipyards by Jacksonville Shipyards, Inc., a wholly owned subsidiary of Fruehauf. The announcement was made by **Arnold P. McIlwain,** president and chief executive officer of Jacksonville Shipyards, Inc.

The shipyard will be operated as the Bellinger subsidiary of Jacksonville Shipyards, Inc., and will provide the nucleus of new construction activity.

The Bellinger yard, located on the Atlantic Intercoastal Waterway near Jacksonville, Fla., includes approximately 92 acres of land, of which only 30 are presently in use.

Bellinger Shipyards is currently constructing a 230-foot ferryboat for delivery to the Woods Hole, Nantucket, and Martha's Vineyard Shipping Authority in Massachusetts.

Max L. Brown Retires From Bethlehem Steel

Max L. Brown

Max L. Brown, New York district manager of the News Media Division of the public affairs department of Bethlehem Steel Corporation, has retired after more than 29 years of service with the organization.

He joined Bethlehem in January 1944 as New York representative of the publications department, the then public relations arm of the corporation. In addition to handling news media relations, Mr. **Brown** was account supervisor of advertising for the company's shipbuilding department for 15 years.

Mr. **Brown** is an accredited member of The Public Relations Society of America and a member of its New York chapter. He is also a charter member of the New York Financial Writers' Association, and a member of The Society of Naval Architects and Marine Engineers, and The Propeller Club of New York.

He is a past chairman of the public relations committees of The Propeller Club of the United States, and the former American Merchant Marine Institute.

Before joining Bethlehem, Mr. **Brown** served for more than 15 years as a member of the business news staff of United Press International. From 1938 through 1943, he was assistant manager of the business and financial news department, and also wrote a daily column which appeared nationally.

Webb To Hold Seminar August 1-3 On Hull Structure

A three-day seminar is planned for August 1-3, 1973, at Webb Institute of Naval Architecture, on Probability Applied to Hull Structural Design. Recent developments in the application of probability theory to the determination of short and long-term distributions of wave loads will be surveyed, along with implications for hull design.

Guest lecturers will include Prof. **A.M. Freudenthal** of George Washington University, Dr. **S.R. Heller** of Catholic University, **E.G.U. Band** of Payne, Inc., Dr. **M.K. Ochi** of Naval Ship Research Development Center, and **John Dalzell** of Davidson Laboratory. The tentative program follows:

August 1—Theory—"Short-term Probabilities based on the Rayleigh Distribution," by **O.J. Karst** and **D. Hoffman**; "New Random Stratified Sampling of North Atlantic Wave Spectra," by **D. Hoffman**; "Alternate Methods of Obtaining Long-term Load Distributions"; "A Computer Procedure for Obtaining a Long-term Load Distribution," by **R.B. Zubaly.**

August 2 — Applications — "Obtaining a Long-term Distribution from Extreme Values in 20-min. Records," by **R. van Hooff**; "Transforming a Long-term Distribution from a Wind to a Wave Basis," by **E.G.U. Band**; "Extreme Value Statistics and Applications," by **M.K. Ochi**; "Multiple Input Spectra Applied to Combined Stresses," by **J. Dalzell.**

August 3 — Design Aspects — "Combining Loads for Design," by **R. van Hooff** and **E.V. Lewis**; "Capability of Ship Structure to Resist Loads," by **S.R. Heller**; "Probabilistic Approach to Economic Design," by **A.M. Freudenthal.**

Registration and tuition fees cover luncheons and a Thursday evening buffet dinner. For announcement and other information, write or phone Prof. **E.V. Lewis,** Webb Institute of Naval Architecture, Glen Cove, N.Y. 11542, phone (516) 671-2356.

Frank E. Reynolds Appointed President Santa Fe Engineering

Frank E. Reynolds

Frank E. Reynolds has been named president of Santa Fe Engineering & Construction Co., a newly designated division of Santa Fe International Corporation.

E.L. Shannon Jr., president of the parent company, said this division will take over all of Santa Fe construction activities, formerly conducted by a subsidiary, Santa Fe-Pomeroy, Inc.

The reorganization followed the recent resignation, for personal reasons, of **N.W. Turner** as president of the subsidiary.

Mr. **Reynolds** joined Santa Fe last October. Since then, he has been executive vice president of Santa Fe-Pomeroy and president of the pipeline construction subsidiary, Santa Fe-Curran & Co. He will continue in the latter post.

Gregory J. Sullivan Named President Of Marine Transport Lines

Gregory J. Sullivan

Gregory J. Sullivan, senior vice president of Marine Transport Lines (MTL), has been named president of this General American Transportation Corp. (GATX) subsidiary.

C.Y. Chen, chairman of MTL, said Mr. **Sullivan** joined the New York City-based shipping firm in 1972, after serving in a variety of capacities with Irving Trust Co., New York, for 14 years.

MTL owns and operates a fleet aggregating three million deadweight tons. The company's vessels are largely under long-term charter to major petroleum, chemical and steel companies.

Mr. **Sullivan,** a native of Bangor, Maine, received a B.A. degree from Brown University in 1954, and an M.B.A. degree in 1958 from the Columbia University Graduate School of Business.

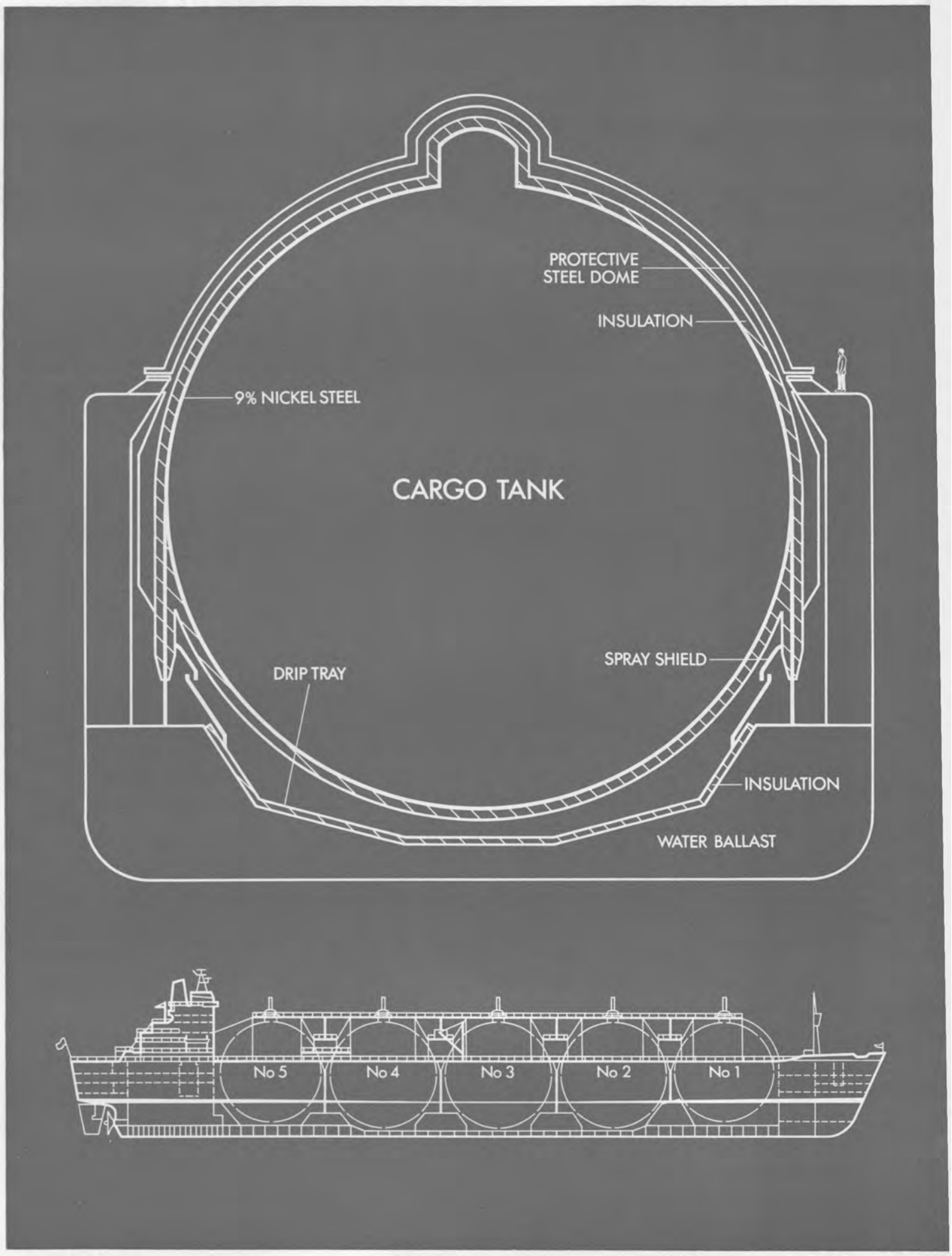
D'Alessandro To Chair Rudder Club's 35th Annual Dinner Dance

The 35th Annual Dinner Dance of The Rudder Club, which is being held in the main ballroom of the Hotel Commodore, New York City, on Saturday evening, June 9, will be chaired by **Andrew D'Alessandro**, manager of import sales for American Export Lines, it was announced by **Clifford M. Palmer,** commodore of the maritime organization, and vice president of Lee & Palmer.

The cost per ticket, which includes gratuity, is set at $23.50, and reservations may be made by contacting The Rudder Club office at 518 Columbia Street, Brooklyn, N.Y. 11231.

The dinner has always been most successful, and is considered one of the highlights of the year. According to Mr. **D'Alessandro,** the women, as in the past, will receive an attractive gift.

In conjunction with the dinner dance, Mr. **Palmer** also announced the appointment of **James A. Rudolph,** vice president of M.J. Rudolph, as chairman of the "Rudder Club Yearbook." The proceeds derived from the "ads" that are solicited are used to continue financial assistance to aid deserving students in the furtherance of their maritime education at the maritime schools to which The Rudder Club has presented educational grants over the years.



LASH And Sea Barge Contract Awarded Conditionally By Navy

A contract to build and charter to the Navy two new-type supply ships — a lighter aboard ship (LASH), and a sea barge—has been won conditionally by Marine Chartering Corp., a subsidiary of Marine Transport Lines.

The Navy's Military Sealift Command (MSC) will operate the vessels once they are delivered.

Marine Chartering must obtain offers to build the two vessels from shipyards, arrange the financing details, and present the total plan to the Navy in about five months for final acceptance.

Jerome Shelby of Marine Transport, in confirming reports of the award, said the vessels will be owned by a trust made up of Citicorps Leasing Corp. and First Chicago Leasing Corp. Construction financing will be handled by First National Bank of Chicago, and the sale of bonds for the long-term financing would be directed by Salomon Brothers.

Use of the vessels was part of the Navy-MSC effort to upgrade its lift capacity. Utilizing the chartering of privately built and owned vessels saves heavy outlays for construction by the Navy.

Mr. **Shelby** said he expected offers to build from Avondale and General Dynamics, which have built LASH and sea barges, respectively, and perhaps also from Todd and Sun Shipbuilding.

The LASH vessel sought was specified originally to be of 36,000 displacement tons, with capacity for 85 barges. The sea barge was supposed to be of 27,050 tons with capacity for 38 barges of 40,000 bale-cubic-foot capacity each. Accommodations for 250 troops each was to be included, plus facilities for containers and heavy lift helicopters. Each was to have a speed of 21-22 knots.

The Navy has acquired the use of a number of tankers via this build-charter plan.

Pacific NW Section Hears Paper On Jetties

Pictured at the meeting held at the Jantzen Beach Thunderbird in Portland are **Howard Hinsdale** (left), of the Umpqua River Navigation Co., guest speaker, and **H.P. Sturdivant** of Zidell Explorations, Inc. of Portland, Ore., host of the SNAME meeting.

Today's jetties are no longer constructed by big trucks dumping loads of big rocks into the sea, the Pacific Northwest Section of the Society of Naval Architects and Marine Engineers were told at a Portland, Ore., meeting April 20. In his paper titled "Rock Island Offshore," **Howard Hinsdale** of the Umpqua River Navigation Company, with many years of jetty experience, described the growth of jetty construction since the first West Coast jetty was built at the mouth of the Columbia River.

A development of recent years is a method of depositing "armor" stone on the sides of the jetty perpendicular to the sloping surface. These rough quarried armor stones are brick-shaped, weigh about 25 tons, and are carefully placed—actually locked in place. This armor stone method has a near-perfect record for standing up against waves and weather.

The "Dolo," 43 tons of concrete shaped like the letter "H" with one leg rotated 90 degrees, has tremendous locking potential and has been used in jetty construction as a wave energy dispenser.

It is a natural step from jetties to rock islands—much of the construction is similar. Mr. **Hinsdale** sees a need for rock islands upward of 200 feet square built in 100 feet of water for oil drilling, for supertanker terminals, and for nuclear power plants.

The color movie "Jetties Against the Seas," produced by the Umpqua River Navigation Company, was shown following Mr. **Hinsdale's** talk.

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Tankers powered by DELAVAL's Enterprise RV diesels... engines which are designed by American engineers and built by American labor with American materials.

DELAVAL's Enterprise diesels have all the operating economy, top availability, smooth-running compactness and flexibility required of today's modern marine diesels, now available to 12,000 HP.

DELAVAL Enterprise Diesels... to meet the needs of the maritime industry.

For more information on how DELAVAL's Enterprise can help you and your shipbuilding requirements, phone or write to us soon. DELAVAL Turbine Inc., Engine and Compressor Division, 550 85th Ave., Oakland, California 94621. (415) 638-0130.

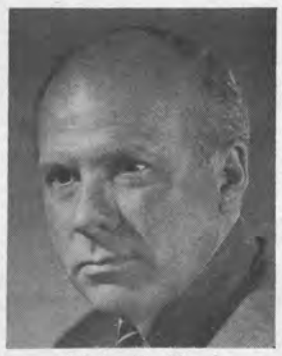
DELAVAL

National Interest First Consideration In Fleet Expansion

Addressing The Rotary Club of Baltimore, **Edwin M. Hood**, president, Shipbuilders Council of America, said that "changing times demand that shipping and shipyard capabilities need to be justified in the broad spectrum of the national interest and not as a fragment of national defense requirements. He noted that the justifications, "arguments and cliches of the past have become shopworn."

Mr. **Hood** explained: "For years, the American merchant marine has been described as our Fourth Arm of Defense. But lately, there have been veiled comments from Pentagon sources questioning the need of an American merchant marine on the grounds that lower cost NATO fleets and flags of convenience vessels—ships of other nations—may be able to provide military transport capabilities as needed.

"Moreover, these days," he added, "one can never be certain whether national planning—as it relates to ships and shipbuilding—is based on emergency contingencies of 90 days, three years or longer. The recent decision to sell certain stockpiled materials, we are told, is based on the postulate that the next war will not last longer than one year. Yet, one can never be certain whether U.S. shipyard capabilities are adequate to meet unspecified mobilization requirements, even for that limited period."



Edwin M. Hood

Calling for upgrading of national decision-making and policy implementation "to restore the United States to a position of maritime prominence," Mr. **Hood** urged greater emphasis on trade movements as a foundation for improving U.S. maritime endeavors. He said: " . . . as trade movements expand, new and more ships are required and must be built, and American shipyards will be increasingly more active."

He suggested "high-level coordination to ensure that an expansion of trade will equate to an expansion of shipbuilding" and "a program correlation between these two elements with specific milestones to be reached in an orderly fashion." A goal of 30 percent carriage (compared to present 6 percent) of U.S. exports and imports by American-flag shipping, he said, "is not overly selfish, nor unrealistic or beyond attainment."

The Shipbuilders Council is a national industry trade association composed of shipbuilders, ship repairers and allied suppliers.

Midland Enterprises Names Two Presidents For Maritime Firms

The appointments of two presidents for two companies in the Midland Enterprises Group of marine transport subsidiaries of Eastern Gas and Fuel Associates of Boston, have been announced by **Louis R. Fiore,** president of Midland and senior vice president-marine of Eastern.

Edward J. O'Donnell was named president of Chotin Transportation, Inc. of New Orleans, La., to succeed Capt. **Scott Chotin,** who is retiring after nearly 40 years with the barge company. Mr. **O'Donnell,** who has been with Chotin since 1961, has served as executive vice president for the last four years.

William D. Oliver, vice president and general manager of Port Allen Marine Service, Inc. since 1967, was named president of the firm, which operates a ship construction and repair yard near Baton Rouge, La.

Matson Navigation Appoints R.T. Colson

Robert T. Colson

Robert T. Colson has joined Matson Navigation Company as vice president-finance, it was announced by **R.J. Pfeiffer,** president.

Mr. **Colson** was formerly executive vice president of Falstaff Brewing Corp. in St. Louis, Mo. He was born in St. Louis, and is a 1957 graduate of the St. Louis University School of Law.

Robert E. McIlvane Named Anixter Bros. Vice President-Sales

Robert E. McIlvane

Anixter Bros., Inc., has named **Robert E. McIlvane** to the new corporate position of vice president-sales, according to an announcement by **Alan B. Anixter,** president.

"Mr. **McIlvane** has had an extremely successful career in the wire and cable industry, and his acceptance of this important post with our company adds to the depth of our management team," Mr. **Anixter** said. "He is particularly well suited for his new position because his broad experience centers upon the major thrusts of our company, serving the dynamically growing CATV, public utility, communications, and shipbuilding markets."

Mr. **McIlvane** was formerly with Anaconda Wire and Cable Company, where he last served as vice president-marketing. Prior to that, he was associated with Plastic Wire & Cable Co., Jewett City, Conn., and Copperweld Steel Company, Pittsburgh, Pa. He is a graduate of Georgetown University, Washington, D.C.

Anixter Bros., based in Skokie, Ill., provides products and services for the transmission, distribution, and control of electrical energy. The company operates a nationwide network of wire and cable outlets.

Arctic Tanker Group LNG Project Post To Robert D. Lyall

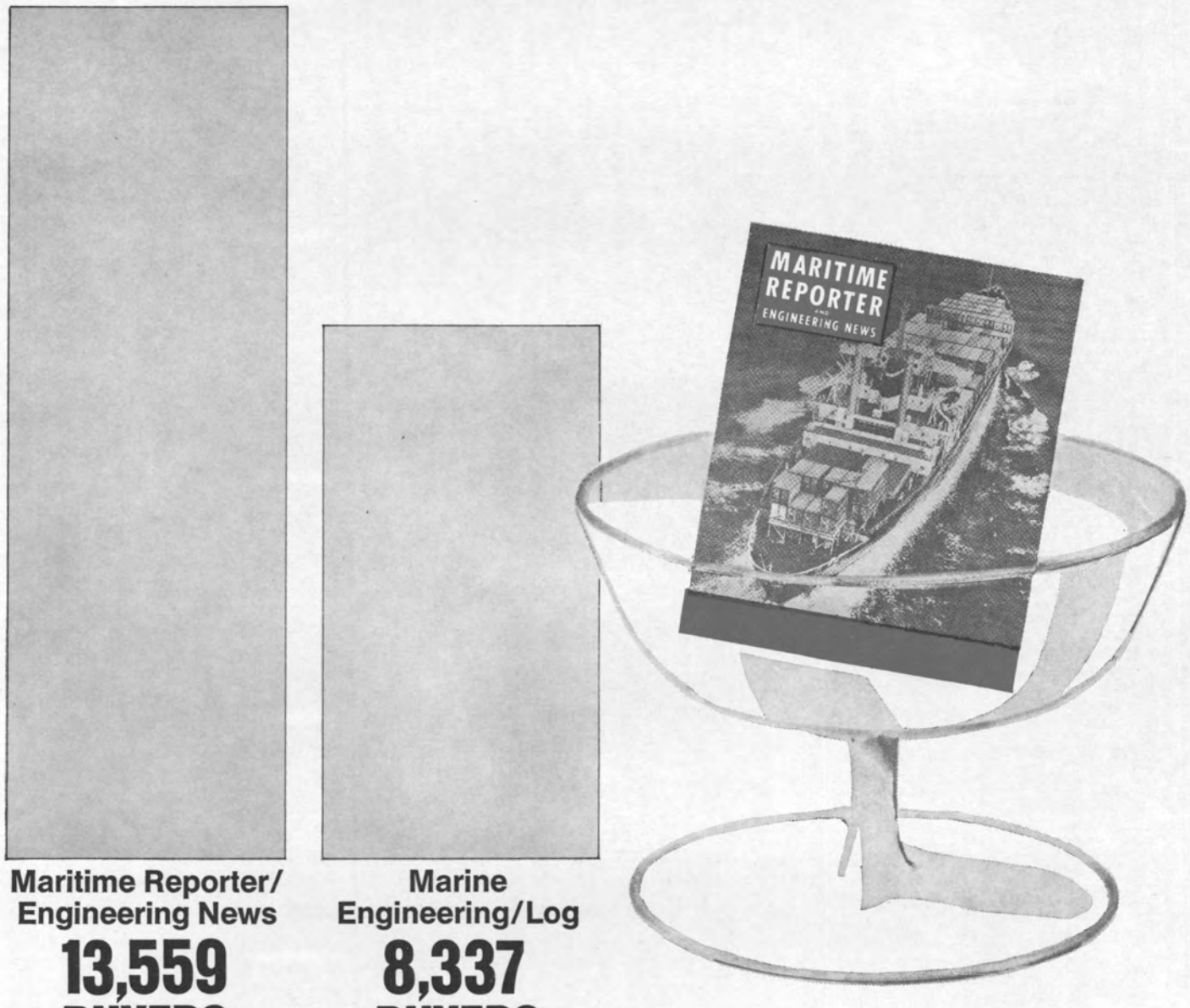
Daniel D. Withers, president, Arctic Tanker Group, Inc., P.O. Box 61205, Houston, Texas 77061, has announced the appointment of **Robert D. Lyall** as LNG project manager.

Mr. **Lyall's** first assignment is the construction management of several U.S.-flag liquefied natural gas (LNG) tug/barge units for Arctic Tanker.

Prior to joining Arctic Tanker Group, Inc., Mr. **Lyall** was contract administrator for a 5,000-cubic-meter LNG barge with Todd Shipyards, Houston Division, the first LNG vessel built under the U.S. flag. During nearly six years with Todd Shipyards, he fulfilled assignments as project estimator, project engineer and designer engineer.

Mr. **Lyall's** engineering career also includes four years as design and project engineer at natural gas and cryogenic installations of Walker & Associates, Houston, and various engineering and inspection assignments in U.S. Naval Shipyards.

proof of the pudding ...



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DIESEL GENERATOR SETS

1

350 KW DIESEL GENERATOR SET

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

2

250 KW DIESEL GENERATOR SET

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

3

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

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

4

UNUSED 10 KW SUPERIOR DIESEL GENERATOR SET

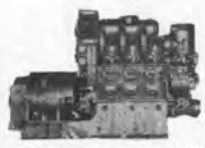
GENERATOR: Delco 10 KW—120 VDC—83.3 amps—1200 RPM. ENGINE: Superior diesel—2 cyl.—4½x5¾—15 HP—heat exchanger cooled.

5

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

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

6



300 KW DIESEL GENERATOR SET

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

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

TURBO GENERATOR SETS

7

400 KW WESTINGHOUSE TURBO GEN SETS FOR BETH. SPARROWS PT. HULLS 400 TO 4500; QUINCY HULLS 1600

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

8

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

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

9

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

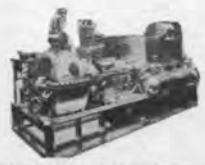
GENERATOR: 300 KW—120/240 VDC—1250 amps—1200 RPM. REDUCTION GEAR: 8.344:1—10012/1200 RPM—type S-182. TURBINE: DOR418N—449 H.P.—10012 RPM—working pressure 180/220 PSIG.

10

WESTINGHOUSE 440/3/60 200 KW UNIT

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

11



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

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

12

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

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

13

AP2 VICTORY WORTHINGTON-MOORE CROCKER-WHEELER 300 KW UNIT

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

UNUSED C-4 CROCKER-WHEELER 500 KW GENERATOR ENDS ONLY

120/240 VOLTS D.C.—1200 R.P.M.

FORMERLY USED WITH WORTHINGTON-MOORE TURBINES & GEARS

14

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

15

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

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

TWO 538 KW WESTINGHOUSE T-2 AUX. GENERATORS

(COMPLETE)

16

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

TURBINES & ROTORS

MAIN PROPULSION

17

BETH. CLASS—13,600 H.P.

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

KNOWN 'ROUND THE WORLD

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18

H.P. & L.P. COUPLINGS

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

19

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

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

T-2 TURBINES & ROTORS

20

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

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

2 COMPLETE T-2 G.E. TURBINES

21

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

ROTOR WILL INTERCHANGE WITH ELLIOTT MAIN TURBINE

Will Sell Rotors Separately

22

T2-SE-A1 MAIN PROPULSION ROTOR—G.E.

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

23

T-2 TANKER UNUSED—4 UNITS AVAILABLE

AUX. G.E. TURBO GEN. ROTORS

DORV—325M—5645 RPM—for 525 KW G.E.

VICTORY SHIP TURBINES & ROTORS

24

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

L.P. – 3509 RPM
H.P. – 6159 RPM

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

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

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

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

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

26 **6000 H.P. G.E. — NORTH CAROLINA C-2**

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

27

19 STAGE WESTINGHOUSE H.P. ROTOR FOR AP2 VICTORY

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

28

G.E. 8500 H.P. REDUCTION GEAR FOR LARGE AP3 VICTORY & C3

MD-48A—8500 HP—6159/3509/763/85 RPM.

29 **ALSO 6000 H.P. VICTORY AP2 REDUCTION GEAR**

Westinghouse 4A-1640.

PUMPS

30

UNUSED DELAVAL IMO ROTARY PUMP

175 GPM—35 PSIG—10 HP—120 volts DC—1750 RPM—serial E-8619—frame 324 VY—76 amps—mfg. by Electro Dynamics. With magnetic control. Excellent condition.

31

CARGO PUMP TURBINES

WESTINGHOUSE

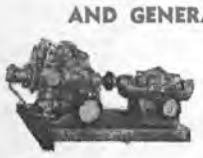
One set of gears available for Westinghouse C-25 Cargo Pump Turbine.

32

UNUSED DELAVAL 24.5 H.P. LUBE OIL PUMP

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

33 **NEW TURBINE DRIVEN FIRE AND GENERAL SERVICE PUMP**



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

TURBINE DRIVEN BOILER FEED PUMPS

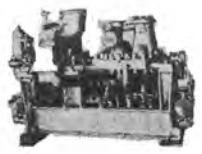
Suitable for Navy and Merchant Vessels

34

COFFIN TYPE D.E.B. TURBO FEED PUMP

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

35 **UNUSED DD445 CLASS WORTHINGTON TURBINE-DRIVEN FEED PUMP**

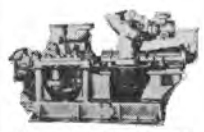


Worthington — drawing SL5043—425 GPM—1675' total dynamic head—5000 RPM 3-stage — double suction. Flanged 4½" inlet—4" outlet. Powered by Sturtevant steam turbine—282 HP—590 PSI. For Fletcher DD-445 Class Destroyers.

36 **INGERSOLL-RAND BRONZE CARGO PUMP**

10GT—4500 GPM at 125 lbs.—2-stage—size 14x12.

37



BUFFALO SIZE 4 FEED PUMPS

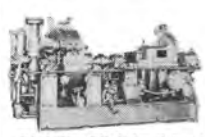
Terry Turbine—BM—273 HP—550 RPM—exhaust 15 lbs—590 PSI—superheat 0°—425 GPM Buffalo Pump—discharge pressure 750 lbs—5"x4"—built for USN DD destroyers. DD 445 Class Fletcher.

38

WORTHINGTON 16"x14"x18" VERTICAL DUPLEX STRIPPING PUMP

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

39



WORTHINGTON 3-STAGE UNUSED BOILER FEED PUMP

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

MISCELLANEOUS

REDUCTION GEARS for Diesel Drive

40

3200 HP DOUBLE INPUT SINGLE OUTPUT DIESEL REDUCTION GEARS 20 DEGREE OFFSET

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

41 **IN LINE GEARS**

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

42 **2100 HP DOUBLE INPUT SINGLE OUPUT GEARS**

Farrell-Birmingham — heavy duty — originally built for 2 heavy-duty direct-reversing engines —300 RPM—1050 HP each. Ratio 3.435:1.

43 **SINGLE ENGINE REDUCTION GEAR**

Farrell-Birmingham — non-reversing—1600 HP at 2.4909:1. With hydraulic couplings.

44

NEW—UNUSED 1-5/16" IDEAL ANCHOR WINDLASS

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

45 **ANCHOR WINDLASS**

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

46

SHARPLESS LUBE & DIESEL OIL PURIFIERS

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

47

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

20" Ex. inlet—⅝" Cu-Ni tubes—with or without air ejector.

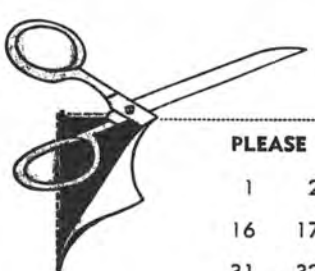
48

UNUSED 70 HP McKIERNAN-TERRY WINDLASSES

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

INQUIRE FOR ALL OTHER ITEMS

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



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46	47	48												

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

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

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

Newport News Ship Appoints D.F. Galvin

Daniel F. Galvin

Daniel F. Galvin has been named director of the material acquisition division of Newport News Shipbuilding, Newport News, Va., a Tenneco company. The announcement was made by **W.F. Wilson,** senior vice president of the shipyard.

The post carries with it significant responsibility affecting the yard's profitability, and Mr. **Galvin** will report directly to Mr. **Wilson,** who is the company's chief financial administrator.

Mr. **Galvin** will be responsible for the functions of purchasing, small business, material utilization and sales, traffic, material coordination and cost-price analysis.

He joined Newport News Shipbuilding in 1951, and served as steel buyer and field expediter until November 1959, when he was transferred to the company's New York office. He returned to Virginia in 1964 as assistant to the purchasing agent. He was named assistant purchasing agent in 1965, and manager of procurement in 1971.

A native of New York City, Mr. **Galvin** attended Manhattan College. He is a member of The Propeller Club, National Defense Transportation Association, Virginia State Chamber of Commerce, and the board of directors of the American Ordnance Association.

Elpac, Inc. To Acquire KGW Towing Company

Elpac, Inc., 1770 Saint James Place, Houston, Texas 77027, has reported the signing of conditional agreements for the acquisition of KGW Towing Company, Inc., the "Weathers Towing Group," of Greenville, Miss., according to an announcement by **Robert N. Mateer,** president. The acquisition is to be for an undisclosed sum of cash, plus common stock.

Mr. **Mateer** noted that Weathers Towing will be an excellent fit with Elpac's existing marine division. The Weathers group operates four large towboats serving the inland waterways system. The Weathers family, in business since 1957, will continue to manage this new division for Elpac.

National Marine Service Gets Title XI Approval To Build 16 Vessels

Title XI approval from the Maritime Administration for 11 tank barges and 5 twin-screw towboats, three of 1,800 bhp, and two of 1,130 bhp, has been received by National Marine Service, St. Louis, Mo. The towboats will be built at a total cost of $2.9 million by Main Iron Works, Inc., Houma, La., and the barges will be built by Hillman Barge & Construction Co. and St. Louis Ship at a total cost of $3.4 million.

FROM HALTER FOR NORTH SEA: Halter Marine Fabricators, Inc. of Moss Point, Miss., recently delivered the Motor Vessel Springbuck for the Primal Boat Company of Dallas, Texas. The vessel is 186 feet long, 40 feet wide and 14 feet deep. It is the fifth in a series of six being built for the Dallas-based firm. The vessel will be operated by Penrod Drilling Company, located in Houma, La., and will service offshore drill rigs off the Louisiana coast for a short period of time, then it is scheduled to go to the North Sea, where it will service offshore rigs.

Israeli Yards Announce Major Expansion Plans

The Government-owned Israel shipyards in Haifa have prepared a master plan with the assistance of Norwegian experts for an expansion which would enable it to build ships from 30,000-200,000 tons.

The plan involves an investment of $15 million, of which a quarter would be needed for the infrastructure. The yard has applied to the Government for the initial $3.75 million to complete the first stage of the project, which would take 18 months.

This was announced in Haifa by the general manager of the yards, **I. Libertowski.** He was speaking upon the completion of the sea trials of the first Israeli-built missile boat, the INS Reshef. He reported that the vessel has stood up to all expectations regarding seaworthiness, fire power and electronic control. He also disclosed that the yard had built the Reshef and a sister ship still under construction at a cost of $875,000 below that quoted by a European yard which had been ready to build missile boats for Israel.

Alton Transportation Applies For Title XI To Build 80-Ft Towboat

The Maritime Administration has received an application for Title XI loan guarantee from Alton Transportation Co., 112 North 4th Street, St. Louis, Mo., to refinance two existing towboats, and to build one 1,150-bhp twin-screw towboat. The new vessel will measure 80 feet, cost about $340,000, and will be constructed by the Missouri Valley Steel Co. of Leavenworth, Kan.

Sioux City Barge Elects G.A. Weinmann

The officers and directors of Sioux City and New Orleans Barge Lines, Inc., and Sioux City and New Orleans Terminal Corp., have elected **Gerald A. Weinmann** to the position of treasurer and assistant secretary.

Mr. **Weinmann** joined SCNO in June 1967 as controller. Prior to his association with SCNO, he was with Material Service Corp., Chicago, Ill.

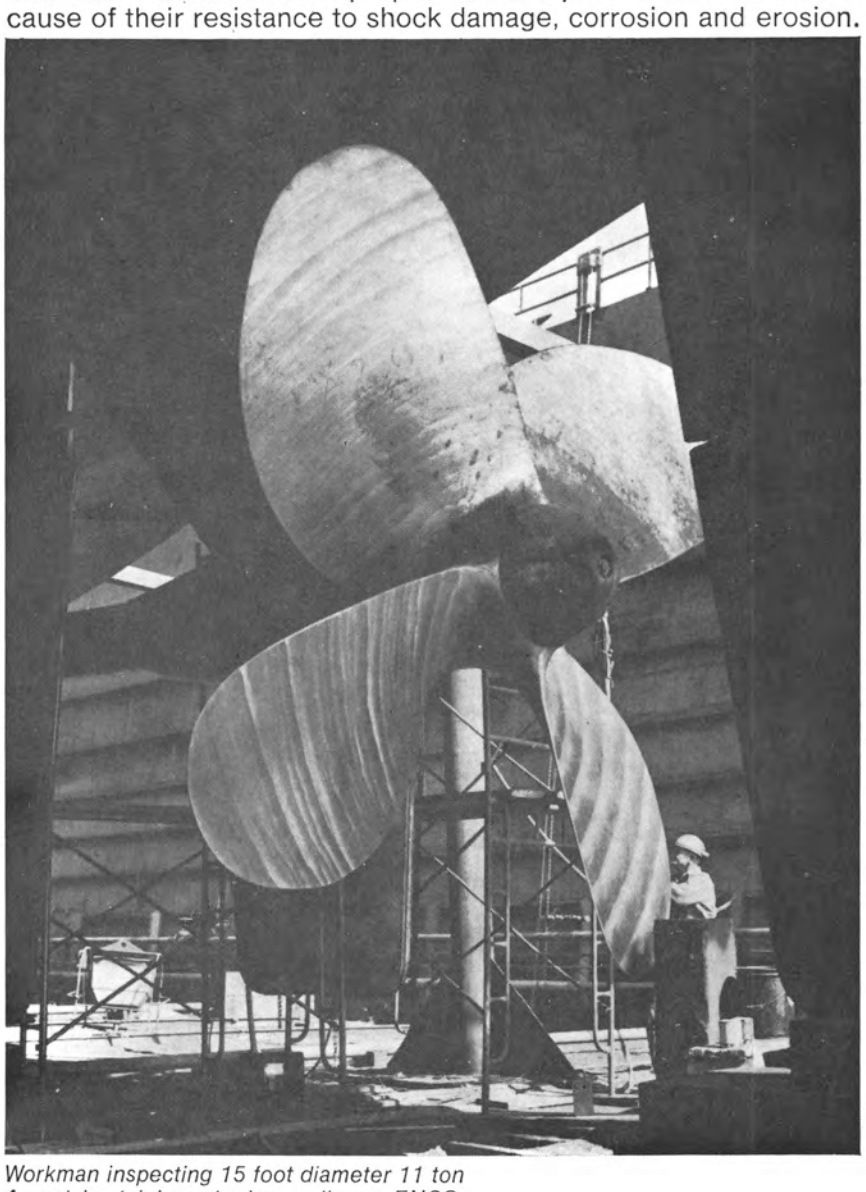
In his new position, Mr. **Weinmann** will assume full responsibilities for all financial matters pertaining to both corporations.

Barber Steamship Names Carl Blom VP

The appointment of **Carl F. Blom** as a vice president of Barber Steamship Lines has been announced by **E.J. Barber,** president. Mr. **Blom** previously served on the United States West Coast as vice president with Overseas Shipping Co.

Eleven ton, fifteen foot diameter Avondale stainless steel propeller proves its worth

Avondale's stainless steel propellers have proved their worth because of their resistance to shock damage, corrosion and erosion.



Workman inspecting 15 foot diameter 11 ton Avondale stainless steel propeller on ENCO Sunshine State

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Tank SAPP Develops Inert Gas Control And Monitoring System

It is now generally accepted that an inert gas system is the most effective method of controlling potentially explosive atmospheres in large tankers. However, a tanker fitted with an inoperable system is as dangerous as a completely unprotected ship.

To help control the problem, Tank SAPP—international contracting consultancy in tanker safety and pollution control—has developed a new piece of equipment which monitors and continuously logs the performance of an inert gas system.

During each voyage, the control unit electronically records the main factors of performance, and the resulting charts are subsequently returned to Tank SAPP's Croydon offices where they are analyzed. The tanker owner is then advised on the performance of the vessel's inert gas system and whether any faults are due to plant inefficiency or faulty crew operation.

If Tank SAPP hold a maintenance contract on the vessel concerned, they will then carry out necessary repairs, servicing or crew training through their network of offices and associates around the world.

During a voyage, the monitoring section of the control system records the following:

a. Inert Gas Oxygen Content—Low oxygen content ensures that the atmosphere is never in an explosive condition.

b. Scrubber Differential Pressure — This is an indication of the pressure drop between scrubber inlet and outlet.

c. Inert Gas Discharge Pressure

d. Scrubber Outlet Temperature

From those readings, Tank SAPP can analyze such faults as the buildup of soot or dirt, blockage of the scrubber or internal corrosion. These faults cannot be seen by the crew, but over a period they can reduce the inert gas system's efficiency or stop it altogether. They can also see whether the pre-set water supplies to the scrubber are maintained for optimum cleaning and cooling. Based on a mimic diagram concept, the equipment is extremely easy to operate. The complete unit may be independently mounted or incorporated in existing engine room control systems. All components are manufactured to marine standards.

This control system provides for centralized control with audible and visual indication of the system status. It includes remote operation of fans (including fan isolation valves), scrubber pump and boiler uptake valves. The discharge pressure of inert gas is controlled from the main panel.

The control unit electronically records the main factors of performance, and the resulting charts are subsequently returned to Tank SAPP's Croydon offices where they are analyzed.

The main control panel comprises an Eldon type TD 362 console topped by an Eldon type TD 162 desk console. The mimic panel is engraved on the desk top and incorporates the control switches and pushbuttons, indicating lamps and alarm panel.

The base section houses pneumatic equipment electrical relays and connection points.

On top of the desk unit two Eldon type 361 panels are mounted: the right-hand unit houses a multipoint potentiometric recorder, and the left-hand unit houses an indicating pressure controller, a pressure regulator and an auto/manual controller. This unit can be mounted separately in the cargo control room to allow personnel to control deck main pressure.

Visual and manual alarms are fitted to indicate the following malfunctions in the system: high scrubber water level; low scrubber water flow; high scrubber outlet temp; high fan outlet temp; fan failure; low seal water flow; low deck seal water level; high oxygen content; low inert gas pressure, and a cargo tank vacuum.

The first two Tank SAPP control monitoring units are being installed on the Conoco Espana and Conoco Britannia. A third has been ordered for installation aboard the Indian vessel Jag Laadki.

Tank SAPP offices in the United States are located at 330 Madison Avenue, New York, N.Y. 10017, and at 1020 Springfield Avenue, Mountainside, N.J. 07092.

Insley Yard In Maryland Builds Innovative Tugboat

Baltimore Gas and Electric Company will use the new Insley-built 1,000-hp tug to handle fuel barges.

A new and innovative towboat, G and E No. 4, has been delivered to the Baltimore Gas and Electric Company by the builder, N.E. Insley, Inc. of Crisfield, Md.

The 145-gross-ton vessel is constructed of three-eighths-inch steel plate, and has the following molded dimensions: length, 75 feet; width, 25 feet; and depth, 10 feet. The tug was designed by Coe M. Best of New Orleans, La., specifically to handle fuel barges in the upper Chesapeake Bay and Baltimore Harbor waters. The vessel's shallow 7-foot 6-inch draft enabled utility company executives to shelve plans for dredging existing unloading facilities.

Two Caterpillar D-379-TA diesel engines provide 1,000 continous horsepower to a hull capable of pulling, pushing, or working alongside loaded barges. The new tug has a speed in excess of 10 knots.

The follow-up type hydraulic steering system employs tiller bars in place of the conventional ship's wheel. The tillers are connected to four specially designed rudders, two forward and two aft of the propellers. A duplicate set of controls allows the vessel's captain to maneuver from either the port or starboard side of the pilothouse with unrestricted visibility. The exceptionally good control and flanking ability derived from this system provided the environment necessary to efficient and safe fuel barge operations.

Ecological concern dictated that the 11,000-gallon-capacity fuel tanks be doubled-skinned and that the sewage holding tanks contain an independent pumping system for shore discharge.

Electronic aids include a Decca RM-916 Radar, VHF radio, depth finder and intercom system.

The five-man crew enjoys heated and air-conditioned quarters consisting of a spacious galley, two heads, a shower, locker room and captain's office. Wood paneling gives the interior a pleasing appearance and is expected to reduce maintenance costs.

The Insley Shipyard, located on Maryland's Eastern Shore between Norfolk and Baltimore, offers many marine services in addition to the construction and repair of self-propelled vessels, hydro-keel craft and barges.

Delaval Markets 20-Cylinder 12,500-Hp Marine Diesel

A 20-cylinder marine engine at 12,500 continuous bhp is now available from Delaval's Engine and Compressor Division, Oakland, Calif.

Designated the RV20, the new power plant is a four-cycle 450-rpm diesel evolved from Delaval's 12 and 16-cylinder RV Series, now being produced at ratings up to 10,000 bhp. The RV16 is presently being used in a variety of ships from tugs and seiners to passenger vessels and 25,000-dwt tankers.

Among the engineering changes incorporated in developing the 20-cylinder version of the RV Series were the use of higher tensile strength crankshaft steel alloy, an increase in shaft diameter at the crankthrows to boost torsional stiffness, and larger flanges for the outlet connection to handle the greater torque.

Delaval's Engine and Compressor Division in Oakland builds diesel and dual-fuel engines for power generation in cities and industries, as well as power packages for ships. Also, its gas engine and compressor sets are used by the gas pipeline and process industries.

Delaval is a multi-division manufacturing subsidiary of Transamerica Corporation.

Trans-Sonics To Supply Instrumentation Systems For Three LNG Tankers

Trans-Sonics, Inc., Burlington, Mass., manufacturers of control and measuring systems, has announced the receipt of an order from Chantiers de France-Dunkerque, Dunkerque, France, to provide instrumentation systems for three LNG tankers (liquefied natural gas ships).

These ships will be employed on the El Paso program to transport LNG from Algeria to the East Coast of the United States.

Trans-Sonics, under the $729,086 order, will furnish the Custody Transfer Measurement System which will be used in the determination of the value of the cargo (a cryogenic liquid at a temperature 259° F below zero) being loaded or delivered, also other subsystems used in cargo handling and control.

A single LNG tanker can transport in liquid form the equivalent energy of more than 600 ships transporting gas.

To date, the company has delivered or has on order LNG systems for 14 ships, 12 from France and two from Sweden. Ships equipped with Trans-Sonics' Systems are traversing routes from Alaska to Japan and from Borneo to Japan.

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Endeavour (Zapata)
Penrod 53 (Penrod)
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Penrod 54 (Penrod)
Penrod 55 (Penrod)
Ocean Master II (Loffland)
Penrod 56 (Penrod)
Chaparral (Zapata)
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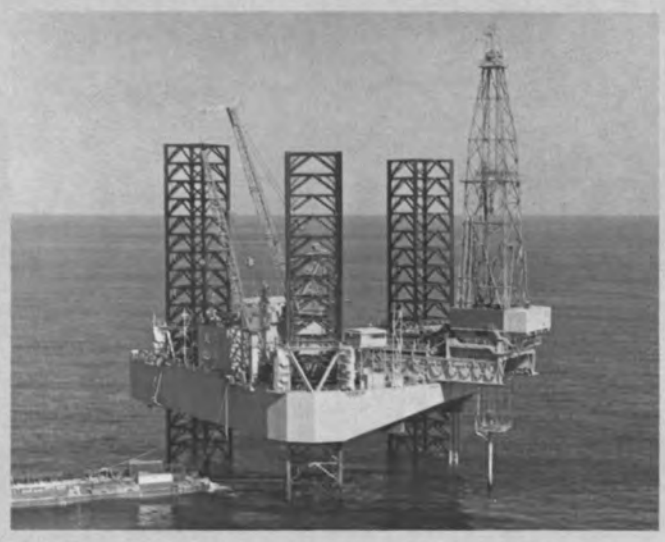
Penrod 57 (Penrod)



Placid 66 (Placid Oil)
Dixilyn One-Fifty (Dixilyn)
Topper I (Crestwave)
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Topper II (Crestwave)
Penrod 58 (Penrod)
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Western Star (Western)
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Earl Rowe-San Antonio (Field International)
Penrod 60 (Penrod)
Zapata Nordic (Zapata)
Penrod 61 (Penrod)
Penrod 62 (Penrod)
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Penrod 73 (Penrod)
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Demaga (Reading & Bates)
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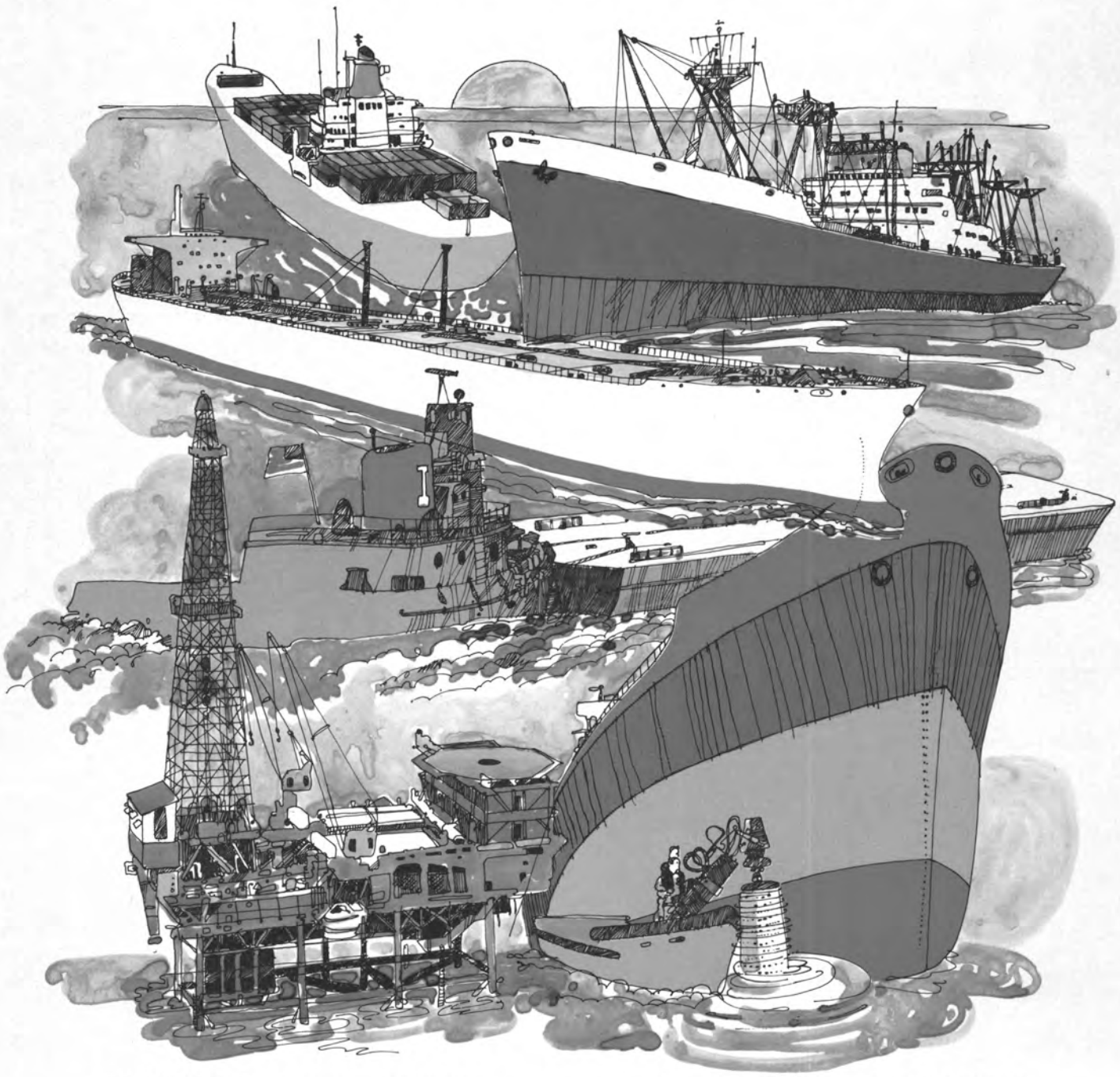

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Dixie Dredge Names Jack Dunn President

The Dixie Dredge Corporation, St. Louis, Mo. 63111, has announced a major management reorganization which has been in the planning process for the past nine months.

Jack T. Dunn, who was appointed chief executive officer of Dixie Dredge in August 1972 with the title of executive vice president, has been given the new title of president of Dixie Dredge Corporation, and has been appointed vice president of St. Louis Ship of which Dixie is a division, according to **Edward Renshaw,** president of St. Louis Ship.

Mr. **Dunn** has been with Dixie Dredge since 1971, when he was appointed vice president in charge of operations. Prior to joining Dixie, Mr. **Dunn** was with the Nashville Bridge Company as sales manager of its Dredge Division, and as manager of Information Systems. Earlier, he had been chief engineer for American Marine & Machine Company of Nashville, Tenn.

Prior to joining AMMCO in Nashville, he was an aircraft structural analyst for Avco Corporation in Nashville, and in Huntsville, Ala. Mr. **Dunn** holds a bachelor's degree in physics and mathematics from Vanderbilt University.

Dixie's parent company, St. Louis Ship, is a division of Pott Industries, Inc., a $100-million corporation, the bulk of whose business is centered around the maritime industry. Its acquisition of Dixie Dredge Corporation in 1969 is a perfect complement to its other companies devoted to shipbuilding, barge construction, barge lines, and other marine services.

Jack T. Dunn

"Pott Industries is delighted with the progress that Dixie Dredge has made since we purchased it in 1969," according to Mr. **Renshaw,** vice president of Pott Industries and president of St. Louis Ship "Dixie's sales have increased substantially since it became a part of our company, and we look forward to many years of successful and profitable operation as part of our group of companies devoted to the marine industry."

The main plant in St. Louis adjoins St. Louis Ship's primary shipyard. St. Louis Ship is one of America's largest inland shipbuilding and repair firms, operating a total of three shipyards at different locations.

Dixie Dredge Corporation operates an additional sales office and plant in Miami, Fla., to service the heavy dredging needs in the Southeastern portion of the United States, and Latin America. Dixie dredges are sold throughout the world.

Quentin Wald Joins Aerojet SES Division

Quentin Wald, hydrodynamics specialist, has joined Aerojet Surface Effect Ships Division, Tacoma, Wash.

During the past 13 years, Mr. **Wald** has contributed to design and construction of a variety of marine vehicles, including submarines, surface effect ships and air cushion vehicles. Before coming to Aerojet, he was chief hydrodynamicist at Electric Boat Division of General Dynamics at Groton, Conn., for 11 years.

Mr. **Wald** has published four technical papers on hydrodynamics and three on marine propulsion, and currently has a patent pending on a ship control device.

A graduate of Massachusetts Institute of Technology, Mr. **Wald** received a B.S. degree there in 1948. He also earned an advanced degree at M.I.T. in 1960.

The SES Division designs, develops and builds advanced seagoing and amphibious naval vessels for travel on a cushion of air at far higher speeds than ships of conventional design can attain.

American Export Lines Elects Crosthwaite VP

John H. Crosthwaite

John H. Crosthwaite, American Export Lines' general sales manager, has been elected a vice president by AEL's board of directors.

Associated with AEL since 1965, Mr. **Crosthwaite** served as sales manager for container operations prior to assuming his present position as general sales manager. Before this, he was Midwest regional sales manager for AEL in Chicago, Ill.

A graduate of the U.S. Merchant Marine Academy at Kings Point, N.Y., he sailed for the Alcoa Steamship Company for three years as a deck officer. Later, he served Alcoa in shore operations in Puerto Rico and the Dominican Republic, and as the company's branch manager in Cleveland, Ohio.

Mr. **Crosthwaite** belongs to the Downtown Athletic Club, Whitehall Club, Chicago Athletic Association and the Ridgewood Country Club.

Santa Fe To Purchase Fluor Ocean Services Marine Equipment

Santa Fe International Corp. and Fluor Ocean Services, Inc., have reached an agreement in principle under which Santa Fe will purchase Fluor's marine equipment valued at approximately $15.5 million.

The transaction, subject to the approval of the directors of each company, was announced jointly by **E.L. Shannon Jr.,** president of Santa Fe International Corp., Orange, Calif., and **J.R. Fluor,** chairman of the board of Fluor Corp.

Under the terms of the agreement, Santa Fe will acquire six offshore pipelaying and construction barges owned by Fluor Ocean Services, as well as equipment and diving operations at Houma, La. Fluor Ocean Services will retain its Houston engineering office, along with its management personnel and staff, and will direct its future efforts toward engineering and construction supervision of marine facilities.

Santa Fe will take over Fluor's current construction contracts in the Gulf of Mexico and will continue operations from the Houma base. All Fluor operating personnel associated with these activities are expected to join Santa Fe.

Among the vessels being acquired by Santa Fe is the RB-2, a reel-type pipelaying barge which can install up to 20 miles of 6-inch pipe or 3½ miles of 12-inch pipe in a continuous string. The RB-2 has laid nearly two million lineal feet of pipeline in the Gulf of Mexico since its completion nearly three years ago.

The sale includes three support barges used in pipelaying and burying operations, plus the patents covering the technique of laying pipe from reel barges. Other vessels involved are the DB-5, a derrick barge with a 400-ton lifting capacity, and the WB-109, an unmanned derrick barge designed for transporting and launching offshore platforms.

The Houma base is located on the coastal canal and covers approximately 20 acres. It includes offices, warehouse, and a spooling yard where pipe joints are welded together for laying from the reel barge.

Joseph Ruivo Joins Tilston Roberts Corp.

Joseph Ruivo has joined the staff of Tilston Roberts Corp., New York steamship agents, as assistant line manager for the National Shipping Corp. of Pakistan. Mr. **Ruivo,** formerly associated with North American Maritime Agencies, Inc., is assisting **Stuart Roland** in the agency's representation of the Pakistani-flag service.

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Cook Industries Announces Formation Of New Inland Marine Transportation Firm

Cook Industries, Inc., Memphis, Tenn., has announced the formation of an inland marine transportation firm to serve the needs of its grain division and other customers.

Scheduled to go into operation June 1 with **Willard R. Sparks** as president, the new company has been named Cook Transportation System, Inc.

According to Mr. **Sparks,** the Cook Transportation System will operate covered hopper barges throughout the Mississippi River tributary system and along the intercoastal canal of the Gulf of Mexico. Most southbound shipments are expected to be grain, while northbound shipments will consist of other dry cargoes.

Mr. **Sparks** said that Cook Industries will be a customer of CTS but that the firm will serve other customers as well. The Cook grain division had previously handled its own freight purchase and barge operation requirements.

Robert R. Wood Jr., vice president and general manager, will be responsible for direct operations of the company. **James C. Campbell** will be manager of barge operations, and **William J. Herring Jr.** will manage marketing for inland marine freight.

Other officers of the new company include **C.R. Parrott,** executive vice president; **Landis C. Stovall,** vice president; Mr. **Campbell,** assistant vice president, and **H.B. Ireland,** secretary-treasurer.

Halter Marine Fabricators Launches Jackson Marine North Sea Supply Vessel

Halter Marine Fabricators, Inc., Moss Point, Miss., recently launched the Ekofisk Moon, a 166-foot by 38-foot by 13-foot supply vessel, for the Jackson Marine Corporation of Houston, Texas.

With a free running speed of 12 knots, the Ekofisk Moon is powered by two Caterpillar D-398 diesel engines rated at 850 horsepower each. She swings two stainless steel four-blade propellers, 72 inches in diameter, which are driven by two ABS grade 6½-inch diameter forged steel propeller shafts.

The vessel is equipped with two GM 6-71 diesel engines driving 75-kw generators. It is also fitted with two 1,000-pound Danforth anchors, with a total of 1,440 feet of 1⅛ high-strength chain.

The steering system is furnished by Steering Systems, Inc. The system will be electric over hydraulic and will incorporate two steering stations—one in the pilothouse and one aft of the pilothouse.

The Ekofisk Moon is completely air-conditioned and heated, and is equipped with a built-in walk-in cooler and freezer.

The vessel is equipped with a complete engine alarm system which allows monitoring from the engine room and also from the pilothouse.

The Ekofisk Moon is certified by the United States Coast Guard, and was built to the American Bureau of Shipping Load Line requirements with delivery and certification for same.

The vessel, upon leaving the Halter facilities, will be delivered to Jennings, La. After delivery, the vessel is scheduled to go to the North Sea, where it will service offshore oil rigs.

Maryland Ship To Install Largest Floating Drydock On East And Gulf Coasts

The board of directors of Fruehauf Corporaapproved the purchase of a drydock which will accommodate vessels up to 125,000 deadweight tons by Maryland Shipbuilding & Drydock Company, Baltimore, Md., a wholly owned subsidiary of Fruehauf Corporation. This will be the largest floating drydock on the East and Gulf Coasts.

One year ago, a drydock which will accommodate vessels up to 85,000 deadweight tons was purchased by Jacksonville Shipyards, Inc. This drydock recently arrived in Jacksonville, Fla., and is expected to go into operation this month.

The new drydock for the Maryland shipyard will be used for repairs and for launching of vessels to be constructed in the future. It is part of a $20-million expansion program now in progress at that facility. The plant expansion will be completed prior to placing the new drydock in service on or before June 15, 1974.

Arnold P. McIlwain, president of both Maryland Shipbuilding & Drydock Co. and Jacksonville Shipyards, Inc., said this program will place both companies in a highly competitive position and will require a 50 percent growth in their labor forces, which at present is 1,700 at Maryland Shipbuilding & Drydock Co. and 2,000 at Jacksonville Shipyards. He stated that these added facilities are an expression of Fruehauf Corporation's faith in the continued growth of the ports of Baltimore and Jacksonville.

Brumley Heads Consolidated Offshore Drilling Companies

A 25-year veteran of the directional drilling industry has been named president of Eastman-Whipstock, Inc., based in Houston, Texas.

Ralph E. Brumley has become president of the consolidated operations of Eastman Oil Well Survey Co. and Whipstock, Inc., both subsidiaries of Petrolane Incorporated (NYSE,PCSE). He was previously president of Whipstock since 1971.

Whipstock was acquired by Petrolane in 1970 and Eastman was acquired in July 1972. Since the Eastman acquisition, Petrolane has been gradually consolidating the operations of the two companies to augment the range of equipment and services offered to the petroleum industry. Eastman is one of the world's leading companies providing precision oil drill instruments and downhole surveying devices, principally for the offshore petroleum industry. Whipstock is a major directional drilling company also with worldwide operations.

Mr. **Brumley** has been based primarily on the Louisiana Gulf Coast since he joined Whipstock in 1955. He was instrumental in establishing Whipstock operations in Nigeria, Norway, Trinidad and the Middle East. In addition, he has been called on for various assignments in Alaska, Australia, and Brazil, and was also instrumental in setting up the first directional drilling contract awarded by the Atomic Energy Commission in Mercury, Nev.

Ralph E. Brumley

At the same time Eastman-Whipstock gained a new president, there was a realignment of responsibilities in operations. **Horace Sharrow,** who joined Eastman in 1959 and was the company's chief executive, will remain as chairman of Eastman-Whipstock.

John W. Wilson, previously with Whipstock, is vice president of U.S. field operations based in Houston.

Matthew Riordan, also from Whipstock, is vice president of operations in the North Sea, Middle East and West Africa. He is based in London.

Edwin D. Dean, previously with Eastman, will handle operations in South America, Australia, Singapore and Canada, and is based in Houston.

E.E. Williamson, the general manager of Eastman before the consolidation, is vice president of manufacturing, based in Houston.

Glenn Harbert, previously with Whipstock, is regional vice president in the Western U.S., based in Midland, Texas.

Charles Granstaff, also from Eastman, is regional vice president in the Eastern U.S., based in Lafayette, La.

Eastman-Whipstock is one of five companies in the Petrolane petroleum services division. Arthur Levy Boat Service operates the "Seahorse fleet" of marine support vessels on a global basis. Petrolane Offshore Construction Services is a deepwater specialist in offshore engineering and construction. Fishing Tools, Inc. provides remedial well service and specializes in downhole obstruction recoveries. P.T. Indonesia Air Transport charters helicopters and fixed-wing aircraft throughout the Indonesian Archipelago as an air support service for petroleum, logging and mining companies.

Martin Marine Moves From N.Y. To Texas

Martin Marine Co. Ltd. and Mar-Ten Marine Associates Ltd. have announced the relocation of their New York offices to 12421 East Freeway, Houston, Texas 77015.

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Babcock & Wilcox Elects George Zipf Board Chairman

George G. Zipf, president and chief executive officer of The Babcock & Wilcox Company, has been elected to the additional position of chairman of the board.

Mr. **Zipf** succeeds **M. Nielsen,** who had served as chairman since 1965 and as chief executive officer of B&W in the period 1957-68. Mr. **Nielsen** will continue as a director of the company.

In addition, **Raymond J. Cantwell,** vice president-finance and accounting and a director, was elected senior vice president.

In this position, Mr. **Cantwell** will continue as head of the finance and accounting division and also continue to direct the management information service and data processing functions. In addition, operations research, which has been a part of the research and development division, is transferred to the corporate level and placed under Mr. **Cantwell's** direction.

Mr. **Zipf** became president of B&W in 1967 and chief executive in 1968. He joined the company in 1942 as a student engineer, following his graduation from Lehigh University with a degree in metallurgical engineering.

He was named general manager of the tubular products division in 1963, elected a vice president of the company in April 1964, and a director in December of the same year. In 1966, he moved to corporate headquarters in New York as executive vice president and became president in December 1967. The following September, he was elected chief executive officer.

George G. Zipf

Mr. **Cantwell** joined the company in 1946 as a member of the comptroller's staff and served successively as comptroller and vice president and chief financial officer. He was elected a director of the company in 1966. He holds a B.B.A. degree from Manhattan College and an M.S. degree from Columbia University School of Business.

Bankers Trust Names Soifer For Maritime Lease Financing

Raphael Soifer, Special Assistant to the Assistant Secretary of Commerce for Maritime Affairs, has joined Bankers Trust Company, New York, N.Y., as a vice president. His principal responsibility will be the bank's domestic and international maritime lease financing business.

Mr. **Soifer** joined the Commerce Department in 1970. As the Department's ship financing specialist, he played a key role in drafting the Federal Ship Financing Act of 1972, as well as the ship leasing provisions of the Revenue Act of 1971. He also participated in the implementation of the Merchant Marine Act of 1970, particularly the provisions dealing with the Act's Capital Construction Fund.

A 1963 graduate of Massachusetts Institute of Technology, where he earned a degree in electrical engineering, Mr. **Soifer** was graduated from the Harvard Business School in 1965. He was elected a George F. Baker Scholar at Harvard, having graduated in the top five percent of his class. He remained at Harvard for two years of study in Government-business relations under a Ford Foundation Fellowship.

Mr. **Soifer** was assistant to the chairman of John Diebold, Inc. from 1967 to 1969, and was with Hayden Stone, Inc., before going to Washington.

He is a member of the Financial Management Association, the Harvard Business School Association, the Harvard Club, and the MIT Club.

Mr. **Soifer** has also been elected a vice president of BT Leasing Services, Inc., Bankers Trust Company's affiliate for lease financing and syndication.

General Dynamics Reports Earnings

General Dynamics Corporation has reported that its 1973 first quarter earnings were 44 percent higher than last year's.

David S. Lewis, chairman and chief executive officer, said earnings for 1973's first quarter ending March 31 were $7,366,000 on sales of $398,033,000, equal to 70 cents per common share. This compares with 1972 first quarter earnings of $5,104,000, or 48 cents per share, on sales of $382,288,000.

Shareholders at the company's annual meeting in St. Louis, Mo., elected **Robert F. Ellsworth** to the board of directors, succeeding **Stanley deJ. Osborne,** who retired from the board after serving since 1970.

Mr. **Ellsworth** is president and chief executive officer of Lazard (N.Y.) International, and a general partner of Lazard Freres and Co. of New York. A native of Lawrence, Kan., he served in the U.S. House of Representatives from Kansas from 1961 to 1967, was an assistant to the President on the White House staff in 1969, and was ambassador and permanent representative of the United States on NATO (North Atlantic Treaty Organization) from 1969 to 1971.

Mr. **Lewis** told the shareholders "we expect that 1973 as a whole will be a much improved year for General Dynamics." One of the company's major goals, he said, has been "to harness our talents and abilities to go after and win new programs, so vital if we are to grow."

New programs won during the year included contracts totaling $270 million for liquefied natural gas tankers, a contract for the YF-16 lightweight fighter prototype, design and development awards for the Trident submarine, a contract for an airport surveillance radar system, and a major subcontract on the space shuttle.

Commercial sales increased to $543 million in 1972, he said, and the company expects "that our commercial business will equal our Government business in a very few years as our sales in both areas are increased."

He pointed out that counting only commercial sales, "General Dynamics would stand as number 223 on the most recent Fortune 500 listing."

Prospects for Stromberg-Carlson Corporation and the Electric Boat and Pomona Divisions are particularly noteworthy, Mr. **Lewis** stated.

Sales by Stromberg-Carlson, the nation's leading independent telephone equipment manufacturer, "reached $142 million in 1972—a record high—and its backlog was up 54 percent, to establish another record," he remarked. Stromberg's earnings are anticipated to reach "an all-time high in 1973," Mr. **Lewis** added.

Electric Boat has submitted proposals on the 11 additional 688-class attack submarines to be bought by the Navy, "and we hope to win a sizeable part of this business to add to our seven-ship backlog of this class of ships," he said.

The Pomona Division, a leading producer of tactical missiles, had earnings in 1972 that "were the best in five years, and so far this year it is well ahead of last year's pace," he observed.

"Perhaps no division in our company has a better overall balance, with a mix of mature profitable programs, systems in pre-production development and more advanced systems just getting started under contract," Mr. **Lewis** commented.

Capital expenditures in 1973 are expected to be about $75 million, he stated, and if the Trident submarine program is approved and awarded to General Dynamics, "we will have to spend approximately $100 million for corporate facilities in 1974."

New Ship Charter Firm Opens In New York

Poten, Bergesen and Wise Shipping & Trading Corp., a new ship chartering firm has opened in New York City, according to an announcement by **Stephen Wise,** a member of the company. Located at 75 Ninth Avenue, New York, N.Y., the corporation will primarily engage in tanker charter business, Mr. **Wise** disclosed.

McDermott Subsidiary Receives Letter Of Intent From Aramco For Crude Oil Storage Facility

C.L. Graves, president and chief executive officer of J. Ray McDermott & Co., Inc., New Orleans, La., has announced that its foreign subsidiary, Oceanic Contractors, Inc., has received a letter of intent from the Arabian American Oil Company (Aramco) for the detailed design, fabrication and installation of a crude oil storage facility.

To be constructed at Ju'aymah, Saudi Arabia, the $100,000,000 contract will consist of both onshore and offshore facilities. Construction activities will be conducted by McDermott subsidiaries and affiliates. Completion of the base facility is expected in September 1974.

The base facility consists of 3.75 million barrels of crude storage with associated piping, booster pumps and shipping pumps capable of loading at approximately 140,000 barrels per hour. Bunker storage and loading are also included.

A submarine pipeline 56 inches in diameter will conduct the crude approximately seven miles from the onshore facility to the offshore 12-pile metering platform and its associated 4-pile control platform. A 24-inch diameter pipeline will be installed for bunker fuel.

The crude and bunker will then be conducted through submarine pipelines from the metering platform to two single mooring facilities capable of handling vessels ranging from 100,000 to 500,000 dwt. The first expansion of the system will provide additional facilities for all phases of the initial project.

J. Ray McDermott & Co., Inc., pioneer in offshore construction services in the hydrocarbons mining industry, has offices, fabrication and construction facilities located throughout the world.

American Ship Building Co. Names Dr. J.O. Kamm President —John Melcher Vice President

Dr. Jacob O. Kamm

John H. Melcher Jr.

The American Ship Building Company, 1210 Investment Plaza, Cleveland, Ohio 44114, has announced the election of Dr. **Jacob O. Kamm** as its new president and chief operating officer succeeding **Campbell W. Elliott,** who will leave American Ship to become president of The Greater Cleveland Growth Association. At the same time, it was announced that **John H. Melcher Jr.** will join American Ship as executive vice president.

Dr. **Kamm** previously served as president of American Ship in 1969 and was with the company from 1967 through 1969 during the formative years of the present management group. Recognized as one of the nation's foremost economists and corporate management experts, he has continued to provide the company with strong financial counsel.

Dr. **Kamm** has also been elected to the board of directors of the company.

Mr. **Melcher,** presently a partner in the Cleveland law firm of Thompson, Hine & Flory, as well as director and general counsel of American Ship, will leave his law practice to accept the executive duties with the company.

Dr. **Kamm,** a native Clevelander, was graduated summa cum laude from Baldwin Wallace College, where he received his bachelor's degree in business administration. He holds a master's degree in economics from Brown University and a Ph.D. in economics from Ohio State University. He also holds an LL.D. from Baldwin Wallace and from Erskine College. A new building to house the School of Business Administration at Baldwin Wallace is to be named The Jacob O. Kamm Hall in his honor.

Dr. **Kamm** is a widely published author and has written more than 80 articles and books on economics and finance. In addition, he wrote a column on economics for the Plain Dealer in Cleveland from 1964 to 1968.

He is a member of the board of directors of the Cleveland Quarries Company, the A.W. Fenton Company, Incorporated, the Second Federal Savings and Loan Association of Cleveland, the United Screw and Bolt Corporation, and the Nordson Corporation.

He is also a member of numerous civic and professional organizations.

Mr. **Melcher** received his bachelor's degree from Williams College in Williamston, Mass., and his law degree from the Harvard Law School. He joined Thompson, Hine & Flory following graduation from law school and was named a partner in 1966. He is trustee of the Health Hill Hospital for Convalescent Children and the Diabetes Association of Greater Cleveland, and an officer and director of several Cleveland companies.

Shipping Consultants A/S Publishes 1972-73 Edition Of "Container Ship Register"

Shipping Consultants A/S, Oslo, has published its 1972-73 edition of "Container Ship Register," which is a survey of existing container vessels, newbuildings under construction or on order, conversions on order, and ships projected or planned. Containership operators are listed with details of their services, fleets, and future plans. In addition to addresses, both of owners and operators, the Register also enumerates member companies of the various consortia. The 1972-73 issue also contains a complete survey of the container trades of the world.

In the Register are given for each ship its name, and if applicable, its previous name, flag, classification society, service speed, operator, manager, owner, and port of registry, whether motor, steam, turbine, turbo-electric, or gas turbine, type of containership, whether open or closed shelter-decker, number of decks, length of poop, bridge, and forecastle, year of build or conversion, position of bridge and machinery, number of engines, with horsepower, number of screws, tonnages, dimensions, capacities, number and size of hatches, whether fitted with stern or bow ramps, bow or stern thruster, cranes or derricks, number of containers above deck, number of containers below deck, number of refrigerated containers, type of container securings above deck, type of container securings below deck, and type of stabilizing system.

The Register will be of use to all concerned with containers, including shipping companies, shipbrokers, manufacturers of containers and container-handling equipment, freight forwarders, agents, port authorities, shipbuilders and ship repairs, marine consultants, railway companies, and others.

The Container Ship Register is compiled and published by Shipping Consultants A/S, Fridtjof Nansens Plass 6, P.O. Box 1370, Oslo 1, Norway. Price per copy is U.S. $30.

ADMIRAL HONORS ADMIRAL: Adm. **Thomas H. Moorer,** Chairman, Joint Chief of Staff, stands beside the Admiral George Dewey Memorial with Richmond Borough president **Robert T. Connor.** The monument was dedicated by Admiral **Moorer** in midday ceremonies at Manhattan's Battery Park on May 3, the 75th anniversary of the Battle of Manila. Mr. **Connor,** as a New York City councilman in 1965, introduced a bill designating the site as the Admiral George Dewey Promenade. The memorial is the result of an effort by 19 civic, veterans' and historical associations. They are: The Naval Academy Alumni Association of N.Y.; United Spanish-American War Veterans; Sons of the Revolution; Sons of the American Revolution; Naval Order of the United States; Navy League of the United States; New York State Society of the Cincinnati; U.S. Naval Institute; The Military Chaplains; Reserve Officers Association; Naval Reserve Association; The Robert L. Hague Post of the American Legion; Catholic War Veterans of N.Y.; The Seamen's Bank for Savings; Naval Historical Foundation; L and L Foundation; New York City National Shrine Associates; Philippine-American Chamber of Commerce, and the Battery Castle Clinton Monument Associates.

Bethlehem Sparrows Point Yard To Build Huge Tankers For Long-Term Charter By Gulf Oil

Gulf Oil Corporation has announced plans to charter two very large tankers to transport crude oil internationally under the U.S. flag.

The tankers, both in the 265,000-deadweight-ton class, will be built by Bethlehem Steel Corporation at its Sparrows Point, Md., shipyard. The tankers will be owned by a trust for the benefit of General American Transportation Corporation, Citicorp Leasing, Inc., and other participants to be named later. Subsidiaries of Energy Transportation Corporation will hold the bareboat charters and place the ships with Gulf under 20-year time charters.

Under provisions added to the Merchant Marine Act in 1970, the owners will apply to the U.S. Maritime Administration for construction differential subsidies on the tankers, which will have a base price of $76 million each, and the subsidiaries of Energy Transportation Corporation will seek operating differential subsidies over the time charter period.

The subsidies are based on the difference between U.S. and foreign shipbuilding and operating costs, and were provided for by Congress to encourage ship construction in the United States and an increase in the size of the U.S.-flag fleet, and to create more jobs for U.S. merchant seamen.

Gulf said the arrangement was significant because it will be the first time a major American oil company has chartered U.S.-built and manned ships of this size on a long-term basis. The company added that the subsidies are necessary to make U.S. ships competitive with those flying foreign flags.

Gulf intends to use the tankers to transport crude oil from producing countries to nations with ports large enough to handle them, including the United States, if efforts to construct superports in its waters are successful.

Australian Company Offers To Purchase U.S. Naval Shipyard

In a letter received by Boston Mayor **Kevin White,** an Australian company has expressed an interest in purchasing the Boston Naval Shipyard to construct supertankers. A billion dollar investment, with estimated employment of 20,000, is projected.

Roward PTY, Ltd. of Sydney, Australia, wants to reach a firm agreement by August 15, 1973, and begin full production of tankers and other commercial vessels within one year. The letter to the Mayor was from International Funding Associates of Monaco, which has assets projected to $5 billion. The company's president and senior counsel is **Jacob J. Gordon** of Worcester, Mass.

Mayor **White** was informed by Mr. **Gordon** that the Australian firm, whose managing director is **M.L. Edwards,** wants to establish a private shipyard in Boston, if and when the Boston Naval Shipyard is closed down.

According to Mr. **Gordon,** all paper work must be completed, and an agreement reached within four months. To expedite negotiations, the Associates are working with intermediaries in Fort Lauderdale, Fla. and San Jose, Calif.

International Funding Insurance Associates has two subsidiaries, International Monetary Exchange and International Bank of Commerce.

The project would require an investment of $1 billion, and would include employment of from 15,000 to 20,000 employees.

Pacific Inland Navig. Applies For Title XI For Tugs And Barges

Pacific Inland Navigation Co., Inc., 400 Norton Building, Seattle, Wash., has applied to the Maritime Administration, Washington, D.C., for Title XI mortage and loan insurance to build three tugs and two barges, and to convert an existing barge, at a total estimated cost of $10 million. No construction contract has been awarded as yet.

Two of the tugs will each be 8,000 horsepower, and the third 4,300 horsepower.

SAN DIEGO ASNE MEETS: The San Diego Section of the American Society of Naval Engineers held their spring meeting on April 19, 1973, at the Officers Club, Marine Corps Recruit Depot, San Diego, Calif. The subject of the meeting was "Sea Control Ship—the Ship Systems Concept and the Navy's Method of Procurement." The meeting was well attended, and there were many questions from the floor. Participants shown above at the Officers Club are, left to right: **Gordon N. Carpenter,** National Steel and Shipbuilding Company (NASSCO), chairman of the San Diego ASNE Section; **James F. Barkely,** P.R.C. Technical Applications, vice chairman; **Clarence L. French,** NASSCO, speaker; Comdr. **R.L. Thomas,** USN, secretary; **James A. Stasek,** Executive Committee, Golden Gate Committee, and Capt. **G.D. Morin,** USN, immediate past chairman.

S.S. Leviathan Museum Receives Artifacts From Todd Executive

Great ships, the really great ones, do not just die. Proof of this may be seen in the collection of more than 5,000 photos, artifacts and bits of memorabilia from that "World's Greatest Ship" Leviathan that have been gathered together by **Frank O. Braynard**, program director of the South Street Seaport Museum, and author of 10 books.

Three choice items in this collection were the recent gift of the late **John H. Baker,** and his wife, **Audrey,** via the good offices of Todd Shipyards Corporation's secretary **Edwin K. Linen.** Mr. **Baker** had been vice president of the corporation.

One is a large framed German Iron Cross, made of hundreds of brass hobnails on a red plush background. Crew members of the Leviathan, still known by her original German name of Vaterland, created the cross as the big ship lay idle at Hoboken, N.J., interned. The cross was found and saved by the late **John Baker's** father, an Army colonel in World War I.

The second artifact is a piece of the ship's teak deck rail, rounded and polished, into which is fitted an oval object, decorated with a gilded rope scroll.

The third item was a heavy brass key marked "Dog House." The Leviathan had on her sun deck a dog kennel built to resemble the wooden house for the ship's florist on the same deck.

Mr. **Braynard** is working on his second of four oversize volumes giving the Leviathan story in depth. Volume I is out and selling well. It may be obtained at the South Street Seaport Museum's bookstore at 25 Fulton Street, New York, N.Y. 10038, and will be mailed, postage paid, upon request. The price is $20. Volume II is due out in late 1974, and the two subsequent volumes should be finished by 1981.

Pittsburgh Firm To Build Hover Ferries In United States

Hovermarine Corporation, a Pittsburgh, Pa.-based company, will begin U.S. production of the HM.2 high-speed hoverferry this month. This will mark the first time that this type of craft will be manufactured in this country for commercial application, according to **William A. Zebedee,** chairman of Hovermarine.

Mr. **Zebedee** said an agreement in principle has been reached with Thompson Trawlers, Inc. of Titusville, Fla., to manufacture the HM.2 at the Thompson facility on a joint venture basis.

The HM.2—a 51-foot 60-passenger surface effect ship—rides on a cushion of air and operates at speeds up to 40 miles per hour. It is a sidewall type hoverferry similar in concept to the larger surface effect ships being developed by the United States Navy for antisubmarine warfare.

HM.2 hoverferries have been in production at Hovermarine's wholly owned subsidiary, Hovermarine Transport Ltd., in Southampton, England, since 1971. They are in use in nine different countries around the world, and have already accumulated more than 30-million passenger miles in commercial service.

An English-built HM.2 arrived in Florida May 1, to serve as a model for craft to be constructed in Titusville.

The passenger-carrying HM.2 features a fiberglass hull, marine diesel engines, and conventional water propellers. Over 20 of the craft have been sold for various commercial and special-purpose applications in England, Portugal, Greece, India, Brazil, Norway, Belgium, Singapore, and Indonesia.

In conjunction with establishment of construction facilities, Hovermarine is intensifying marketing activities for sale of the HM.2 for mass transit and other commercial ferry applications in the United States.

Hovermarine is working with the Florida Department of Transportation to establish a waterway transit demonstration program. A Federal grant is being sought.

Candidate locations for the proposed HM.2 demonstration program include Miami, Tampa, and Jacksonville. Other cities for which over-the-water HM.2 demonstrations are being considered are New Orleans, San Francisco, New York, Washington, D.C., and Pittsburgh.

B.L. Black, Hovermarine marketing vice president who is directing U.S. marketing activities, has returned from England where he has spent the past three years expanding the HM.2 market in Europe, Asia, India, and South America.

According to Mr. **Black:** "The HM.2 is a proven over-water transit vehicle being used hourly by commuters and tourists throughout the world. The craft is distinguished by its lack of noise, comfortable air cushion ride, and high reliability.

"We have recognized the vast potential of the U.S. market for HM.2 and are now entering this market on a broad and determined basis. We plan to have HM.2 craft serving the U.S. public by this time next year."

Thompson Trawlers, Inc., located on the Florida Intracoastal Waterway near Cape Kennedy, manufactures workboats and fishing trawlers made in fiberglass in sizes up to 72 feet. Thompson also produces craft for the pleasure boat market.

Rodney Thompson, president of the Florida boat producer, noted: "We are very pleased with our arrangement with Hovermarine. HM.2 production adds a new dimension to Florida industry. It will provide increased employment potential for the Titusville area."

John H. Kennedy, Hovermarine vice president, also cited the importance of the agreement: "Thompson Trawlers' assistance through this joint venture arrangement will allow us to deliver U.S.-built HM.2s in a shorter time period, and their experience in marine construction will contribute importantly to our ability to produce the craft at quality levels comparable to our present English production."

Current laws prohibit commercial operation of foreign-built vessels between U.S. ports. Accordingly, Hovermarine's English-built HM.2s are not available for sale in the United States, and the company has not previously attempted any domestic marketing of this unique transit vehicle.

In addition to the HM.2, a general purpose version of the craft will be offered for applications such as crew boats, hydrographic survey, airport rescue, and patrol duties. Larger versions of the HM.2 are under development for use in mass transit.

Mooremack Returns Show Net Increase

First quarter 1973 income of Moore and McCormack Co., Inc., before extraordinary items, was $1,708,000 or 71 cents per share on operating revenues of $14,739,000, compared with $467,000 or 20 cents per share on revenues of $10,761,000 in the same 1972 interval, according to **James R. Barker**, president and chief executive officer.

Net income for the quarter increased to $2,016,000 or 84 cents per share from $597,000 or 25 cents per share the year before.

Chas. H. Tregenza Co. Moves To Connecticut

Chas. H. Tregenza Co. Ltd., managing operators of Falmouth Steamships, Inc., has moved to new headquarters at 50 Washington Street, Norwalk, Conn. according to an announcement by **C.H. Tregenza,** president. The company has been operating in New York City for the past 40 years. Existing telephone numbers will be continued, he said.

Dravo Elects Three Vice Presidents

Walter P. Barrett

D. Robert Berg

James D. Copeland

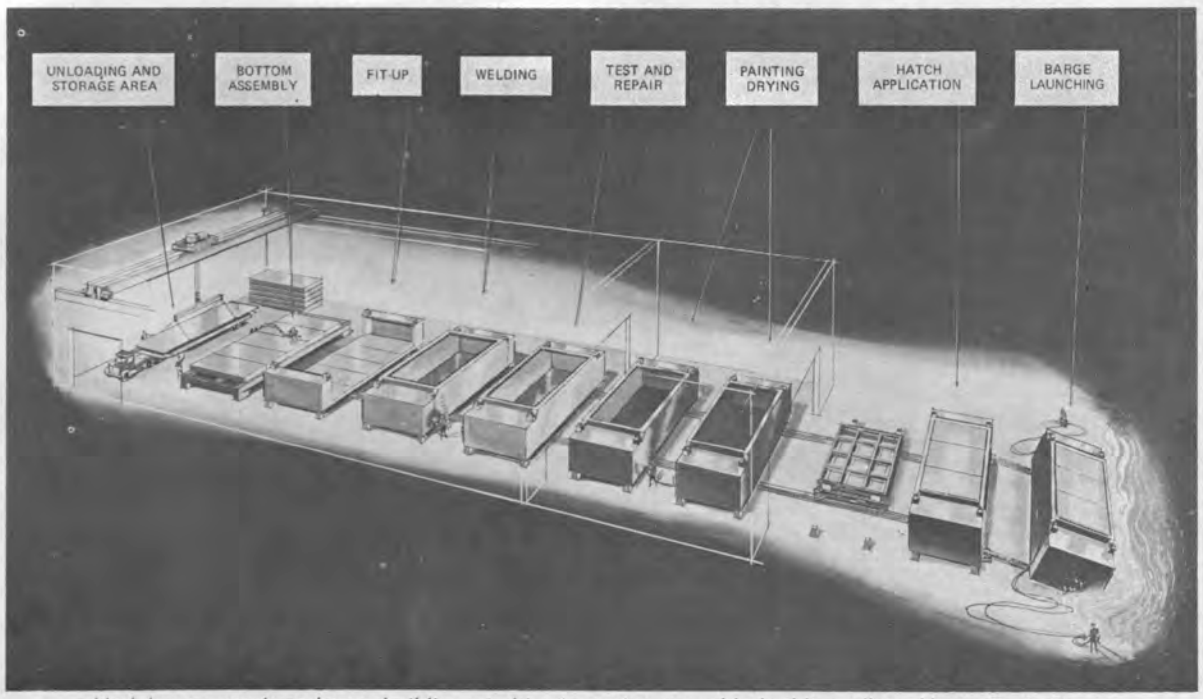
The election of three vice presidents has been announced by Dravo Corporation, diversified Pittsburgh-based company. They are **Walter P. Barrett,** vice president, purchasing and traffic; **D. Robert Berg,** vice president, international, and **James D. Copeland,** vice president, industrial relations.

Mr. **Barrett** first joined Dravo in 1935 as a sales engineer in the company's Philadelphia office. He held several sales and managerial positions for Dravo in Philadelphia, New York, and Pittsburgh, and in 1964 assumed the responsibility for purchasing and traffic activities.

Mr. **Berg** started with the corporation in 1938 in a production position. He was appointed administrative manager of the Wilmington, Del., plant in 1945, manager of the heating department in 1950, manager of the piping department in 1954, manager of new product development in 1958, and manager, international, in 1965.

Mr. **Copeland** began his career with Dravo as a grievance investigator in 1946 and was named manager of personnel research in 1951. He was given responsibility for industrial relations activities in 1962.

Union Tank Car Plant Five Miles From Water Builds And Launches A LASH Barge Each Day



Modular approach to barge building at this six-station assembly building allows Union Tank Car to launch one barge a day. The partially assembled barges are moved from station to station with the rail-mounted transfer table, shown between painting and hatch application stations at right.

Building and launching 61-foot by 30-foot by 13-foot LASH barges is a project for any shipbuilding company. It is especially so for a manufacturing company whose plant is located five miles from the nearest navigable waterway.

Officials at Union Tank Car Company, second largest railroad tank car manufacturer in the United States, realized that last year when they offered their advanced plate welding technology in a bid against established marine builders on an order for 440 LASH barges from Central Gulf Lines, New Orleans, La. Both companies are affiliates of Trans Union Corporation of Chicago, Ill.

Their huge tank car fabrication facility in densely populated East Chicago, Ind., met every requirement except launching space. But they had a solution for that, ready to put into action when they won the contract.

Union Tank Car entered the LASH barge construction business with the $17-million order.

The first LASH barges ever built in the Chicago area are now sliding into the U.S. Ship Canal at East Chicago, Indiana, at the rate of one a day, according to their builder. To date, over 40 barges have been launched, adding to the "made in U.S." status of the nation's maritime fleet.

R.D. McEvers, president of Union Tank Car, said the company won the contract in competitive bidding against other barge and shipbuilders because of advanced plate fabrication technology gained in building railroad tank cars.

Mr. **McEvers** said the 440-barge order will be fulfilled by the end of 1974.

Their solution to the "five miles from water" dilemma is to modularize each barge in nine individual sections at the main tank car production plant in East Chicago, and transport them by truck to a much smaller, specially-built assembly plant on the U.S. Ship Canal that feeds into Lake Michigan.

The assembly plant was built especially for LASH barge production. Its layout is ultra-simple, as can be seen in the accompanying illustration. The nine modules are assembled into a finished barge as they move via a special rail-mounted transfer table through six work stations, much as an automobile moves through a Detroit plant.

Finished barges splash into U.S. Ship Canal to await movement into Illinois waterway on way to New Orleans.

The initial station is the bottom assembly, where five bottom modules are laid side-by-side and welded. The second or "fit-up" stage puts the remaining side and end modules in place and tack welds them.

Welding is completed at the next station, after which the unit transfers to the test and repair slot. After technicians examine the vessel to make certain it is completely leak-free, the barge moves to the painting and drying bay.

Finished barges are moved outside, fitted with watertight hatch covers and slid into the U.S. Ship Canal at East Chicago, Ind., to await their maiden downriver towboat journey. Current production rate is one barge a day.

The 440 LASH barges to be built by Union Tank Car will implement Central Gulf Lines' plan to expand LASH shipping and bring ocean transportation into reach of more and more inland shippers, particularly those U.S. companies located in the fertile Midwest waterway market. Central Gulf pioneered the LASH system in 1969 and operates two LASH mother ships between the Gulf of Mexico and Europe, and expects to launch an additional three U.S.-flag ships in late 1974 at a cost of about $84 million. These vessels are under construction at Avondale Shipyards, Inc. in New Orleans, La. Each vessel carries 89 barges. A total of 200 are needed in the waterway system to serve each mother ship.

The LASH ship and barge concept was developed and designed by Friede & Goldman, Inc., naval architectural firm of New Orleans.

Star Shipping Streamlines Worldwide Operations Using Marine Management Systems

Marine Management Systems, Inc., has announced expansion of its recently developed global marine data system which is streamlining and speeding the worldwide cargo and vessel scheduling operations of Star Shipping, A/S, a leading transporter of wood products from North America.

The system, believed to be the only one of its kind commercially available, has been in operation since last November, and was recently expanded to link Star's Tokyo office to their Vancouver, British Columbia, San Francisco, Calif., and Bergen, Norway, offices. Marine Management Systems, Inc., headquartered at 300 Broad Street in Stamford, Conn., designs and implements computer systems exclusively for the international marine industry.

Eugene D. Story, MMS president, said the system is enabling Star to better coordinate and control its far-flung operations, with their management personnel getting information they require faster and more efficiently regardless of location.

"When a company such as Star is spread out all over the world," he said, "any effort to coordinate a large fleet of ships is bound to represent a major communications problem."

Until last fall, he pointed out, Star had been relying entirely on normal communication lines (telex). He said the old system was becoming increasingly impractical since Star was growing, and cargo tonnage estimating and vessel scheduling were becoming more complex.

The MMS system operates much like an airline reservation system, Mr. **Story** explained. A keyboard input/output device at the Star location is used to enter a cargo shipping order as it is received. A local telephone call links the device "on-line" to a common data bank.

Any of Star's offices on the network can also retrieve up-to-the-minute information concerning the status of cargo bookings for any trade or voyage. Star's use of special-type ships capable of moving cargoes efficiently in the shortest possible time is highly dependent on the accuracy and timeliness of the cargo and vessel schedule data.

Headquartered in Bergen, Norway, Star Shipping A/S operates a fleet of vessels transporting pulp, lumber and other forestry products from United States ports, and from Vancouver, British Columbia to U.K., northern European countries, and Italy, Spain, France, and Japan.

The MMS system utilizes the G.E. Network Time-Sharing System, the heart of which is General Electric's giant (Mark III) computer center located in Cleveland, Ohio. Access overseas is via the communications satellite.

Marcona Corporation In Joint Saudi Arabia Steel Project

Marcona Corporation, San Francisco, has announced conclusion of an arrangement with Petromin, a Saudi Arabian corporation, aimed at development of a steel mill project in that country.

Marcona, a company engaged in international minerals development and ocean transportation, will head a group which will include another San Francisco-based company, Gilmore Steel Corp., operator of an integrated steel plant in Portland, Ore., and Midland-Ross Corporation of Cleveland, Ohio.

Marcona Corporation is primarily owned by Cyprus Mines Corporation and Utah International, Inc.

The Marcona Group will undertake jointly with Petromin the study of technical and economic factors related to the production of steel by pelletizing, direct reduction, electric furnace and pipe mill operation. It is contemplated that iron ore concentrates will be delivered in slurry form employing the Marconaflo system.

Fifty percent of the operating company would be held by Petromin, with the balance owned by the Marcona Group.

C.W. Robinson, president of Marcona Corporation, stated that the company holds high hopes for this project which would provide an economic outlet for major quantities of available energy not currently utilized.

Hampton Roads Section Hears Paper On Sea Travel Changes —New Officers Elected

Shown above at the Mariners Museum are (left to right): **J.D. Deal Jr.,** chairman of the Hampton Roads Section; **R.D. O'Leary,** guest speaker, and **E.E. Jaeger,** papers committee.

The Hampton Roads Section of The Society of Naval Architects and Marine Engineers convened at the Mariners Museum on April 12, 1973, with approximately 230 members, wives and guests in attendance.

During the brief business portion of the meeting, chairman **J.D. Deal Jr.** announced the results of the election of officers for the year commencing September 1, 1973. Those elected were: chairman, **C.E. Peacock Jr.;** vice chairman, **R.C. Strasser;** secretary-treasurer, **C.M. Brooks,** and executive committee, **W.K. Johnson.**

Following this announcement, chairman **Deal** relinquished the gavel to chairman-elect **Peacock.** The first duty of the incoming chairman was to present a certificate of appreciation to chairman **Deal** for the fine performance rendered to the Section during his tenure of office.

Richard D. O'Leary, president of Cruise International of Norfolk, Va., presented a most interesting paper on "Changing Patterns of Ocean Transportation of People." Mr. **O'Leary** traced a brief history of passenger ships from the ordeal of the days of sail to the luxury of the Queen Mary and the United States. He described the effect of the transocean airliner on the passenger ship trade with the resultant shift from passenger traffic to the cruise trade.

The interesting discussion of the growth of the cruise trade and the development of the Hampton Roads area as one of the largest terminals for vessels plying this trade was most interesting to the ladies present. From the comments heard following the presentation, there should be quite a number of new travelers cruising the Caribbean in the not too distant future.

TWELFTH IN A SERIES FROM KOCKUMS: The steam turbine tanker Turquoise, built and engined by Kockums Mek Verkstads AB, Malmo, Sweden, was recently delivered to Compagnie Navale des Petroles of Paris. With a carrying capacity of 255,470 long tons or 259,560 metric tons, the vessel is the twelfth in the yard's current series of 20 such ships. The first of this series, also built for CNP, was delivered in January 1971. Built under special survey of Bureau Veritas, the Turquoise has an overall length of 1,117 feet, molded breadth of 170 feet, and a molded depth of 84 feet. Propulsion is by a set of cross-compound triple-reduction geared Kockum-Stal-Laval AP 32 type turbines developing 32,000 shp at 85 rpm.

ARCTEC, Inc., Announces Formation Of Canadian Affiliate

Roderick Y. Edwards Jr.

Dr. Bernard Michel

ARCTEC, Incorporated of Columbia, Md., has announced the formation of a Canadian affiliate company, ARCTEC CANADA, Limited. **Roderick Y. Edwards Jr.**, formerly vice president for research at ARCTEC, Incorporated, is the president of the new firm, with Dr. **Bernard Michel** of Laval University as vice president. Temporary offices are at 739 Des Vignes, Ste. Foy, Quebec City 10E, P.Q., Canada, and will be relocated to Montreal in the near future.

The new firm is 50 percent Canadian owned, and offers consulting services for the cold regions of the world, similar to that of ARCTEC, Incorporated. More specifically, the services include applied research and design studies for structures capable of withstanding ice forces. To support these services, ARCTEC CANADA, Limited has under construction a new Canadian laboratory, which will be used to model and measure the forces during ice-structure interactions. Two methods are now available to either laboratory to simulate the ice cover during tests—real saline ice or a synthetic material. An ARCTEC patented process is used to grow the former, and the latter material was developed by Dr. **Michel.** The choice of methods to simulate the ice cover will depend upon the failure mode of the ice during the structural tests and the need to simulate a variety of different ice fields during the test program.

Additional services provided by the firm include: development of design criteria for offshore structures in ice-covered waters; collection of ice data in the field; design and model testing of fixed structures to act as ice-control devices such as ice booms, dikes, and dams; model icebreaking tests for icebreakers and cargoships; maneuvering tests of marine vehicles in simulated ice fields; modeling tests of ice growth and movement in rivers; model tests involving pressure ridges, and general consulting services related to cold regions technology.

Mr. **Edwards** graduated from the Coast Guard Academy, and the Massachusetts Institute of Technology with a master of science degree. His previous experience includes three years as ARCTEC, Incorporated's vice president for research, and he is co-developer of the patented methods for growing model saline ice sheets in an ice-modeling laboratory. During this time, he has pioneered the development of ice-modeling techniques for ships, and has conducted numerous model tests of icebreaking ships and offshore structures in ice. His experience includes participating in the icebreaking S/S Manhattan tests, and directing icebreaking tests aboard the Coast Guard icebreakers Mackinaw and Wind class.

Dr. **Michel** is a graduate of the University of Grenoble, France, and of Laval University, Quebec. His major efforts have been in the field of ice mechanics, where he has written over 113 papers since 1957. Some of the projects with which he has been involved include the computation of ice forces on booms, laws of formation, and studies of frazil ice, laws of breakup, including design of dams and ice control structures, interaction of moving ice with piers, design of berthing structures in ice, and the development of a new model ice material.

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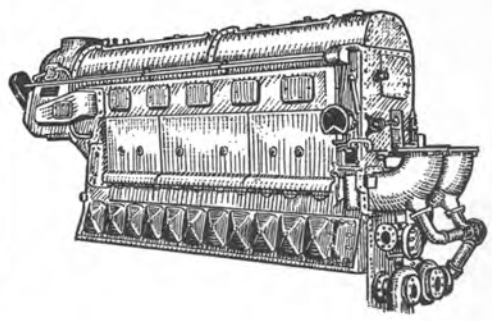

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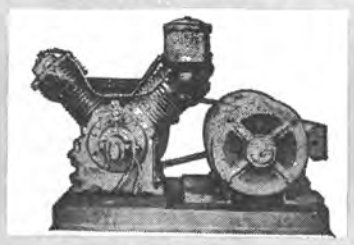

2—GARDNER-DENVER, 150 CFM, 125 PSI, Class WB, Size 7x5¾x5, with Diehl Motors, 45 HP, 230 Volts DC, 870 RPM, 167 Amperes.

3—INGERSOLL-RAND, Size 5x5x4x4, 50 CFM, 150 PSI, with G.E. Motor, 20 HP, 440/3/60.

1—INGERSOLL-RAND, Size 4x1½x3½, 10 CFM, 600 PSI, with Diehl Motor, 7½ HP, 120 Volts DC.

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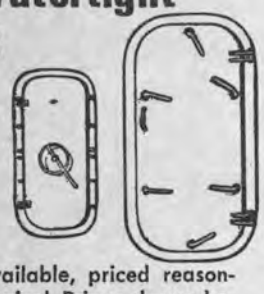

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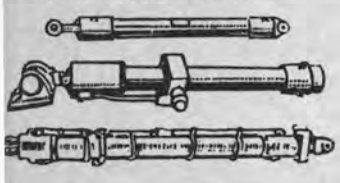

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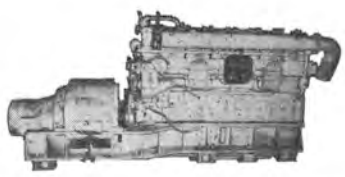
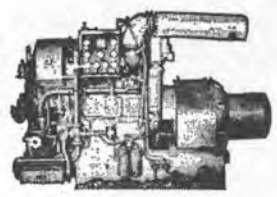
10"	26"	3.75"	58½"	single
2"	8"	1½"	20"	double
2.5"	15"	1.12"	25½"	double
3"	8"	1.37"	15½"	double
6"	8'	4"	144"	double

MARINE DIESEL GENERATORS



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

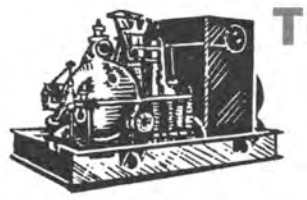
6—SUPERIOR Diesel Engines . . . Model GBD8 Marine, 150 HP, 1200 RPM, 8 cylinder, with Delco Generators, 100 KW, 120/240 DC.



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

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

TURBINE GENERATORS



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

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6—WESTINGHOUSE, 200 PSI, with Westinghouse Generators, 60 KW, 120 DC.

4—ALLIS-CHALMERS, 440 PSI, 740°, with Allis-Chalmers Generators, 300 KW, 240/240 DC.

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Derrick Boat, steel, 44' x 80' x 6' molded ⅜" plate, Clyde stiffleg Model L1272, 70' boom hook capacity 14 T @ 70' radius, three-drum Clyde hoist, 2 spuds, CAT D326 air-start with Twin Disc clutch. Elevated operators cab. GM 373 powers Quincy compressor and 5 kw Delco generator, clamshell capacity 14,500 lbs. PRICE: **$60,000**

Derrick Boat ("Montgomery"), steel, 99'6" x 52' x 6' molded, 5/16 plate, stiff leg 85' boom, Hook capacity 20 T @ 75' radius, 2 drum hoist, separate boom hoist, all diesel electric with one CAT D 398 500 kw CAT genset, 2 spuds and 5 kw Onan aux. genset. Elevated operators cab. Clamshell capacity 20,000 lbs. Fuel oil capacity 25,000 gals. Some spare parts available. PRICE: **$250,000**

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Manitowoc 4500 diesel 5½ yd. shovel, very reasonable.
American diesel 40 ton gantry crane (E) $16,500.
Dredges, diesel, 20", 22", 24". Locomotives.
Manitowoc 4000 barge crane, 125-150 ton, 90' bm.
Clyde-20 crane, 50 ton on barge, diesel (So.)
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C. Pipe Fittings
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Submit letters for Bid List consideration in category interested to:

MANAGER, SURPLUS SALES, 1080-01
P.O. Box 149
Pascagoula, MS 39567

Sealed Proposals for Barging Sludge to Sea

Notice is hereby given that sealed proposals for furnishing, maintaining and operating one or more barges and towing service for the transportation of sewage sludge from a private dock on Arthur Kill in the City of Elizabeth, N.J. to a point at sea for the following periods:

PROPOSAL "A"—For a one-year period
PROPOSAL "B"—For a two-year period
PROPOSAL "C"—For a three-year period

will be received by the Joint Meeting for certain municipalities in Essex and Union Counties, New Jersey.

Sealed proposals will be received in the Conference Room of the Maplewood Municipal Building, Valley Street, Maplewood, N.J. on Thursday, June 21, 1973 at 4 p.m. Eastern Daylight Savings Time, at which time they will be publicly opened and read.

Information concerning this work, specifications and proposal forms may be obtained from the Office of the Secretary of the Joint Meeting, 105 Mill Road, Irvington, N.J.

The Joint Meeting reserves the right to reject any or all bids or to waive any informalities therein.

By Order of the Joint Meeting,
EDWARD P. DECHER, Secretary
FRANK H. LEHR, Chairman

SHIPS FOR SALE

5 CIMAVI TYPE VESSELS
for
NON TRANSPORTATION USE

Dimensions: LOA 338' 8" — Beam 50' — Depth 29' — Draft 23' 5"
Tonnage: Gross 3805 — Net 2123 — DWT 6090 — Displ 8370
Main Propulsion: Single Screw, 1700 HP Diesel
Auxiliary Generators: 250 KW, 230V D.C. Diesel
Complete With All Accessories. Saw Very Little Service Before Government Layup. Extremely Good Condition.
Ideal as Self Propelled Drill Ship, Crane Ship, or as Stationary Supply or Quarter Ship.
5 Available — Gulf Location

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SPECIALIST PRODUCT BARGE FOR SALE
1050 tons on 11 feet

USCG Inspected, Gas free, tanks cleaned and ready for use. 153.4' LOA 28.4' Breadth, Blt 1957. 8 Cylind. cargo tanks each 31'x10' 18000 Gal. capacity, 4" cargo line, 400gpm Worthington cargo pump. Crew Quarters incl. Galley and shower.

Barge in very good condition but surplus to our requirements. Can be inspected at Curtis Bay, Md.

We Will Consider Any Reasonable Offer

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COASTAL DIESEL TANKER

243' x 40' x 14'. Diesel Engine.
800 H.P. Fairbanks-Morse.
1,233 Gross Ton—15,000 Bbl. Cap.

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WEYERHAUSER No. 1	195', 8800 Bbl.	$35,000
WEYERHAUSER No. 2	195', 8800 Bbl.	45,000
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Certificated for Grade E. Inspection Norfolk, Va.

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Four each, 33 F 12 Engines New 1948, out of service 1960. Good running at that time, inside storage since. On steel skids ready to ship.

Serial Numbers 903094-905498-909401-909389 $10,000.00 each or best offer. Also New Piston Assy. for above at $750.00 each.

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THE FOLLOWING EQUIPMENT

FLOATING AGGREGATE PROCESSING PLANT

Steel 160' x 46' x 8'6" molded 5/16" plate, Diesel electric. 2 Cat D353 engines with D333 aux. genset with 30 kw CAT generator. 2 spuds. Totally enclosed machinery spaces. Hot air heat with Clever Brooks oil-fired steam boiler. Operating Equipment: 2 seco twin deck Type F, Model 2616 vibrating screen; 1 H-R triple deck, Type E-11 Eliptey vibrating screen; 1 Eagle special double screw feeder; 1 Symons 3 ft. Standard Cone Crusher; 1 Eagle 44" x 32' log washer; 1 Eagle 40' 3 cell Autospec sand classifier; 1 Floway Type 14HKH service water pump; 1 ASH Model D65 10" x 8" rubberlined sand pump; 1 Clever-Brooks Model CBH 100-40 steam boiler. Some spare parts available. This machine has a designed capacity of 400 tons per hour. (300 sand and 100 gravel). 23,000 gal. fuel oil capacity. Operating freeboard 3'6" (5' draft).
PRICE: **$700,000**

DERRICK BOAT

Derrick Boat ("Montgomery"), steel, 99'6" x 52' x 6' molded, 5/16 plate, stiff leg 85' boom, Hook capacity 20 T @ 75' radius, 2 drum hoist, separate book hoist, all diesel electric with one CAT D398 500 kw CAT genset, 2 spuds and 5 kw Onan aux. genset. Elevated operators cab. Clamshell capacity 20,000 lbs. Fuel oil capacity 25,000 gals. Some spare parts available. PRICE: **$250,000**

DREDGE

#8 Dredge, length 155', 0" molded, Breadth 44' 0" molded, depth 8' 0" molded @ side; two boilers, vertical firetube, 60" dia. x 20'6" length; two main engines, cross compound, 9" x 18"; Digging ladder buckets (78) 6⅔ cu. ft.; elevating buckets (52); 4⅞ cu. ft. gravel conveyor; one boom hoist engine, 8½ x 10; four spud hoist engines, 8½ x 10; engines; one 25 kw generator; one 5 kw generator; one main classifying screen, one gravel screen; 110 manganese inboard conveying buckets, pins and bushings. Converted to oil firing 6/71: Oil Tank, 2 #SS-2G Leahy Oil Burners, Air Compressor 255S, 2 cyl. Diesel Engine Serial #350AC1. PRICE: **$75,000**

FOR FURTHER INFORMATION PLEASE WRITE TO:

Robert L. Burtnett
Dravo Corporation
4800 Grand Avenue
Pittsburgh, Pennsylvania 15225
Phone: 412 771-1200 Extension 644

Capt. Don Hall
Potomac Sand and Gravel Company
3020 K Street, N.W.
Washington, D.C. 20007
Phone 202 488-7540

Dravo

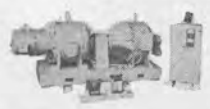
M.G. SETS

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

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

$89.50 EACH

UNUSED—10 KW—120/1/60 M.G. SET



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

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

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

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

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

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

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(MEET PANAMA REGULATIONS)

With extended legs for welding to deck. IMMEDIATE DELIVERY FROM STOCK.

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

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94 KVA—75 KW CAT. DIESEL SET
125/216/236/440/3/60
1800 R.P.M.

Caterpillar turbo-charged D-330 engine—4 cyl. radiator cooled. GENERATOR: 10 wire—low connection: 125/216 volts 250 amps 230 volts 236 amps; high connection: 460 volts 116 amps. Fully alarmed—electric starting — complete with free-standing switchgear. Test run only 75 hours. Static exciter.

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ON GULF COAST OF FLORIDA

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UNUSED
30,000 CFM
AXIAL FANS

Made by Joy Manufacturing Co.—A30A4W6. MOTOR: 25/14 HP—440/3/60—36-20.4 amps—1200/1900 RPM.

OTHER AVAILABLE AXIAL FLOW FANS

115 VOLTS DC

4000 CFM/5000 CFM/6000 CFM/10,000 CFM/12,000 CFM

230 VOLTS DC

Unused 2000 CFM 20AF —mfg. by Joy—0.75 HP motor—3450 RPM—3.4 amps—0.5" static—15" ID—17" flange

ALSO
8000 CFM/10,000 CFM/35,000 CFM

440 VOLTS AC

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T2-SE-A1 T2 Tanker Baltimore, Md.

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T2-SE-A2 Mission Tanker Baltimore, Md.
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6-Dog right and left hand hinged steel doors—with frames. Built and tested to A.B.S. specifications.

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26"x60"	300 lbs.	$269.50
26"x66"	320 lbs.	$297.50
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EACH DOOR

IMMEDIATE DELIVERY

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Star Iron & Steel Co., 326 Alexander Ave., Tacoma, Wash. 98421
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Galbraith-Pilot Marine Corp., 600 Fourth Ave., Brooklyn, N.Y. 11215
Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
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ASEA Marine, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y., 10523
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De Laval Turbine Inc., Engine & Compressor Div., 550 85th Ave., Oakland, Calif. 94621
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Oceanic Electrical Mfg. Co., Inc., 159 Perry Street, N.Y. 10014
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Marine Design Associates, P.O. Box 2674, Palm Beach, Florida
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Robert Moore Corp., 350 Main St., Port Washington, N.Y. 11050
Nickum & Spaulding Associates, Inc., 71 Columbia St., Seattle, Wash. 98104
Ocean-Oil International Engrg. Corp., P.O. Box 6173, New Orleans, La. 70114
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida 33156
S.L. Petchul, Inc., 8-D So. New River Drive East, Ft. Lauderdale, Fla. 33301
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M. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013 and 657 Mission St., San Francisco, Calif.
George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007
T. W. Spaetgens, 156 West 8th Ave., Vancouver 10, Canada
R. A. Stearn, Inc., 100 Iowa St., Sturgeon Bay, Wisc. 54235
Richard R. Taubler, 44 Court St., Brooklyn, N.Y. 11201
H. M. Tiedemann & Co., Inc., 74 Trinity Pl., New York, N.Y. 10006
Whitman, Requardt & Associates, 1304 St. Paul St., Baltimore, Md. 21202
Yankee Shipwrights, P.O. Box 35251, Minneapolis, Minn. 55435
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American Hydromath Co., 55 Brixton Rd., Garden City, N.Y. 11530
Collins Radio Co., M/S 407-321, Dallas, Texas 75207
Edo Western Corporation, 2645 South 2nd West, Salt Lake City, Utah 84115
ELCO Corp./Safecraft Division, Maryland Road & Computer Ave., Willow Grove, Pa. 19090
Electro-Nav, Inc., 501 Fifth Ave., New York, N.Y. 10017
F&M Systems Co., P.O. Box 20778, 2525 Walnut Hill Lane, Dallas, Texas 75220
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
ITT Decca Marine, Inc., 386 Park Ave. South, New York, N.Y. 10016
ITT Mackay Marine, 2912 Wake Forest Road, Raleigh, N.C. 27611
Lorain Electronics Corp., 2307 Leavitt Road, Lorain, Ohio 44052
Magnavox Navigation Systems, 2829 Maricopa St., Torrance, Cal. 90503
National Marine Service, 1750 So. Brentwood Blvd., St. Louis, Mo.
Radiomarine Corp., 20 Bridge Avenue, Red Bank, N.J. 07701
Raytheon Co. Marine Products, 676 Island Pond Rd., Manchester, N.H. 03103
Raytheon Co., Submarine Signal Div., P.O. Box 360, Portsmouth, R.I. 02871
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
Standard Communications Corp., 639 N. Marine Ave., Wilmington, Calif. 90744
Teledyne Hastings Raydist, P.O. Box 1275, Hampton, Va. 23361
Tracor, Inc., 6500 Tracor Lane, Austin, Texas 78721
The Waterways Co., 3512 Metairie Hts. Rd., New Orleans, La. 70002

OILS—Marine—Additives
ESSO International, Inc., 1251 Avenue of the Americas, N.Y. 10020
Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017

PAINT—Marine—Protective Coatings
Ameron Corrosion Control Div., Brea, Calif. 92621
Carboline Co., 328 Hanley Industrial Court, St. Louis, Mo. 63144
Devoe & Raynolds Co., Inc., Subsidiary Celanese Coatings Co., 414 Wilson Ave., Newark, N.J. 07105
International Paint Co., 21 West St., New York, N.Y. 10006
Patterson-Sargent, P.O. Box 494, New Brunswick, N. J.
Porter Paint Company, 400 South 13th Street, Louisville, Ky. 40203
Transocean Marine Paint Association, P.O. Box 456, Delftseplain 37, Rotterdam, Holland

PETROLEUM SUPPLIES
Independent Petroleum Supply Co., 1345 Ave. of Americas, New York, N.Y. 10019
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017
The West Indies Oil Co., Ltd., St. John's, Antigua, W. I.

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

PLASTICS—Marine Applications
Ameron Corrosion Control Div., Brea, Calif. 92621
Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231
Philadelphia Resins Co., 20 Commerce Dr., Montgomeryville, Pa. 18936

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

PROPELLERS: NEW AND RECONDITIONED
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Coolidge Propellers, 1601 Fairview Ave. East, Seattle, Wash. 98102
Escher Wyss Gmbh, P.O. Box 798, Ravensburg, Germany
Federal Propellers, 1501 Buchanan Ave. S.W., Grand Rapids, Mich. 49502
Ferguson Propeller, 1132 Clinton St., Hoboken, N.J. 07030

PUMPS
Colt Industries, Inc., Fairbanks Morse Pump & Electric Div., 3601 Kansas Ave., Kansas City, Kansas 66110
Goulds Pumps, Seneca Falls, N.Y. 13148
Houttuin-Pompen N. V. Sophialaan 4, Utrecht, Holland
Jacuzzi Bros., Inc., 11511 New Benton Highway, Little Rock, Arkansas 72204

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

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

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

RUDDER ANGLE INDICATORS
Galbraith-Pilot Marine Corp., 600 Fourth Ave., Brooklyn, N.Y. 11215
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

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

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

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

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

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

SHIPBREAKING—Salvage
The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
National Metal & Steel Corp., 1251 New Dock St., Terminal Island, Cal. 90731
Zidell Explorations, Inc., 3121 S. W. Moody St., Portland, Ore. 97201

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

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

SHIPBUILDING—Repairs, Maintenance, Drydocking
Astilleros Espanoles, S.A. Zurbano, 70, Madrid 10, Spain
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Barbour Boat Works, Inc., P.O. Box 1069, New Bern, N.C.
Beliard, Crighton & Cie, P.O. Box 2074, Route des Docks, 59, Dunkirk, France
Beliard Murdoch S. A., Kattendijkdok Westkaai 21, Antwerp, Belgium
Bertram Marine, Division of Whittaker, 3663 N.W. 21 Street, Miami, Fla. 33142.
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
Blount Marine Corp., P.O. Box 360, Warren, Rhode Island 02885
Bludworth Shipyard, Inc., Box 5426, Cypress St., Brady Island, Houston, Texas 77012
Carrington Slipways Pty. Ltd., Tomago, N.S.W. 2322, Australia
Conrad Industries, P.O. Box 790, Morgan City, La. 70380
Curacao Drydock, Inc., P.O. Box 153, Willemstad, Curacao, N.A.
Devcon Corporation, Endicott Street, Danvers, Mass. 01923
Dravo Corporation, Neville Island, Pittsburgh 25, Pa.
Empressa Nacional Bazan, 65 Castellana, Madrid 1, Spain
Equipment Systems, Inc., A Microdot Co., P.O. Box 95, Port Deposit, Md. 21904
Equitable Equipment Co., Inc., P.O. Box 8001, New Orleans, La. 70122
General Dynamics, Electric Boat Division, 99M Eastern Point Road, Groton, Conn. 06340
General Dynamics, Quincy Division, Quincy, Mass. 02169
Halter Marine Services, Inc., Route 6, Box 287H, New Orleans, La. 70126
Havre de Grace, Havre de Grace, Md.
Hillman Barge & Construction Co., Grant Bldg., Pittsburgh 19, Pa.
Hongkong & Whampoa Dock Co. Ltd., Kowloon Docks, Hong Kong
Ishikawajima-Harima Heavy Industries Co., Ltd., 15 William St., New York, N.Y. 10005
Jacksonville Shipyards, 644 E. Bay St., Jacksonville, Fla. 32203
Jeffboat, Inc., Jeffersonville, Ind. 47130
Kawasaki Dockyard Co., 8 Kaigon-dori, Ikuta-ku, Kobe, Japan
Kelso Marine, Inc., P.O. Box 268, Galveston, Texas 77550
Keppel Shipyard (Private) Ltd., P.O. Box 2169, Singapore
Kockums Malmo, Fack, Malmo, Sweden
Litton Industries, 9920 W. Jefferson Blvd., Culver City, Calif. 90230
Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
Marathon Manufacturing Company
Marathon LeTourneau Offshore Company, 1700 Marathon Building, 600 Jefferson, Houston, Texas 77002
Marathon LeTourneau Gulf Marine Division, P.O. Box 3189, Brownsville, Texas 78520
Marathon LeTourneau Marine Division, LeTourneau Rural Station, Vicksburg, Mississippi 39180
Marathon LeTourneau Offshore Pte., Ltd., P.O. Box 83, Taman Jurong Post Office, Singapore 22, Singapore
Marathon Shipbuilding Company, P.O. Box 870, Vicksburg, Miss. 39180
Marathon Shipbuilding Company (U.K.) Ltd., Clydebank Bunbartonshire, G81-1YB, Scotland
Maryland Shipbuilding & Drydock, P.O. Box 537, Baltimore, Md. 21203
Matton Shipyard Co., Inc., P.O. Box 428, Cohoes, New York 12047
Mitsui Shipbuilding & Engrg. Co. Ltd., 6-4, Tsukiji 5-chome, Chuo-ku, Tokyo, Japan
Mitsubishi Heavy Industries, Ltd., 5-1 Marunouchi 2-chome, Chiyoda-ku, Tokyo, Japan
Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655
National Steel & Shipbuilding Corp., San Diego, Calif. 92112
Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
Newport Ship Yard, Inc., 379 Thames St., Newport, R.I. 02840.
Northwest Marine Iron Works., P.O. Box 3109, Swan Island, Portland, Oregon 97208
Nuclear Service & Construction Co., Inc., 9296 Warwick Blvd., Newport News, Va. 23607
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Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156
Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862
St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111
Sasebo Heavy Industries Co., Ltd., New Ohtemachi Bldg., Chiyoda-ku, Tokyo, Japan
Savannah Machine & Shipyard Co., P.O. Box 787, Savannah, Ga. 31402
Sembawang Shipyard (Pte) Ltd., P.O. Box 3, Sembawang, P.O. Singapore, 27
Slocum Iron Works, Inc., P.O. Box 2506, 1752 Telegraph Road, Mobile, Ala. 36601
Sumitomo Shipbuilding & Machy. Co., Ltd. 2-1 Ohtemachi 2-chome, Chiyoda-ku, Tokyo, Japan
Swedish Shipbuilding Association, Fack S-402 70, Gothenburg 8, Sweden
Teledyne Sewart Seacraft, P.O. Box 108, Berwick, La. 70342
Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
Tracor/Mas, Inc., P.O. Box 13107, Port Everglades, Fla. 33316
Vancouver Shipyards Co., Ltd., 50 Pemberton Ave., North Vancouver, B. C., Canada

SHIP MODEL BASIN
Hydronautics, Incorporated, Laurel, Maryland 20810

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Weather Routing, Inc., 90 Broad Street, New York, N.Y. 10004

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Wm. E. Hough Co., 1125 P N.W. 45th St.. Seattle, Wash. 98107

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Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002
Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202
Henry Gillen's Sons Lighterage, West End Ave., Oyster Bay, N.Y. 11771
James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004
Interstate Oil Transport Co., 214 Transportation Center, Six Penn Center Plaza, Philadelphia, Pa. 19103
McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
McDonough Marine Service, P.O. Box 26206, New Orleans, La.
Moran Towing & Transportation Co., Inc., One World Trade Center, Suite 5335, New York, N.Y. 10048
L. Smit & Co., 11 Broadway, New York, N.Y. 10004
Suderman & Young Towing Co., 329 World Trade Center, Houston, Texas 77002
Turecamo Coastal and Harbor Towing Corp., 1752 Shore Parkway, Brooklyn, N.Y. 11214

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Dover Corp. / Norris Division, P.O. Box 1739, Tulsa, Okla. 74101.
Hubeva Marine Plastics-Lining, 435 Hamilton Ave., Brooklyn, N.Y. 11231
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Mechanical Marine Co., 900 Fairmount Ave., Elizabeth, N.J. 07027

WIRE ROPE
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
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