MARITIME
REPORTER
AND
ENGINEERING NEWS

James J. Henry | John Vasta | Rear Adm. E. J. Fahy | John Rubel

SNAME 1969 Spring Meeting Held In Los Angeles, Calif.

(SEE PAGE 6)

JULY 1, 1969

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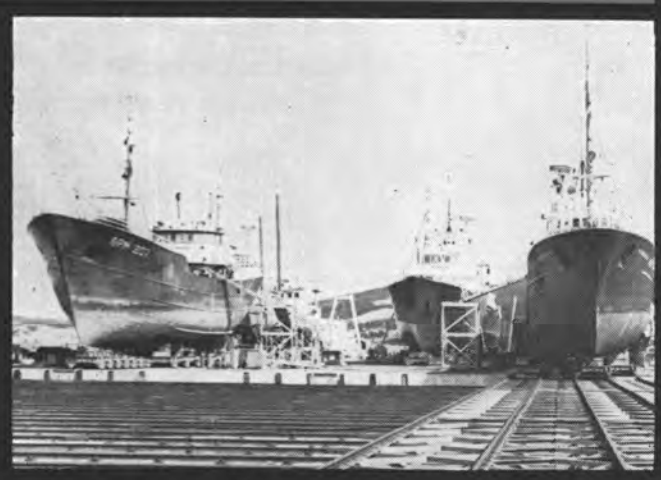

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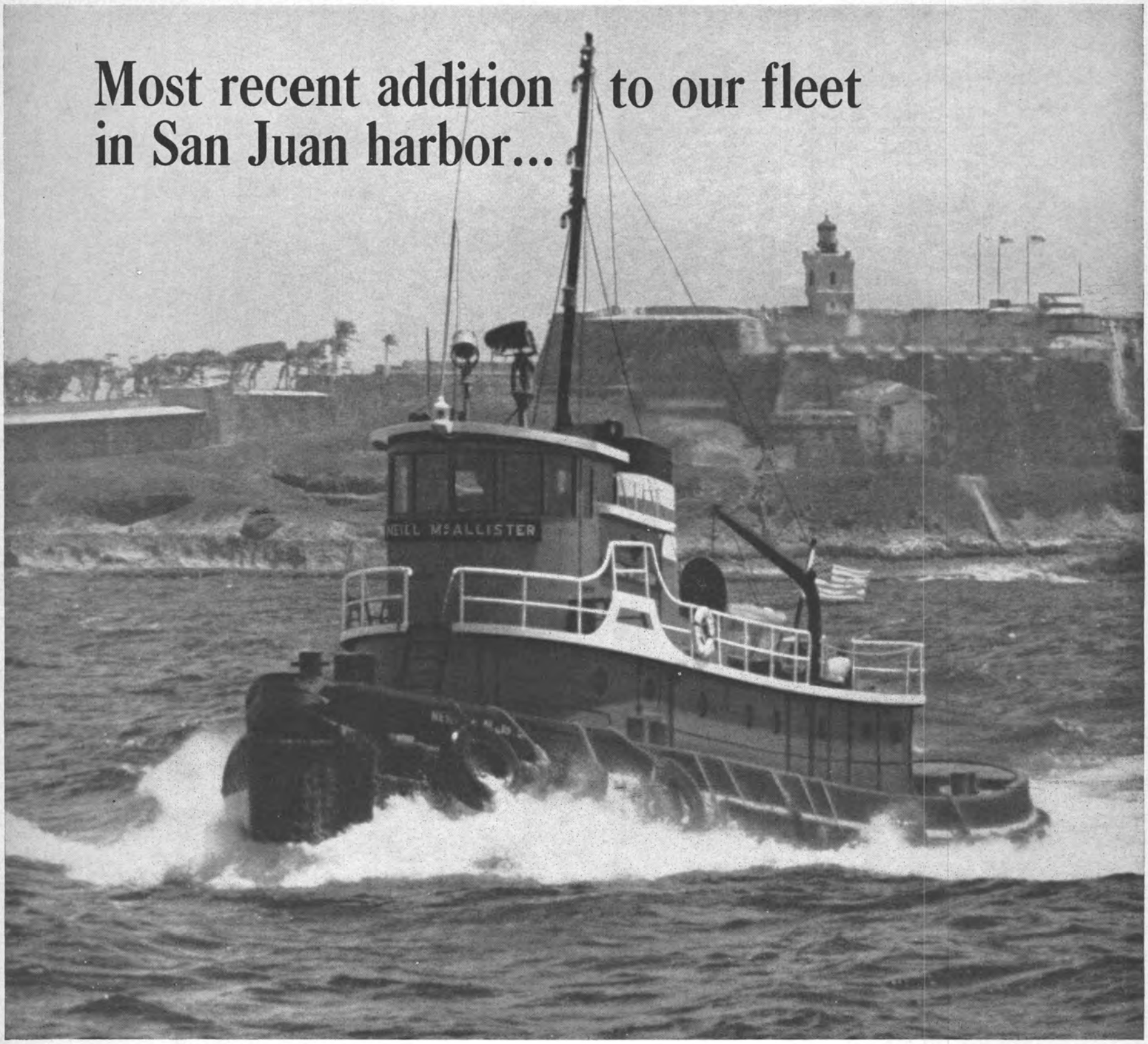

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McAllister is on the move in the Caribbean

Containership Bids Requested By Matson

Matson Navigation Company has requested construction bids for two containerships for its non-subsidized trans-Pacific service. Bids for the 23-knot ships are scheduled to be opened July 11. Each ship will be capable of carrying more than a thousand 24-foot containers.

In September, 1967, Matson applied to the Maritime Subsidy Board for construction subsidy for the two ships. However, the Board has not taken any action on the request so Matson has decided to proceed on its own.

Bermuda Firm Orders Three Containerships From Two Dutch Yards

The firm H. C. Isbrandtsen, Bermuda, has ordered three full containerships for 400 containers each from the Dutch shipyards N.V. Scheepswerf "De Hoop", Lobith, and Van der Giessen-de Noord N.V., Krimpen aan den IJssel. Two of these vessels will be built by Van der Giessen-de Noord and one by Scheepswerf "De Hoop."

The ships will have a deadweight of 8,000 tons and they will have M.A.N. engines of 17,500 hp, giving the ships a speed of 22 knots.

They will be commissioned in the first half of 1971.

The total value of this order amounts to about $19.2-million.

Mangone To Build Offshore Supply Boat

Stewart & Stevenson Services, Inc., Houston, Texas, has ordered an offshore, oil-well supply boat from the Mangone Shipbuilding Co., also of Houston. The vessel, to be equipped with 600-total-bhp diesels, will have a length of 156 feet 6 inches, a beam of 36 feet, and a depth of 15 feet. Designated Hull No. 94, it will be of 300 gt and 600 dwt.

Goudy & Stevens Is Low Bidder For Seiner

With a price of $405,480, Goudy & Stevens, East Boothbay, Maine, is apparent low bidder for a 70-foot 1½-inch steel seiner to be constructed for Sardine Carriers, Inc. Bids for the vessel, which will be financed by the Government up to as much as 50 percent, were received recently by the Maritime Administration and are based on a delivery time of 330 calendar days.

MARITIME REPORTER AND ENGINEERING NEWS

No. 13 Volume 31

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

MUrray Hill 9-3266, 3267, 3268, 3269

ESTABLISHED 1939

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

Controlled Circulation postage paid at Hoboken, New Jersey 07030

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The Society Of Naval Architects And Marine Engineers

1969 Spring Meeting—Vista Pacific

The stimulating 1969 National Spring Meeting of The Society of Naval Architects and Marine Engineers was held on May 21-24 in Beverly Hills, Calif. at the luxurious Beverly Hilton Hotel. The theme of the meeting was Vista Pacific, and it was designed to show that the West Coast has come of age as a marine center. A total of 294 registered for the meeting.

Capt. **Henry P. Rumble,** USN (ret.), outgoing chairman of the Los Angeles Metropolitan Section, officially opened the Spring Meeting on Wednesday, May 21. **Nathan Friedland,** chairman of the steering committee that planned the meeting, then welcomed the attendees and introduced SNAME President **James J. Henry.**

Highlights from Mr. **Henry's** report are as follows: the financial condition of the Society is excellent with assets over 50 percent greater than at the time of the last spring meeting on the West Coast in Seattle in 1965; the scholarship program is proceeding normally with a Society investment of $300,000 plus $25,000 per year; as a result of a special review, an additional $25,000 per year will be allocated to the activities of the Technical and Research Program; Capt. **Marvin H. Gluntz,** secretary of the Society for over ten years, is retiring for reasons of health; attendance at section meetings has been one of Mr. **Henry's** most enjoyable functions as president; profits are poor in the shipbuilding industry and the great problem is lack of progress in the merchant marine, and the United States is ahead of the rest of the world in ship advances as exemplified in such areas as containerships, LASH, and roll-on/roll-off cargo.

ON THE COVER

John Vasta being awarded the Distinguished Civilian Service Award by Rear Adm. **Edward J. Fahy,** USN, commander, Naval Ship Systems Command, at the National Spring Meeting of The Society of Naval Architects and Marine Engineers. This award was presented by Admiral **Fahy** in behalf of the secretary of the Navy and is the highest award given to a civilian by the secretary. It was bestowed upon Mr. **Vasta** for dedicated and distinguished service to the Navy in the fields of submarine structural design and associated research and development programs. These services were performed by Mr. **Vasta** in his capacity as head, Structural Branch, Naval Ship Engineering Center. He is presently consultant on the staff of **C. R. Schaeffner,** vice-president and director of engineering, Litton Systems Advanced Marine Technology Division. Witnessing the awarding of the certificate are: **James J. Henry** (left), Society president and **John Rubel,** senior vice-president, Litton Industries.

Technical Sessions

On Wednesday and Thursday, May 21 and 22, ten papers were presented at the technical sessions dealing with surface, subsurface, and above surface aspects of marine activities.

The papers and their authors, the presiding and assistant presiding officers, and the written discussers were:

Paper No. 1. "The Society of Naval Architects and Marine Engineers and the Conquest of Innerspace" by **E. M. MacCutcheon,** ESSA. Presiding—**Hollinshead de Luce.** Assisting—Capt. **Henry P. Rumble,** USN (ret.). Discussers—Rear Adm. **J. B. Oren,** USCG (ret.), Dr. **H. E. Sheets, Arthur Lubinski, A. C. Vine,** Rear Adm. **E. H. Thiele,** USCG (ret.), **B. K. Duffy, Nathan Friedland,** Rear Adm. **C. P. Murphy,** USCG, and **Blakely Smith.**

SYNOPSIS — The increasing worldwide emphasis on the exploitation of the world oceans has revealed the need to invoke the disciplines of naval architecture and marine engineering and the technologies of ship designing, shipbuilding and ship operating. SNAME recognizes this need and intends to play an important role in solving the many challenges which this exploitation will generate.

Paper No. 2. "A View of the Present and Future Hydrofoil Industry" by **William H. G. FitzGerald,** Supramar Ltd., Switzerland. Presiding—**John V. Banks.** Assisting—**John E. M. Enroth,** who also presented the paper for absent author. Discussers—**Gordon Rosekilly, Frank Lee Jr., Albert M. Midboe** and **James A. Higgins.**

SYNOPSIS — While hydrofoil transportation has progressed steadily in other parts of the world, progress has been slow in the United States due to the lack of financial support from the Federal Government and the shipbuilding industry for hydrofoil development. Obsolete provisions of the Shipping Act of 1920 have further restricted usage of foreign built hulls for domestic marine transportation.

Paper No. 3. "Weight Considerations for Deep Submersibles" by **E. H. Nickell,** Lockheed Missiles and Space Company. Presiding—**Hugh C. Downer.** Assisting—**John R. Graham.** Discussers—Capt. **E. S. Arentzen,** USN (ret.), **John J. Nachtsheim** and **John Vasta.**

SYNOPSIS—The results of a simplified weight study are presented. The analysis examines the various parameters affecting the total boat size and weight of contemporary deep submersibles. It is shown quite definitely that the greatest potential for further reductions in boat weight lies in the redesign of on-board equipment, specifically for deep submersible operations.

Paper No. 4. "The Design and Certification of Submersibles" by **Charles G. Kosonen.** Presiding—Rear Adm. **James M. Farrin,** USN (ret.). Assisting—**Reuven Leopold.** Discussers—**John A. Pritzlaff, Mathew J. Letich, Harvey J. Smith Jr.,** Comdr. **Charles B. Glass,** USCG, **Raymond A. Peabody, Harry E. Peterson Jr., W. O. Rainnie,** Capt. **R. J. Dzikowski,** USN, and **J. H. Purcell.**

SYNOPSIS—The evolution of certification requirements for submersibles from today's guidelines into tomorrow's rules and regulations is highlighted. Attention is given to assessing the need for a distress buoy and underwater escape capabilities in submersibles. The surface stability requirements for naval surface ships is applied to a representative undersea commercial vehicle and the need for industry to develop meaningful design standards for submersibles is stressed.

Paper No. 5. "Design of a Dynamically Positioned Support Platform for a Tethered, Unmanned Submersible Vehicle" by **Donald Hall** and **D. A. Kunz,** Ocean Design Engineering Corp. and Naval Undersea Warfare Center, respectively. Presiding—**Philip Finkelstein.** Assisting — **Klemme M. Jones.** Discussers—**John R. Graham** and **Rene M. Delaunay.**

SYNOPSIS — As man enters greater depths of the ocean with remotely controlled vehicles, the ability to accurately position the surface support craft becomes increasingly more vital. The paper discusses the conversion of a standard 110-foot lighter into an economical, well-equipped and versatile platform. The resulting parameters and configuration are described.

Paper No. 6. "Anomalous Behavior of Merchant Ship Steering Systems" by **Robert Taggart,** Robert Taggart, Inc. Presiding — Capt. **Henry A. Pearce Jr.,** USCG. Assisting—**S. J. Cina.** Discussers—Dr. **Karl E. Schoenherr, Louis W. Nelson** and **Irving W. Smith.**

SYNOPSIS—Observations and measurements of the interrelationship between steering system actuation and ship motion response in roll and yaw are evaluated in terms of hydrodynamic characteristics, steering machinery performance,

(Continued on page 8)

J. J. Henry, SNAME president, reports on Society activities during business meeting.

Rear Adm. **J. J. Fee,** USN (ret.), described the conversion of the Queen Mary.

Rear Adm. **E. J. Fahy,** USN, commander, NSSC, spoke at the Thursday luncheon.

Rear Adm. **L. V. Honsinger,** USN (ret.), at left, presents Certificates of Appreciation to Capt. **H. P. Rumble,** USN (ret.), on behalf of the Society's council.

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Presenting paper No. 1 on "The Society of Naval Architects and Marine Engineers and the Conquest of Innerspace" were, left to right: **Hollinshead de Luce; E. M. MacCutcheon,** U.S. Dept. of Commerce, author, and **H. P. Rumble,** Rand Corp.

Presiding on paper No. 2, "A View of the Present and Future Hydrofoil Industry," was **John V. Banks,** (left) National Steel & Shipbuilding Co., with **J. E. M. Enroth,** who read the paper for absent author **W. H. G. FitzGerald,** Supramar Ltd.

Paper No. 3, "Weight Considerations for Deep Submersibles," was presented by: (left to right) **Hugh C. Downer,** Marcona Corp.; **Eugene H. Nickell,** Lockheed Missiles and Space Company, author, and **John R. Graham,** Global Marine Exploration.

Spring Meeting—

(Continued from page 6)

and automatic steering control response. A potentially dangerous situation which can arise on any high-speed containership is revealed and the possibilities of corrective action are discussed.

Paper No. 7. "Vertical Ship Motions and Deckwetness" by **M. F. van Sluijs,** Netherlands Ship Model Basin, The Netherlands. Presiding—Capt. **Duane J. Gerry,** USN. Assisting—Comdr. **Robert A. Rourke,** USN (ret.). Discussers—Dr. **Odo Krappinger,** Prof. Dr. **J. Fukuda,** Prof. **G. Aertssen,** Prof. **V. Ferdinande,** Prof. **Edward V. Lewis, L. Vassilopoulos,** Prof. **Dan Hoffman, Reuven Leopold, R. Wahab** and Dr. **K. M. Ochi.**

SYNOPSIS—The author, in order to formulate a criterion for deck wetness and thereby deck heights for equal wetness at various locations, describes the tests made to find the distribution of the relative motion of the wave surface along the ship's length versus the ship's own wave system in still water. Good correlation is shown between model test results and the data furnished by ships at sea.

Paper No. 8. "A New Hull Form for High-Speed Volume Limited Displacement-Type Ships" by **Reuven Leopold,** Litton Systems, Inc. Presiding—**C. Richard Schaeffner.** Assisting—**John E. M. Enroth.** Discussers—Prof. **Harry Benford, John T. Drewry,** Dr. **S. D. Sharma,** Dr. **Paul Kaplan, Theodore M. Pitidis, John Vasta** and **G. Rosekilly.**

SYNOPSIS—As a result of examination of basic hydrodynamic principles a new hull form has evolved for high-speed volume-limited ships. This form results in a vessel of highly efficient lift/drag ratio for a specific speed and cargo density regime. The paper describes the philosophy governing the selection of the gross characteristics of such a vessel and demonstrates through model testing the hydrodynamic performance of the new hull form as related to its resistance and seakeeping qualities.

Paper No. 9. "Marine Reheat Cycles and Systems Evaluation" by **Chester W. Stott Jr.,** General Electric. Presiding—**Carl M. Lippincott.** Assisting—**S. J. Cina.** Discussers—**L. F. van Sciver, Charles W. Wilson, W. G. Bullock, W. I. H. Budd, John B. Letherbury** and **Robert Giblon.**

SYNOPSIS—This paper is a powerful tool and time saver to the ship owner, operator, marine engineer, naval architect and student. It gives up-to-date thermodynamic evaluation and allows fast, consistent and comparable answers for determining trade-off studies in arriving at the most reliable and economical powerplant system for 30,000 to 200,000 shp high utilization, fast and slow, quick turn-around vessels.

Paper No. 10. "Design and Construction of the Dynamically Positioned Glomar Challenger" by **John R. Graham, Klemme M. Jones, G. Dayton Knorr** and **Thomas F. Dixon,** Global Marine, Inc. Presiding—**John E. Marriner.** Assisting—Capt. **Henry P. Rumble,** USN (ret.). Discussers—**Peter G. Trapani** and **Bion E. Henderson.**

SYNOPSIS—A presentation of the complete general description of a unique and sophisticated new ship design. Detailed discussions of her mission, special features such as powering, positioning system and controls are included along with arrangement plans and explanatory illustrations. Some informal comments on in-service experience are included in the presentation.

Luncheon Speakers

A buffet luncheon was held on Wednesday, May 21, at which Rear Adm. **J. J. Fee,** USN (ret.), project manager for the City of Long Beach, discussed the conversion of the Queen Mary into a maritime museum and a convention center. The bottom half of the ship will be reserved for the museum. A 40-year agreement has been concluded with the California Museum Foundation for installation of the museum on the Queen Mary with an initially planned $2.5-million worth of equipment from industry. The top half of the ship will be converted to commercial purposes and will be operated by the Diners Club. It will contain hotel accommodations of approximately 400 rooms for almost 800 people, convention and meeting rooms, and many special shops and restaurants. Three and a half million tourists are expected to visit the Queen Mary the first year. Admiral **Fee** explained that all power for the Queen Mary will be shore-based, and that all of the boilers aboard ship had been shut down for the first time in the ship's history only after the Queen Mary had been docked at Long Beach. It has also been decided that the Queen Mary will remain afloat and will not be docked.

A banquet-style luncheon was held Thursday, May 22, at which Rear Adm. **Edward J. Fahy,** commander, Naval Ship Systems Command, was the principal speaker. He was introduced by **John H.**

(Continued on page 10)

Seated at the head table of Thursday's luncheon, first row are: (left to right) **J. Rubel;** Rear Adm. **E. J. Fahy,** speaker; **N. Friedland,** Ocean Systems Operations; Rear Adm. **A. Mumma,** USN (ret.), chairman, Worthington Corp., and **L. Rosenblatt,** M. Rosenblatt & Son, Inc.; second row: Capt. **H. P. Rumble,** USN (ret.); Adm. **J. M. Farrin,** USN (ret.); **J. J. Henry;** Capt. **K. E. Phillips,** USN; **L. Sanford,** former president of the Shipbuilders Council of America, and **J. Enroth.**

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MARINE FUELS AND LUBRICANTS

Presenting paper No. 4, "The Design and Certification of Submersibles," were, left to right: Rear Adm. **J. M. Farrin,** USN (ret.); **Charles G. Kosonen,** North American Rockwell Corp., author, and **R. Leopold,** Litton Systems, Inc.

Paper No. 5, "Design of a Dynamically Positioned Support Platform for a Tethered, Unmanned Submersible Vehicle," was presented by: (left to right) **P. Finkelstein; D. Hall,** Ocean Design Engineering Corp., author, and **K. M. Jones.**

Delivering paper No. 6, "Anomalous Behavior of Merchant Ship Steering Systems," were: (left to right), Capt. **H. A. Pearce Jr.,** USCG; **Robert Taggart,** Robert Taggart, Inc., author, and **S. J. Cina,** North American Aviation, Inc.

Spring Meeting—

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Rubel, senior vice-president for Long Range Planning and Development for Litton Industries. Admiral **Fahy** discussed some of the numerous activities of NAVSHIPS as well as recent advances in the maritime field. He pointed out that the sea offers many riches such as food and minerals, but that there are tremendous difficulties in working with this hostile environment. He described salvage activities, including those for the Thresher and Scorpion, and revealed that the bathescope Trieste is being sent to the Scorpion site for further exploration. Highlights of NAVSHIPS activities are the deep submergence rescue vessel, an air-transportable salvage vessel; better methods for underwater breathing; foamed in place foam, and deep-diving ships that can do useful work. Recent advances include the LHA which replaces four different ship types—LPH, LPD, AKA, and LSD; new northwest passage tankers to obtain the recently discovered oil on the Alaskan north slope; offshore oil drilling and mining; ocean habitats; LASH ships, and containerships. Admiral **Fahy** stated that he likes to think that people, like the members at SNAME, will be leading the way in such developments, and concluded with "I wish for all of us the unsinkable future with naval architecture."

Awards

As the finale to the luncheon, Admiral **Fahy,** on behalf of the secretary of the Navy, presented the Distinguished Civilian Service Award to **John Vasta** of Litton Systems Advanced Marine Technology Division. This is the highest award given to a civilian by the Secretary of the Navy and was awarded to Mr. **Vasta** for his dedicated and distinguished service to the Navy as head, Structural Branch, Naval Ship Engineering Center.

At the conclusion of the technical sessions, Capt. **Henry P. Rumble,** USN (ret.) turned over the duties of chairman of the Los Angeles Metropolitan Section to incoming Chairman **John Enroth.** On behalf of the council of the Society, Rear Adm. **L. V. Honsinger** then presented a Certificate of Appreciation to Captain **Rumble** for his activities as chairman for the preceding year, including hosting the Spring Meeting.

Special Activities

The social activities for the Spring Meeting were initiated by an informal President's Reception early Wednesday evening, May 21. This provided an opportunity to renew acquaintances after the first day of technical sessions. This was the most popular event of the entire meeting.

The traditional Dinner-Dance was held on Friday evening, May 23, in the Grand Ballroom of the Beverly Hilton. It brought to a festive conclusion the social and technical activities of the Spring Meeting.

As a pleasant departure from indoor activities, 119 people took advantage of the pleasant California climate and participated in the tour by boat of the Los Angeles and Long Beach harbors. This was climaxed by a luncheon aboard the Princess Louise.

The host, Los Angeles Section, also arranged for a day at Disneyland on Saturday.

A full program was arranged for the benefit of the ladies. To start things off, a continental breakfast was held on Wednesday morning and provided an opportunity to form new acquaintances or renew old ones. This was followed by a studio tour and luncheon. Activities concluded on Thursday with a fashion tour and luncheon. Hostesses were provided for these tours by the Beverly Hills Chamber of Commerce.

Steering Committee

The Los Angeles Metropolitan Section made all the arrangements for the 1969 Spring Meeting of the Society. The smooth performance of both the technical and social activities was the result of a year's work on the part of the Steering Committee under the chairmanship of **Nathan Friedland.**

The other members of the Steering Committee were: **H. P. Rumble** in charge of the technical sessions, **P. Bukunt** in charge of the hotel arrangements, **L. M. Dingler** in charge of the social activities, **R. G. Rados** handling the publicity, **H. D. Ramsden** watching the budget, **D. A. Ball** providing liaison with Society headquarters and other sections, **J. R. Allan, R. E. Apple, G. Cooper, J. E. Marriner, V. E. Shelton** and **T. G. Smith.**

This group, together with all the other members of the Section, provided a Spring Meeting that will long be remembered by those attending.

Presenting the paper on "Design and Construction of the Dynamically Positioned Glomar Challenger" are: (left to right), **John E. Marriner,** California Shipbuilding and Drydock Co., who presided over the session; authors, **G. Dayton Knorr, John R. Graham, Klemme M. Jones** and **Thomas F. Dixon,** all of Global Marine, Inc., and Capt. **Henry P. Rumble,** USN (ret.), Rand Corp., assistant chairman.

Presenting paper No. 7, "Vertical Ship Motions and Deckwetness," were, from left to right: Capt. **D. J. Gerry,** USN; **M. F. van Sluijs,** Netherlands Ship Model Basin, author and Comdr. **R. A. Rourke,** USN (ret.), Harco Engineering.

Paper No. 8, "A New Hull Form for High-Speed Volume Limited Displacement-Type Ships," was presented by: (left to right), **C. R. Schaeffner,** Litton Systems; **R. Leopold,** Litton Systems, author, and **J. E. M. Enroth,** American Bureau of Shipping.

Presenting paper No. 9, "Marine Reheat Cycles and Systems Evaluation," were: (left to right), **C. M. Lippincott,** Todd Shipyards; **C. W. Stott,** marine applications engineer, General Electric Co., author, and **S. J. Cina,** North American Aviation, Inc.

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Safmarine To Build Giant Oil Tanker

South African Marine Corporation (Safmarine) soon will enter the giant oil tanker market. **Frank Demarco,** president of South African Marine Corp. (N.Y.), the shipping line's American subsidiary, said that an order for a 213,000-dwt tanker will be placed shortly.

He noted that negotiations for the new vessel are at an advanced stage and indications are that the construction contract will be awarded to Japanese shipbuilders. Mr. **Demarco** added that arrangements for the full employment of the new tanker have been concluded.

He said that Safmarine expects delivery of the tanker toward the end of 1971 or early in 1972. He estimated the cost of the tanker at approximately $16,000,000.

Safmarine is also in the process of expanding its fleet of cargoliners.

Mr. **Demarco** said that the SA Morgenster was launched in Japan last month. This is a 13,210-dwt vessel, a sistership of the SA Constantia which was launched in Japan in March of 1968.

The SA Vergelegen will be launched in Japan this month, Mr. **Demarco** said.

In addition to these two vessels, a 25,000-dwt universal bulk carrier with a speed of 19/20 knots is being built for Safmarine in Durban, South Africa.

When these vessels have been commissioned, Safmarine will have 16 new vessels in service. At present more than 40 ships sail under the Safmarine flag on South Africa's major trade routes.

Capt. Gluntz Retiring As SNAME Secretary— Mende Named Successor

Robert G. Mende

J. J. Henry, president of The Society of Naval Architects and Marine Engineers, has announced that the executive committee has reluctantly honored Secretary Capt. **Marvin H. Gluntz'** request for retirement. Captain **Gluntz** will continue as a consultant to the Society until his retirement becomes effective at the end of this year. Captain **Gluntz** has served the Society in an efficient and dedicated manner for over ten years. Concurrently, Mr. **Henry** announced that the executive committee had appointed **Robert G. Mende** to the position of secretary, effective June 16, 1969.

Mr. **Mende** brings with him to his new position a long history of active and valued participation in SNAME, of which he has been a member for 22 years. He is the immediate past chairman of the New York Metropolitan Section, has been a member of many local and national committees, technical and research panels, and has authored two technical papers presented before the New York Metropolitan Section, one of which received the 1952 Student Paper Award.

Mr. **Mende** attended M.I.T., graduated from the New York State Maritime Academy in 1947, and from Webb Institute of Naval Architecture in 1951. He is an officer in the United States Naval Reserve, is currently first vice-president of the Webb Alumni Association and is a member of the American Society of Mechanical Engineers, and The North East Coast Institution of Engineers and Shipbuilders.

Mr. **Mende** has resigned from the naval architecture firm of J. J. Henry Co., Inc., where he was employed as a senior naval architect for the past six years. His prior engineering associations included Bird-Johnson Co. and the Foster Wheeler Corp.

Jiri Nekoksa Joins Wilson, Walton Int'l

Jiri Nekoksa

Jiri Nekoksa has joined Wilson, Walton International, Hoboken, as manager of the Cathodic Protection Engineering Department, according to an announcement by **Charles Potosnak,** vice-president of the firm. Formerly associated with Chemoproject Design, Engineering and Consulting Corporation, Prague, Czechoslovakia, Mr. **Nekoksa** was active in pipe-line engineering design for chemicals, petroleum products and water. He also specialized at that time in cathodic protection systems for pipe lines and industrial installations in general.

Educated at the Czech Technical College, Prague, with degrees in water engineering and corrosion engineering, Mr. **Nekoksa** speaks Czech, German, Russian and English. He has written more than a dozen technical papers on subjects covering water treatment, sewage and powerplant equipment.

Wilson, Walton International maintains offices in ten countries. Mr. **Nekoksa** is part of their expansion plans for the cathodic protection engineering services they offer customers on a worldwide basis.

Liverpool Considering Supertanker Terminal On Man-Made Island

An imaginative glimpse of the future was revealed recently by the Mersey Docks and Harbour Board in the form of a $108-million man-made island 11 miles off the Welsh coast in Liverpool Bay, to provide a terminal for tomorrow's million-ton oil tankers.

The island would be 3,800 feet long, in the form of a breakwater, and would be built off Rhos Point, near Rhyl, Flintshire. It would be connected by two submarine pipelines to the Point of Air and by a further main pipeline to the oil refineries of the northwest.

This massive project is being planned by the Mersey Docks and Harbour Board, whose own officials have already made a preliminary feasibility study taking as a yardstick ships of 1,800 feet in length and a 283-foot beam, with drafts of 95 feet.

Orders to investigate went out to the board's experts following the construction of crude-oil carriers in excess of 250,000 tons and the intention of the big oil companies to build ships of up to 750,000 tons, followed by the government's interest in the megaton tanker.

The man-made island envisaged would be capable of berthing 1,000,000-ton tankers. It would also provide on-the-spot flow storage in tanks with a capacity of 1¼ million tons of oil. Those tanks would form part of the structure and when not in use for storage would be filled with sea water. Mammoth tankers would be able to discharge their oil and turn-round in 24 hours. An annual throughput of 70 million tons could be contemplated.

Detailed studies will continue and researchers from Liverpool University are already collaborating with the dock board.

The concept of a fixed island with integral storage is entirely new. The site presently in mind, some 11 miles from the mainland, would make it completely unobtrusive so far as the resorts on the Welsh coast are concerned. Mammoth tankers would be able to use the terminal at all times and such a project could well become the most important oil terminal with transshipment facilities in Europe.

With the board's Tranmere and Dingle oil terminals already handling 14,000,000 tons of oil annually, the Port of Liverpool could become, if such a scheme is found to be practicable, the reception and distribution base for some 80-85 million tons a year.

SS Cadillac Is First Ship Converted From Coal To Oil-Fired Automated Boilers

Automation of The Cleveland-Cliffs Iron Company's vessel SS Cadillac was hailed as a total success at the end of the vessel's first 1969 trip on the Great Lakes following conversion. The first vessel to be converted from coal firing to oil firing and simultaneously equipped with automated boilers, each with a single burner, the Cadillac was certified for operation with a two-man watch the day of her sea trials, April 30. The automation system was installed by the Manitowoc Ship Building Company in their Manitowoc, Wis., yard.

The Babcock & Wilcox Company supplied the type 3M oil burners with Racer steam atomizers which were specially designed for this installation. The integrated control system for the automation of these boilers was developed and manufactured by Bailey Meter Company, Wickliffe, Ohio. This is the seventh Cliffs vessel to be automated with Bailey controls. Included in the control system are Bailey MINI-LINE 500 pneumatic combustion and feedwater controls, instrumentation, and a Bailey 760 solid-state-digital logic burner-management system.

As a coal-burning vessel, the Cadillac required a boiler room crew of 12—an engineer, fireman, coal passer, and an oiler on each watch. In addition to the two-man watch now permitted, the vessel has two day workers, a total boiler room operating crew of eight. Cliffs expects the converted vessel to be in service for another 25 years.

The engineer's console, Figure 1, is located on the engine control level. From that location the operator can shut down or start up either boiler. Duplicate controls are located at the boiler room level. Generally, these controls are used only during initial boiler start-up.

Figure 1—The Cadillac's chief engineer, **C.R. Mihalick,** shown at the engineer's console, located on the engine control level.

Under normal conditions the boiler room, Figure 2, is unattended.

Conversion of the Cadillac has provided space, in the area formerly required for storing coal, for a new chief engineer's room, a crew recreation room, and a CO_2 system in the event of a fire in the engine room.

To assure fast start-up after installation, Bailey checked out the 760 burner-management system at their Wickliffe facility. The ship's operation was simulated there and the system tested throughout its full range. Prefabricated cables furnished with plug-in arrangements permitted installation time to be reduced.

The success achieved in converting the Cadillac has encouraged Cliffs to consider conversion of their remaining coal-burning vessel, in keeping with their long-standing policy of constantly updating all of their vessels.

According to a Cliffs spokesman, the company is studying plans to further automate their fleet through the installation of more sophisticated guidance systems and engine room controls.

Counting the seven Cliffs vessels, Bailey has automated a total of 23 vessels, including two Navy ships, and has contracts for two more.

A subsidiary of The Babcock & Wilcox Company, Bailey Meter Company is a leading manufacturer of instrumentation, control computers, and systems for process and powerplant automation.

Figure 2—The boiler room on the Cliffs vessel, Cadillac, is normally unattended. The panel at the right duplicates the controls on the engineer's console. These controls are normally used only during initial boiler start-up. The boiler fronts are at the left. These contain Bailey FLAMON Flame Detectors, ignitors, and B&W burners. Beneath the stairs (center) is a horizontal donkey boiler that provides heat when the vessel is in port.

Tretout New Zinc-Lock Sales Representative

Marc W. Tretout

Marc W. Tretout has been appointed sales representative for the East Coast and Great Lakes area by Zinc-Lock Company, Division of The Bunker Hill Company, a subsidiary of Gulf Resources & Chemical Corporation. Zinc-Lock manufactures protective coating systems for marine, chemical and industrial applications.

Mr. **Tretout** was formerly an engineering sales representative with Amercoat Corporation where he worked closely with the marine, chemical and refining industries. A graduate in business administration from Ithaca College, he is a member of the National Association of Corrosion Engineers, The Society of Naval Architects and Marine Engineers and the Junior Chamber of Commerce.

Mr. **Tretout** will be located in the Zinc-Lock Company offices at 526 North Avenue, Westfield, N.J. 07090. Zinc-Lock Company general offices and manufacturing facilities are in Emeryville, Calif.

Litton Reveals Plans For Unloading Facility And Two Ore Carriers

An indication as to some of the future plans of Litton Great Lakes Corporation was given by two recent actions taken by the firm.

Litton has applied to the Corps of Engineers for permission to build special mooring dolphins next to the breakwall in the west outer harbor of Cleveland. There would be eight of these dolphins made of interlocking sheet piling, each being 18 feet long. These would form a tie-up wall for large ore carriers and barges. The ore carriers would discharge their ore into the barges which in turn would move the ore upriver to the steel mills.

The other development was given when Litton requested certain shipyards to submit proposals covering the construction of two bow and stern sections for 1,000-foot ore carriers.

Newport News Elects Wilson Vice President For Administration

W. F. Wilson

W. F. Wilson, former director of systems for Tenneco, Inc., has been elected vice-president for administration by the board of directors of Newport News Shipbuilding and Dry Dock Company, it was announced.

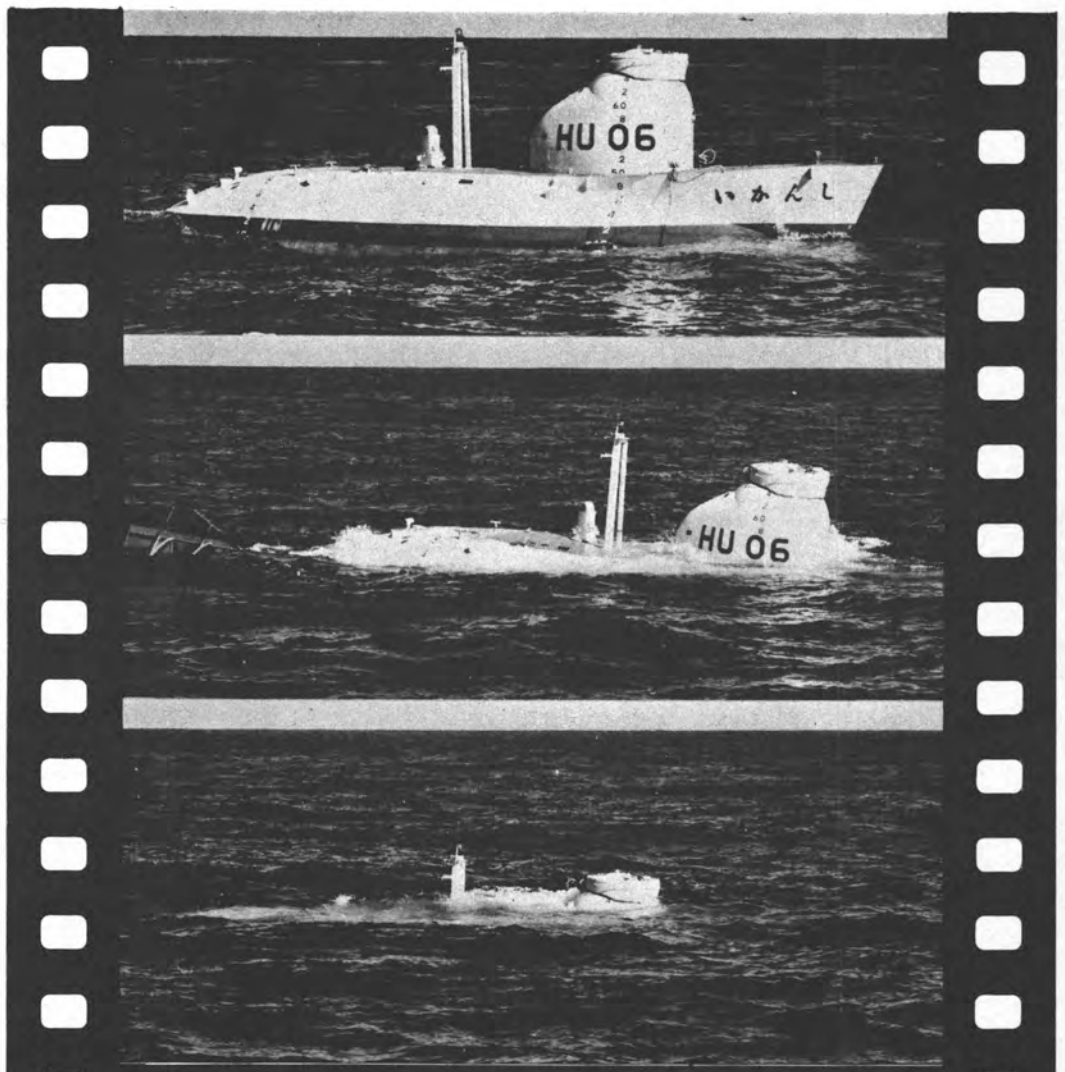
Mr. **Wilson** will report to **L. C. Ackerman,** president and chief executive officer of the shipyard, and is responsible for all company activities in systems and computer operations, accounting, treasury, finance, purchasing, material control, transportation and office services.

Mr. **Ackerman** also announced that senior vice-president **W. T. Smith** has been given the assignment of assistant to the president to work on special assignments and projects.

Mr. **Wilson,** who has been on special assignment with the shipyard since April of this year, has been associated with Tenneco since 1953 when he joined the company as senior systems analyst. He then served successively as systems supervisor, general accounting manager, chief accountant of refining and marketing operations, director of systems and office services for the Tennessee Gas Transmission Company, director of systems for Tenneco Oil, and most recently, director of systems for Tenneco Inc. Prior to joining Tenneco, Mr. **Wilson** had been supervisor of cost accounting, payroll and data processing for Shell Chemical.

A 1940 graduate of the University of Texas with a degree in accounting, Mr. **Wilson** has done graduate work at Texas A. & M. and the University of Houston.

Senior Vice-President **Smith** has been with the shipyard since 1929. He served successively as acting assistant superintendent of the machinery division, assistant superintendent, production engineer, assistant general manager, assistant to the president, vice-president for production, executive vice-president and was elected to his present position in 1966. He is a member of the board of directors for the Shipbuilders Council of America and is active in the Propeller Club of the United States, The Society of Naval Architects and Marine Engineers, National Association of Manufacturers, American Society of Naval Engineers, National Defense Transportation Association and others.



We've made something that goes 'way down so man's knowledge can go 'way up.

It's the Shinkai—a very special research submarine that we built for the Japanese government's Maritime Safety Agency.

Its name means "Deep Sea". And on its first trial run recently, it dived to 600 meters (1,980 feet), testing its wide array of scientific equipment.

The Shinkai will be used to enlarge our understanding of the sea depths around Japan and the life that is found there.

We've acquired quite a bit of knowledge at Kawasaki. And we put a lot of it to use in building the Shinkai.

Our technical abilities also go to work on things like giant 300,000 dwt tankers. We bring out skills to tasks like building, repairing, refitting and remodeling other craft like bulk carriers, combined bulk carriers, cargo liners and refrigerated fruit carriers.

And we know a lot about U-Plant power systems, M.A.N. diesel engines and electro-hydraulic steering gears. Plus a wide range of auxiliary marine machinery.

No matter what your marine needs or problems are, call Kawasaki. We'll dig deep to come up with the right answer for you.

We've got a new name! We used to be Kawasaki Dockyard. Now we've merged with Kawasaki Aircraft Co. and Kawasaki Rolling Stock Mfg. Co. And now we're Kawasaki Heavy Industries, Ltd. Now with more than 28,000 skilled people . . . with combined technical know-how and abilities . . . with more flexibility. Now we can serve you better than ever before!

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Barge And Towing Industry Safety Contest Winners Honored At Luncheon In St. Louis

Representatives of winners in the 1968 Barge and Towing Vessel Industry Safety Contest are shown with officials of The American Waterways Operators, Inc. and officers of the U.S. Coast Guard and the Army Corps of Engineers. Seated, left to right, are: **Lester C. Bedient,** general manager of The Harbor Tug & Barge Company, San Francisco, Calif.; **A. E. Winholt,** marine superintendent, Western Rivers, Mobil Oil Corporation, St. Louis, Mo.; **Wilbur W. Cottle,** branch manager, Baytown Branch, Marine Department, Humble Oil & Refining Company, Houston, Texas; **Robert E. McCloskey,** marine safety director, Sun Oil Company, Marcus Hook, Pa.; **W. I. McElroy,** vice-president, Ohio Barge Line, Inc., Dravosburg, Pa., and Capt. **Alan C. Gumbert,** superintendent, river transportation and marine ways, U.S. Steel Corporation, River Transportation, Clairton, Pa. Standing, from the left, are: **Braxton B. Carr,** president of The American Waterways Operators, Inc., Washington, D.C.; Rear Adm. **Russell R. Waesche,** commander, Second Coast Guard District, St. Louis, Mo.; **George H. Blohm,** vice-president and general manager of Cities Service Tankers Corporation, New York City, and chairman of the board of AWO; Col. **John C. H. Lee Jr.,** deputy division engineer for Appalachia, Army Engineers Division, Ohio River, Cincinnati, Ohio, and Lt. Col. **Wayne F. Alch,** deputy district engineer, St. Louis, Mo.

Winners in the 1968 Barge and Towing Vessel Industry Safety Contest were honored guests at a reception and luncheon in St. Louis under joint sponsorship of The American Waterways Operators, Inc., and the Propeller Club of the United States, Port of St. Louis, in observance of National Maritime Day and in celebration of the 25th anniversary of the founding of AWO .

George H. Blohm, vice-president and general manager of Cities Service Tankers Corporation, New York City, and chairman of the board of AWO, made the safety awards presentations and called on the barge and towing industry to work harder to achieve an even better safety record than the outstanding one which has already been accomplished.

The luncheon celebration climaxed two days of meetings and events attended by executives of the barge and towing industry from throughout the United States, government officials with whom the industry works, and others.

Rear Adm. **Russell R. Waesche Jr.,** commander of the Second Coast Guard District, delivered the principal address at the luncheon, emphasizing the cooperative interest of the industry in improving navigational safety in towing vessel operations. He also outlined plans of the Coast Guard to enhance its marine safety work.

Braxton B. Carr, president of AWO, traced the history of the Association, citing its aims and accomplishments and its concomitant growth with the barge industry in the last 25 years. At the same time he pointed out some of the problems facing the industry on the legislative and regulatory fronts.

Also taking part in the luncheon program was **Willard B. Fouts,** president of the St. Louis Propeller Club Port.

In another feature of the luncheon, special tribute was paid to **G. W. Gladders,** president of G. W. Gladders Towing Company, Inc., St. Louis, Mo., in appreciation of his services as chairman of the board of AWO in 1968.

G. W. Gladders, (at left) president, G. W. Gladders Towing Company, Inc., St. Louis, Mo., and former chairman of the board of The American Waterways Operators, Inc., is shown receiving a commemorative gavel mounted on a plaque from his successor in the AWO post, **George H. Blohm,** vice-president and general manager, Cities Service Tankers Corp., New York City.

The tribute was made on behalf of the Association by Mr. **Blohm,** who was elected last February 26 as chairman of the board of AWO.

The safety contest, which is cosponsored by the National Safety Council and AWO, is divided into three categories. One is composed of companies engaged in push-towing operations. Another is made up of vessels engaged in pull-towing or towing-along-side operations. And the third category is for harbor boat operations. Some companies engaged in more than one category of operations and participated in more than one division of the contest.

U.S. Steel Corporation, River Transportation, Clairton, Pa. was first-place winner among contestants engaged in push-towing operations.

Ohio Barge Line, Inc., Dravosburg, Pa., was second-place winner.

A third-place award in this category went to Western Transportation Company, Portland, Ore.

Perfect record certificates in the push-towing operations division of the contest were won by Sun Oil Company, Marcus Hook, Pa.; Mobil Oil Corporation, Western Rivers; Humble Oil & Refining Company, Baytown Branch, and Parker Towing Company, Tuscaloosa, Ala.

Winner of the top award in the pull-towing or towing-along-side operations category was Crown Zellerbach Corporation, Canadian Tugboat Co., Ltd. The second-place winner was United Transportation Company. **Lester C. Bedient,** general manager of The Harbor Tug & Barge Company, San Francisco, Calif., accepted the award on behalf of United Transportation. The Harbor Tug & Barge Company was third-place winner.

Winner of the top award honor in the harbor boat operations category of the contest was The Harbor Tug & Barge Company.

All of the winners maintained perfect safety records in 1968.

Mr. **Blohm** paid tribute to the leadership of **Ralph A. Guffey,** A. L. Mechling Barge Lines Inc., Joliet, Ill., who as chairman of AWO's Safety Committee played a major role in planning and executing AWO's safety program of which the Barge and Towing Vessel Industry Safety Contest is a part.

The luncheon celebration was the final event of a series of meetings of AWO directors, members and committees. A mid-continent navigation conference, with officials of the Army Corps of Engineers and the U.S. Coast Guard participating, also was part of the program.

Speakers at the conference included Admiral **Waesche;** Brig. Gen. **C. Craig Cannon,** Missouri River division engineer, Army Corps of Engineers, Omaha, Neb.; Col. **John C. H. Lee Jr.,** deputy division engineer for Appalachia, Army Engineers Division, Ohio River, Cincinnati, Ohio; Col. **Paul R. Sheffield,** deputy division engineer, Lower Mississippi Valley Division, Army Corps of Engineers, Vicksburg, Miss., and Col. **Richard J. Hesse,** St. Paul District Engineer, Army Corps of Engineers, St. Paul, Minn.

David A. Wright, president, National Marine Service Incorporated, St. Louis, was chairman of a special committee of AWO handling arrangements for the Association's anniversary celebration and joint arrangements with the St. Louis Propeller Club Port for the National Maritime Day celebration.

AWO represents the national interests of the barge and towing industry. The Association was incorporated in the State of Delaware on May 22, 1944. The first meeting of the members of the Association was held in St. Louis on May 26, 1944.

Eastern Gas And Fuel Elects John N. Philips Exec. Vice-President

John N. Philips has been elected executive vice-president of Eastern Gas and Fuel Associates, parent company of a group of coal and water transportation companies with headquarters in Boston.

Esso Int'l. Elects Peyton And Anderson Senior Vice-Presidents

The board of directors of Esso International Inc., worldwide marketing, transportation and supply affiliate of Standard Oil Company (New Jersey), has announced the elections of **I. C. Anderson** and **C. O. Peyton** as senior vice-presidents and regular members of the executive committee.

Mr. **Anderson,** a chemical engineering graduate of Syracuse University, joined the Jersey organization in New York in 1937 and the following year transferred to Lago Oil & Transport Company, Ltd., an affiliate on the island of Aruba, Netherlands West Indies.

He joined Esso Research and Engineering Company in 1942, and in 1947, he joined the New York office of Creole Petroleum Corporation, Jersey's Venezuelan affiliate, where he held a number of executive sales posts. He was elected a vice-president of Creole in 1960 and held that position until his election as a vice-president of Esso International in 1961. He was elected a director of the company in 1966.

Mr. **Peyton** was also elected a director of the company in 1966. Prior to that he had been a vice-president and general manager of the supply department.

A graduate of Louisiana State University, he began his career in the oil industry in 1942 at the Baton Rouge refinery of Esso Standard Oil Company, now part of Humble Oil & Refining Company, Jersey's principal domestic affiliate. He joined Esso International Inc. in 1961.

Tidewater Names R.J. Hope Manager Of Joint Ventures

Ray J. Hope

Ray J. Hope has been named manager of joint venture operations for Tidewater Marine Service, Inc., New Orleans-based marine transportation company, according to **Damon B. Bankston,** executive vice-president.

Effective June 1, 1969, Mr. **Hope** will coordinate operations of three ventures in which Tidewater Marine is a half owner with foreign partners. They are: Tidewater Middle East Marine Service Co., in Iran; Tidewater-Halcyon Marine Service N.V., The Netherlands, and, Tidewater Port Jackson Marine Pty. Limited in Australia.

Mr. **Hope** was previously manager of marine operations of Ray Geophysical Co., a division of Mandrel Industries, and brings to his new position experience in both marine and foreign operations, said Mr. **Bankston.**

Paul Puckorius Named Zimmie Vice-Pres.

Paul R. Puckorius

W. E. Zimmie, Inc., a leading supplier of specialty chemicals and deck machinery to the marine industry, has announced the election of **Paul R. Puckorius** as vice-president.

The company's patented mud remover, Zimmite, is used to treat the ballast tanks of 80 percent of the Great Lakes fleet. Earlier this year Zimmie, Inc. announced acquisition of the marine products business of Hyde Division of Bath Iron Works Corporation.

Mr. **Puckorius,** widely known in the field of cooling-water treatment and technology, had been associated with Nalco Chemical Co. for the past 16 years where he formerly was manager of the cooling-water chemicals department.

Commenting on Mr. **Puckorius'** joining the company, Mr. **Zimmie** said, "We have long considered him one of the top people in cooling-water technology in the country. Under his guidance, we expect to continue our program of developing a broad line of non-toxic chemicals for total water management."

Mr. **Puckorius** has been a guest lecturer at the chemical engineering departments of the University of Wisconsin and the University of Iowa. He also has delivered papers at the International Water Conference and National Association of Corrosion Engineers. He has authored approximately 30 articles on water technology. A graduate of North Central College, he was a member of the board of directors of the Cooling Tower Institute and active in local and national committees of the National Association of Corrosion Engineers, American Petroleum Institute, and American Water Works Association.

Zimmie, Inc.'s line of products includes a patented mud remover, Zimmite. This polyelectrolytic chemical changes the consistency of mud to reduce natural adhesiveness, thus permitting easy removal from system piping. Last year, the company introduced the only chemical available which offers a non-toxic, combination treatment for mud, scale and rust. The company's products are sold to the primary metals, chemical processing and marine industries and are also used widely in commercial buildings to treat central air-conditioning systems.

Nine Port Of New York Employers Receive Safety Awards From Shipping Association

New York Shipping Association, Inc., 16th annual safety awards winners, left to right: (standing) **A. Nicotra,** Standard Fruit & Steamship Co.; **H. Krebs,** Pier 40 Corporation; **J. L. Clark,** Sealand Services, Inc.; Capt. **G. Kozel,** Isthmian Lines, Inc., and **A. C. Mele,** Mealli Protective & Investigation Service; (seated) **H. Feinberg,** Lipsett Steel Products, Inc.; Capt. **George D. Barlow,** NYSA Safety Bureau director; Adm. **John M. Will,** NYSA president and chairman of the board, American Export Isbrandtsen Lines, Inc.; **Mrs. F. V. Donohue,** Lynch, Donohue & Dee, Inc.; **Alexander P. Chopin,** NYSA chairman, and Capt. **George H. Evans,** NYSA vice-president, and senior vice-president, States Marine Lines, Inc.

Adm. **John M. Will,** USN (ret.), president of the New York Shipping Association, and chairman of the board of American Export Isbrandtsen Lines, presented awards to nine employers of waterfront labor in the port of New York who had outstanding records in accident reduction last year. The presentations were made at the 16th annual luncheon, sponsored by NYSA Safety Bureau, at the Downtown Athletic Club. Capt. **George D. Barlow,** Safety Bureau director, assisted in the presentations.

Those receiving plaques were: Sealand Service Inc., Standard Fruit & Steamship Co., Chelsea Ship Repair Corp., Lipsett Steel Productions Inc., Isthmian Lines, and Mealli Protective & Investigating Service Inc.

Recipients of citations were: Ramar Stevedores Inc., Pier 40 Corporation and Lynch, Donohue & Dee Inc.

In making the presentations Admiral **Will** observed that "the number of award winners is smaller than in previous years, but for a very good reason. The rules governing the awards have been redefined to add greater importance and significance to this official recognition.

"Previously, an award recipient had only to report a reduction in his accident frequency rate from that of the preceding year. Under the new rules, an award is presented to the company whose accident frequency rate last year was under the lowest rate reported by that company since 1965."

Alexander P. Chopin, NYSA chairman, stressed the need for continued vigilance in accident prevention and praised the cooperation given by employer members and by the International Longshoremen's Association in the promotion of waterfront safety.

The guest speaker at the awards luncheon was **Leonard Linsenmayer,** acting director of the Bureau of Labor Standards, U.S. Department of Labor, who discussed the role of the government in accident prevention in industry.

St. Louis Ship Promotes R.A. Bennett

Ronald A. Bennett

Ronald A. Bennett has been promoted to assistant vice-president of St. Louis Ship, a division of Pott Industries Inc., St. Louis, Mo., according to an announcement by **Edward Renshaw,** president. He formerly was a project engineer of the company.

Mr. **Bennett** will be working directly with **Robert J. Patrick,** vice-president-engineering, with the responsibility of coordinating engineering projects and estimating for the St. Louis yard.

Prior to joining St. Louis Ship in 1965, Mr. **Bennett** was employed as project engineer, subsafe certification program, with the Charleston Naval Shipyard.

He was graduated with a BS degree in engineering from the U.S. Merchant Marine Academy.

Mr. **Bennett** is a member of The Society of Naval Architects and Marine Engineers and of the U.S. Propeller Club, Port of St. Louis.

Radically Different GE Transmission System Used Successfully On Canadian Hydrofoil

New Canadian Navy hydrofoil ship Bras d'Or shown in flight off Halifax during trials.

A new Canadian Navy hydrofoil ship with a transmission system radically different from any ever built before has successfully flown off Halifax. The hydrofoil Bras d'Or, with both foilborne and displacement transmission systems built by General Electric's Marine Turbine and Gear Department, West Lynn, Mass., recently completed its first flight.

The 200-ton, 151-foot hydrofoil anti-submarine ship is faster and more maneuverable than a destroyer. It has a speed of 60 knots. It will carry a crew of only 25, compared with the 225 officers and men required to man an anti-submarine destroyer. When foilborne, it will be powered by a 30,000-shp gas turbine, and when hullborne by a 2,400-bhp diesel.

General Electric designed and built an "extremely lightweight, very compact transmission system to fit within an unusual configuration of a pod system," according to Marine Turbine and Gear Department General Manager **David S. Bennett.** The GE FHE-400 hydrofoil transmission system has downshafts 32 feet long, which operate at 8,500 rpm.

The transmission system, according to Mr. **Bennett,** is unique in that it has a wide variety of different types of gears, including a planetary, compound star, spiral bevel, and double helical parallel shafts.

The Marine Turbine and Gear Department of General Electric coordinated its transmission systems work with de Havilland Aircraft of Canada in building the prototype. The vessel was built at the Marine Industries Ltd. shipyard at Sorel, Quebec.

The ship gets its name from the name of a lake in Nova Scotia on which Alexander Graham Bell tested a hydrofoil he designed in 1907.

A. P. BOXLEY—The second twin-screw, 5,000-hp towboat in the expanding fleet of the barge subsidiaries of Eastern Gas and Fuel Associates is launched into the Ohio River. Designed and built by Dravo Corporation, Pittsburgh, the 166-by-42-by-11½-foot vessel is powered by two, 16-cylinder, turbocharged, aftercooled diesel engines with reverse reduction gears and clutches. It will later be christened the A.P. Boxley, honoring the president of Eastern Associated Coal Corp., Pittsburgh, the coal subsidiary of Eastern Gas and Fuel Associates. Along with the company's first 5,000-hp towboat launched by Dravo in April, the J. N. Philips, (shown in the background), the A. P. Boxley will be used for push towing of coal, phosphate and grain on the Mississippi River System. Both vessels will be operated by Orgulf Transport Company, one of Eastern's barge lines. Dravo has built three other towboats for Orgulf during the past four years.

Three Australian Terminals First To Use PACECO Twin-Container Systems

Aerial view of Port of Melbourne, one of the world's first ports to use Twin-Container Terminal Systems. Containers are handled in pairs by Twin-Lift Portainer cranes and Twin-Lift Transtainers or terminal cranes.

The world's first twin-container systems are now in operation in the Ports of Fremantle, Melbourne and Sydney, Australia.

Containers are handled in pairs throughout the terminal from the unloading of the ship by a Paceco Twin-Lift Portainer crane to the handling in the in-transit storage area by a Paceco Twin-Lift Transtainer or terminal crane. Transfer of twin-containers between cranes is handled by twin capacity yard trucks.

Cargo is handled at a rate of approximately 1,000 tons per hour and the terminals are expected to begin handling between 40,000 and 80,000 containers a year. To avoid excessive use of the valuable waterfront land, the terminals are stacking containers five high in the storage area. U.S. port terminals are stacking containers two and three high.

The three terminals are operated by Seatainer Terminals Limited to service the large 1,300 container capacity ships of Overseas Containers Limited and Associated Container Transportation as well as the Coastal Feeder Service of Associated Steamship Pty. Limited.

The Twin-Lift Portainer cranes and the Transtainer terminal cranes comprising the twin system were built in Australia by Vickers Hoskins Pty. Limited, the Australian licensee of Paceco, Alameda, Calif.

Sun Ship Is Low Bidder For Two Large Containerships

Sun Shipbuilding and Drydock Co., Chester, Pa., submitted the lower of two bids for the building of two 22,000-dwt containerships for United States Lines' South Atlantic-European continent subsidized service. The bid was $17,588,000 for each of the two ships. Bath Iron Works was the only other bidder.

U.S. Lines had asked for subsidy to build six containerships, but the Maritime Administration warned potential bidders that there was no assurance subsidy funds would be available for more than two. Neither of the bidders submitted proposals for the construction of six ships.

Subsequently, potential bidders were also advised that should U.S. Lines decide to go ahead with one, the line would have the option to order a second one within 120 days of the signing of the contract. The 700-foot-long ships, with drafts of 31 feet 11 inches, will be capable of speeds of 22.5 knots.

Netumar Int'l. Appoints Swanton Vice-President

Charles T. Mattman, president of Netumar International, Inc., has announced the appointment of **Gerald F. Swanton,** as vice-president.

Netumar International, Inc., represents Companhia Navagacao de Maritima Netumar of Rio de Janeiro, Brazil in the United States and Canada.

Netumar, formed in 1958, entered into the international trade in 1967, after serving solely the Brazilian coastwise trade. As an international carrier, Netumar has experienced rapid growth. They presently serve ports in Brazil from and to the East Coast of the United States, Canada and Great Lakes ports with their privately-owned Brazilian-flag vessels, supplemented with some chartered tonnage.

Mr. **Swanton,** formerly a director and vice-president of Moore-McCormack, Inc., will assist Mr. **Mattman** in the coordination of Netumar's activities in the United States and Canada. He is also vice-president and a director of the Emmett J. McCormack Foundation, a charitable foundation.

Mr. Swanton attended St. Jonn's University and the Harvard Business School, joining Moore-McCormack Lines in 1956. He has served in various capacities in both the United States and abroad, including South America, Europe and South Africa. He was a resident of Rio de Janeiro for two years, and has extensive experience in the South American steamship trade.

T. J. Stevenson & Co. Inc., act as general agents for Netumar's service to Brazil from U.S. North Atlantic and Great Lakes ports.

Lakes And Rivers Section Discuss Propulsion Systems

New officers of the Great Lakes and Great Rivers Section, SNAME, and authors are, left to right: (standing), **Benjamin F. Tracy Jr.,** chairman; **Trevor White,** papers chairman, and **John Manning,** meetings chairman. The authors of the papers presented (seated) are: **R. H. Roemer, Fred Y. Martin** and **Peter K. Dewhurst.**

At the spring meeting of the Great Lakes and Great Rivers Section of The Society of Naval Architects and Marine Engineers, held at the LaSalle Hotel in Chicago, **R. C. Doane,** U.S. Steel Corporation and Section chairman announced the officers for the 1969-70 season. The new officers are: **Benjamin F. Tracy Jr.** of Ashland Oil & Refining Company as chairman; **Richard H. Suehrstedt,** Marine Consultants and Designers, Inc., and **James E. Nivin,** Jeffboat, Inc., as vice-chairmen; **Robert F. Vollack,** American Bureau of Shipping, secretary-treasurer; **Trevor White,** Fraser Shipyards, papers chairman; **John Manning,** Hanna Mining Company, meetings chairman; **Leo J. Fredette,** American Bureau of Shipping, membership chairman, and **Harry H. Kendall,** Bird-Johnson Company, publicity chairman.

During the technical portion of the all-day meeting three papers were presented. **Fred Y. Martin** of The University of Michigan presented a paper entitled "The Application of Cycloidal Propellers to the Western Rivers Towboat Industry." **O. Bussemaker** and **R. H. Roemer,** Schottel of America, Inc., presented a paper on "Right Angle Propulsion, Maneuvering and Thruster Drive Units for Heavy Duty Marine Applications." A paper entitled "Steerable Right-Angled Drive Units for the Main Propulsion of Ships" was presented by **Peter K. Dewhurst** of Murray and Tregurtha, Inc.

In the afternoon the members of the Section were given a tour of the Nalco Chemical Company plant. The meeting concluded with a dinner in the evening.

The fall meeting of the Section will be held at the Latham Smith Lodge in Sturgeon Bay, Wis. on October 2.

R. C. Doane, left, U.S. Steel Corporation, passes on to **Benjamin F. Tracy Jr.,** Ashland Oil & Refining Company, the chairman's gavel.

N.Y. Maritime College Graduates 124 Cadets

The State University of New York Martime College, oldest institution of its kind in the United States, held its 113th graduation exercises on June 3. These colorful outdoor ceremonies were held in the Pentagon of the Maritime College's Fort Schuyler, Bronx campus, and more than 1,000 persons attended.

The graduation class, numbering 124 young men, is one of the largest to receive degrees in the long history of the Maritime College and its predecessor organizations. Bachelor of engineering degrees were conferred on 42 Maritime College cadets; 44 received the degree of bachelor of science, 17 received bachelor of science (nuclear) and the degree of bachelor of science (meteorology and oceanography) was conferred on 21.

Rear Adm. **Edward J. O'Donnell,** USN (ret.), president of the Maritime College, presided over the commencement exercises; and **Robert J. Blackwell,** deputy Maritime Administrator, U.S. Department of Commerce, delivered the principal address.

In addition to the diploma and degree, each cadet received a federal license as third mate or third assistant engineer in the American merchant marine.

More than 90 percent of the graduating cadets were commissioned as ensigns in the U.S. Naval Reserve, and 14 others have accepted commissions in other branches of service—ten in the U.S. Coast Guard, two in the Air Force and two in the Environmental Science Services Administration.

Western Offshore II To Drill In Hudson Bay This Summer

The first offshore drilling test in the frigid waters of Northern Canada's Hudson Bay will be conducted by one of Fluor Corporation's deep-water drilling vessels, Western Offshore II, during the ice-free months this summer, according to **Ross McClintock,** president of Western Offshore Drilling and Exploration Company.

The drilling barge, under contract to Aquitaine Company of Canada, Ltd., was outfitted in Halifax, Nova Scotia, for arctic operation.

The contract with Aquitaine calls for drilling two wells at sites on a block of more than 60-million acres of offshore lands covered by Canadian federal government permits. Other companies involved in the acreage are Atlantic Richfield Company, Sun Oil Company, Ltd., Camerina Oil and Gas, Ltd., Elf Oil Exploration and Production Canada, Ltd., and Canadian Fina Oil, Ltd.

"Timing and international logistics present a number of problems under this particular contract," Mr. **McClintock** said. "Ships, equipment, supplies, and people must be moved into the area from a number of points around the world. The two wells must be drilled and men and equipment removed before ice forms in the fall."

The Los Angeles-based Western Offshore II, under tow by the Dutch towboat Mississippi, will leave Halifax about the middle of this month for Hudson Bay. Depending on the ice breakup, the vessels will rendezvous later in the month at Cape Chidley, Newfoundland, with the Canadian tugboat, Foundation Vigilant, at least two European supply boats, and the local icebreakers.

The international convoy of cold-water drilling and service vessels will then enter the Hudson Strait and proceed to the drill site, some 250 miles due east of Churchill, Manitoba, on the west shore of the Bay.

Churchill is the supply base for the project. Men and material are being gathered at the base to support the 100-day operation. Mr. **McClintock** said that all men, equipment and vessels must leave the location and return to the seaward mouth of the Hudson Strait by mid-November in order to avoid the severe icing that starts at that time.

"The contract was awarded to Western Offshore on the basis of many years' experience with the extreme weather conditions of Alaskan waters," Mr. **McClintock** said, "as well as considerable experience in deepwater drilling." One of the critical problems to be faced by his group, he said, is communications which affect the departures and arrivals at various locations of a group of vessels in order to have icebreaker support available at all times when required.

The operation must stay in contact with Canada's Department of Transport and its various ice-reporting services, including vessels operating in Hudson Bay, Halifax Central, Frobisher Bay Aircraft, and the Churchill base.

Fluor's Western Offshore is one of the world's largest offshore oil-well drilling contractors and is presently conducting operations in Alaska, West Africa, the Persian Gulf, and the Gulf of Mexico. Western Offshore was the first drilling contractor to commence offshore-drilling operations in Cook Inlet, Alaska, and has continually conducted operations in that area.

Nashville Bridge Co. Elects New Officers

The Nashville Bridge Company, Nashville, Tenn., following a recent meeting of the board of directors, announced the election of new officers of the company. The announcement was made jointly by **Albert E. Hill Jr.**, president of Whale, Inc., the parent company, and **Harry B. Dyer,** chairman of the board, Nashville Bridge Company.

Mr. **Dyer** will assume the office of president, in addition to his present duties as chairman of the board.

Robert A. Downing was promoted from vice-president to executive vice-president. **William H. Barton, Robert C. Sanders** and **Ralph E. Van der Naillen Jr.,** were promoted from assistant vice-presidents to vice-presidents. **John E. Womack, Donald L. Guyton** and **Wesley H. Dyer** continue as vice-president, treasurer and secretary respectively.

R. A. Downing, a native of Tennessee,has has been with the Nashville Bridge Company since 1940 when he began in the Engineering Department. He received his engineering degree from Vanderbilt University. During World War II, he served in the Marine Corps in the South Pacific attaining the rank of Lt. Colonel. After the war, he returned to the Nashville Bridge Company as an engineer at the Bessemer, Alabama plant. In 1955 he was appointed assistant sales manager of the Nashville District at the home office. He was elected vice-president in 1962. Mr. **Downing** is a past president of the Engineers Association of Nashville; a member of the Tennessee Society of Professional Engineers; the Downtown Kiwanis Club; the Society of Military Engineers, and the Nashville Chamber of Commerce.

W. H. Barton, a native of Nashville, graduated in 1948 from the U.S. Naval Academy with a BS in engineering. He was on active duty with the U.S. Navy until 1959 when he joined the Nashville Bridge Company. In 1966 he became an assistant vice-president.

R. C. Sanders joined the Marine Department of the Nashville Bridge Company in 1962, and was named assistant vice-president in 1966. A native of North Carolina, he received his BS degree in civil engineering in 1949 from the U.S. Military Academy. He was on military duty for nine years, with the eventual rank of major.

R. E. Van der Naillen, a native of California, began work with the Nashville Bridge Company in 1958, and was named assistant vice-president in 1966. He received his bachelor's degree in engineering in 1951 from the U.S. Naval Academy. He served with the U.S. Navy for seven years, reaching the rank of lieutenant, with special duty as Navy pilot. He is now a commander in the Naval Reserve.

Lane Lifeboat Purchases Welin Davit And Boat Div.

The combining of two of the nation's oldest lifeboat manufacturers was disclosed on June 11 with the announcement that Lane Lifeboat and Davit Corporation of Brooklyn, N.Y. had purchased the assets of the Welin Davit and Boat Division, Perth Amboy, N.J. from Continental Copper & Steel Industries. The announcement was made by **Mortimor S. Gordon,** president of Continental.

Lane Lifeboat and Davit Corporation, serving the marine industry for over 100 years, will conduct the combined operations. Lane President **Henry Allen** stated that, "through this combined operation of Lane and Welin, we will be better able to supply the entire marine industry in the United States and abroad."

In addition to manufacturing lifeboats and davits, Lane operates a fiberglass premix press molding division for the production of instrument housings for industrial products. This division also manufactures molded rigid-foam products.

The consideration received by Continental for its 75-year old Welin Division included shares of stock of Lane.

Todd Announces Completion Of Derrick Barge Cherokee

Arthur W. Stout Jr., general manager of Todd Shipyard's Houston Division, has announced the completion of the 350-foot by 100-foot by 25-foot derrick barge Cherokee and its delivery to Santa Fe-Pomeroy Marine Services Company.

Though originally planned as a 500/1,000-ton derrick barge, a pipe ramp was designed and built into the vessel at the direction of the owners to give it the added capability for use as a pipe laying barge.

The vessel's revolving derrick will lift 500 tons as high as 150 feet at a radius of 95 feet, and in a fixed position will handle lifts up to 1,000 tons. The boom is 275 feet long and has, in addition to the heavy lift block, an auxiliary block of 150-ton capacity at a 130-foot radius, and a light load block of 50-tons capacity at a 240-foot radius.

The vessel has air-conditioned living quarters for 133 workmen and a crew of three.

Medium-Speed Diesels In Production at B&W

At Burmeister & Wain's subsidiary company, Alpha-Diesel A/S, Frederikshavn, Denmark, a diesel engine of the new type, V23H, was demonstrated recently. This is a four-stroke V-type engine which has a rating of 122 bhp per cylinder at 800 rpm, and is built with from 8 to 18 cylinders.

There are several reasons why Burmeister & Wain has commenced its production of four-stroke engine types. First of all, medium-speed four-stroke engines, because of their low weight and small space requirements, have in recent years won increasing popularity with shipowners for the propulsion of large and small ships; the second reason is that with this type engine it is possible to cover a very much larger horsepower range than has been possible up to now with B&W-Alpha engines having a top rating of only 1,000 hp. Further, with the choice of the 23-type, a simplification of production, stocking, etc. has been achieved, since this type—both as in-line and V-type engine—has replaced two or three earlier engine types and is produced by B&W's Danish subsidiary company, Holeby Dieselmotor Fabrik, and by several other licensees abroad.

In geared marine installations, one or more engines can be coupled through a reduction gear to a controllable-pitch propeller, or through reduction and reversing gears to a propeller with fixed blades. Additionally, this engine can be applied to power generators in diesel-electric propulsion plant, as marine auxiliary engines, as well as stationary plant. With multi-engine installations of the V23H-type, very high outputs can be obtained; for example, a plant with four 18-cylinder engines could have an output of approx. 10,000 bhp. Although the new V-type engine will find application as a propulsion engine in steel trawlers, smaller freighters, and all types of specialized ships, there is also the possibility of covering the propulsion requirements for larger merchant vessels, ferries, roll-on/roll-off vessels, etc., where the low height of the V23H-engine is an advantage.

The first two V23H engines built at Frederikshavn, are 12-cylinder units of 1,470 bhp, which are to be installed in tankers of 499 grt, building at Solvesborgs Varv in Sweden for two Swedish owners. Among the orders received are three 8-cylinder V-type engines for a Danish owner. To date, 120 engines (639 cylinders) of the 23-type have been delivered by Holeby Dieselmotor Fabrik and B&W's licensees, and there are 265 engines (1,499 cylinders) on order.

Naval Ship Systems Takes Bids For Tugs

IFB N00024-69-B-0619 has been issued by the Naval Ship Systems Command, Washington, D.C. 20360, pursuant to a two-step formal advertising to certain shipyards for the construction of three medium harbor tugs (YTM) and three small harbor tugs (YTL). The yards eligible to bid under the foregoing are: Bender Welding & Machine Co., Inc., Mobile, Ala. 36601; Blount Marine Corp., Warren, R.I. 02885; Halter Marine Services, Inc., New Orleans, La. 70129, and Equitable Equipment Co., Inc., New Orleans, La. 70130. Other firms will be neither eligible to bid under, nor to receive copies of, this IFB.

Texas Transport Elects Lake Vice-President

Boyd C. Lake, manager of the Philadelphia office of Texas Transport & Terminal Co., Inc., steamship agents, has been elected a vice-president of the company, it was announced by **Robert Reid,** chairman.

Mr. **Lake** joined T.T.T. in November, 1943. After working in the Accounting and Operations Departments, he became assistant manager in 1958 and manager in 1962.

Texas Transport & Terminal Co., Inc. act as steamship agents for many well-known lines and full cargo and tanker owners on the U.S. East Coast and Gulf.

MMC Develops Automated Liquid Cargo-Handling System

The Marine Moisture Control Company, a pioneer in remote controlled marine valve systems, has developed a new concept in automated liquid-cargo handling. The heart of the MMC remote controlled hydraulic valve system is the MMC butterfly valve assembly. This system uses proven marine quality butterfly valves of heavy pattern, for long life, with complete compatibility with cargoes to be handled. A valve assembly consists of a valve, rotary hydraulic actuator and a positive mechanical locking device in the full open or completely closed positions only.

In order to operate valves in a system, control valves are required. MMC offers control valves to meet various conditions. Both manual operated and solenoid operated four-way, three-position control valves are offered depending on the degree of automation desired.

To actuate the valve system, MMC manufactures two different types of power supplies: one is an electrically driven variable-displacement demand system and the other is a pneumatically driven unit of smaller output. Both power supplies have hand pumps incorporated for emergency operation.

The pneumatically driven unit can be installed in a hazardous area and requires only ships air supply for power. The electric supply gives a variable output depending on the systems hydraulic-flow requirements.

MMC valve assemblies employ the fewest moving parts to actuate a valve. Less parts mean more reliability due to simplicity of design.

For valves that are remote to the control station, a rotary position indicator is required. MMC will consolidate control stations into console or panels where central control is desired.

More automation can be obtained by using MMC's sonic overflow alarm system to operate the tank valves on function rather than manually.

To complete the system, cargo pump suction and discharge gases with chem protectors and pressure transmitters can be supplied and incorporated into the control consoles on request.

For more information, write Marine Moisture Control Company, Inc., 449 Sheridan Boulevard, Inwood, N.Y. 11696.

Canadian Vickers Launches MV Klondike—Containership For Vancouver-Alaska Run

Christening party for the container vessel Klondike, left to right: **Frank H. Brown,** chairman of the board of White Pass & Yukon Route, owners of the ship; **Mrs. James Smith,** wife of the commissioner for the Yukon Territory, who christened the Klondike, and **Wilbrod Bherer,** chairman of the board of Canadian Vickers Limited. The ship is the third of her type to be built at the Vickers yards for the White Pass & Yukon Route.

The MV Klondike was christened recently in a traditional champagne ceremony at the Canadian Vickers Limited shipyards, Montreal, Quebec, Canada.

The 6,000-ton vessel, built for the White Pass & Yukon Route for service between Skagway, Alaska, and Vancouver, B.C., is the third containership of this type produced by Canadian Vickers for the West Coast company.

Mrs. James Smith, wife of the commissioner for the Yukon Territory, christened the ship and the Venerable Archdeacon **F. J. Sinnamon** performed the blessing.

Wilbrod Bherer, chairman of the board of Canadian Vickers Limited, **Frank H. Brown,** chairman of the board of White Pass & Yukon Route, and Commissioner **James Smith** spoke briefly to the 300 invited guests.

The ship is a single deck type having an extended upper deck terminating above an open weather deck aft. Accommodations, navigation bridge and machinery are arranged at the aft end; the hull is laid out with the forepeak, a bulk-cement hold, a pump room, seven container cargo cells, fuel-oil-cargo wing tanks, machinery space and aft peak. In addition to cargo containers in holds and on deck, the ship has capacity for 1,300-tons of cement and 623,000-gallons of cargo oil.

It is 394 feet long, 70 feet wide and has a speed of 13½ knots and will carry a variety of cargoes such as perishable freight, containerized asbestos, containerized ore concentrates, general cargo, petroleum products and bulk cement.

The Klondike is equipped with van-type containers designed for use aboard ship, and rail and highway transport. There are four types for use with dry cargo, vented cargo, heated cargo and refrigerated cargo. Normally they will be arranged below deck in six cells of 30 containers.

On deck, there is a gantry crane for container handling and removing and replacing hatch covers. This traveling crane has a maximum lift capacity of 80,000 pounds and an outreach of 60 feet from the ship's centerline.

The Klondike is powered by two Nohab-Polar reversing diesel engines, each with seven cylinders. Each engine develops 2,800 bhp at 250 rpm.

Three 300-kw diesel-driven main generators supply 550-volts, 3-phase, 60-cycle a-c current to the distribution section of the main switchboard.

Lockheed To Build DSSV For 20,000 Feet

Following authorization from the Department of Defense, the Naval Ship Systems Command has issued a $500,000 letter contract to Lockheed Missiles and Space Company, Sunnyvale, Calif., for final, pre-construction design-study of a prototype Deep Submergence Search Vehicle (DSSV) with a depth range of 20,000 feet.

Lockheed proposes to start work this year on concept refinement and material development for the DSSV. To achieve minimum vehicle weight, Lockheed aims to use improved buoyancy materials and hull structural materials. Actual construction work is scheduled to begin during fiscal year 1971, although the first vehicle will not be operational until the late 1970's.

The missions of the DSSV include search and oceanographic operations on the deep ocean floor.

The vehicle will have accommodations for four crewmen, a 30-hour endurance at depths and a life support capability of 80 hours.

Long lead time developments such as the DSSV's fuel cell powerplant and pressure sphere material will be funded next fiscal year. The Navy has chosen Allis-Chalmers Corp. of Milwaukee and the Pratt and Whitney Corporation of East Hartford to undertake preliminary designs of the fuel-cell power system for the submersible. The companies will have until August to complete their respective designs. One of them will eventually undertake the final design and construction of the fuel-cell system.

The fuel-cell power system is expected to furnish the electrical power required for the propulsion and auxiliary loads of the vehicle. It will include the powerplant, reactant supply, control, instrumentation, and associated hardware.

McDermott To Install Largest Gulf Pipeline

Roger W. Wilson, president of J. Ray McDermott & Co., Inc., New Orleans, La. 70160, has announced that the company had been awarded the contract for construction of the Sea Robin Pipeline project. He said, "The value of the contract is $32-million."

Sea Robin Pipeline Company is a joint venture of United Offshore Company and Southern Deepwater Pipeline Company, each of which are respectively subsidiaries of United Gas Pipe Line Co., Inc., and Southern Natural Gas Co., Inc. The system will transport gas from the Gulf of Mexico through 169 miles of large diameter pipeline, including 65 miles of 36-inch-diameter line. This will be the first 36-inch pipeline laid in the Gulf of Mexico. There will also be an interconnecting gathering system. McDermott will also install five offshore junction platforms.

Mr. **Wilson** said, "Several of our largest pieces of construction equipment will be utilized on this project including two 500-ton combination derrick and pipelaying barges and our new 420-foot pipelaying barge."

Groignard Shipyards Repairs Esso Mercia

Esso Mercia at Groignard Shipyards in Marseille while undergoing guarantee repairs.

The largest vessel to be handled by Groignard Shipyards, Marseille, France, the 170,000-dwt Esso Mercia, has re-entered service for Esso Petroleum London. The Groignard Shipyards had submitted the lowest bid of any European shipyard for guarantee repairs and improvements to the vessel.

Prior to entering the shipyard the vessel stopped at the tank cleaning station at Marseille to have 3,500 tons of residuals removed. With this work out of the way, Groignard carried out the overhaul work involving machinery, steel, electrical and piping work within the bid time.

The shipyard workers were somewhat amazed by the size of the cargo tanks on this ship but it did not delay their work. One center cargo tank on the Esso Mercia holds 30,000-tons of oil—equal to a supertanker of but a few years ago.

Now that Marseilles is proceeding to build a drydock capable of handling 350,000-dwt ships, Groignard feels confident that many more of these mammoth tankers will be repaired by them.

LAUNCHING ONE OF SIX 250-ton deck cargo barges being built by the structural shops of the San Juan Shops Division of Atlantic, Gulf & Pacific Co. of Manila, Inc. for the Luzon Stevedoring Corporation in Manila, Philippines. The barges are to be used in loading and unloading ships and for carrying freight on rivers. Each barge is 115 feet long, 24 feet wide and 7½ feet deep. The interior of each barge is divided into ten watertight compartments and has a 50-gallon water tank, a deckhouse and wooden deck sideboards. The construction of the six barges was accomplished in about 30 days.

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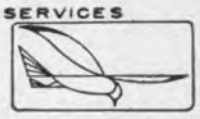

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Three Yards Submit Bids To Convert Three U.S. Lines Mariners To Containerships

Bids for the conversion of three United States Lines Mariner-class vessels to full containerships were recently opened by the Maritime Administration. Todd Shipyards was the apparent low bidder with a figure of $8,546,-333 for each of three ships. The other bidders were Maryland Shipbuilding and Drydock Company and Alabama Dry Dock and Shipbuilding Company.

The bids were very close and an evaluation of the options requested could change the position of the bidders. The tenders are firm for 120 days.

The invitation to bid called for delivery of the first ship in 360 calendar days after award of a contract. Each successive ship is to be delivered at 60-day intervals.

The United States Lines had previously received bids for the conversion of eight Mariner-class vessels to containerships. Five of these ships were tentatively assigned to shipyards but awards have not been made.

Largest Ore-Oil Ship Ordered in Japan

A contract for the construction of a 210,000-dwt combination dry and liquid bulk carrier—reportedly the largest such vessel yet built—has been announced by the Japanese shipbuilding firm of Nippon Kokan. The current record size vessel of the ore-oil carrier class is 150,000 dwt, the shipyard reported.

The new vessel, to be built for Marmros A.B. of Sweden, will be 1,075 feet long, have a beam of 164 feet and a draft of 62 feet. Delivery is scheduled for January, 1972.

Largest Self-Unloading Bauxite Ore Ship Launched In Germany

The David P. Reynolds, the largest self-unloading bauxite ore ship in the world, was launched recently in Hamburg, West Germany. The traditional champagne bottle was broken over her bow by **Mrs. Margaret H. Reynolds,** wife of the executive vice-president of Reynolds Metals Company, Richmond, Va., for whom the ship is named.

The new 51,500-ton-capacity vessel, built by Howaldtswerke-Deutsche Werft, will take her place in a fleet of seven ships operated by Reynolds and its subsidiaries.

Slated for delivery in November, 1969, she will be used in various trades, including carrying bauxite ore from Reynolds mines in Jamaica to the company's alumina plant at Corpus Christi, Texas. The new ship will carry nearly two-million-tons of bauxite annually.

Speaking at the launching, **David P. Reynolds** noted that the vessel symbolized the progress of Reynolds as a worldwide enterprise.

As the largest of the firm's ships, the new carrier "is an essential part of an expansion of all Reynolds operations from mining and transportation of bauxite to primary production and fabrication of aluminum products in many countries," he said.

Another part of the expansion is the aluminum reduction plant and fabricating complex which Reynolds has announced it will build in Hamburg.

"Finally," Mr. **Reynolds** said, "this vessel symbolizes increased international trade. Increasing trade brings more and more people of different nations together, in multiplying contacts and friendships. The result can only be good, for world peace and the betterment of living standards everywhere."

Present at the launching, in addition to Mr. and **Mrs. Reynolds,** was **J. Louis Reynolds,** chairman of Reynolds International, Inc., a wholly owned subsidiary of Reynolds Metals Company, which will be responsible for the company's new West German facilities.

To handle the David P. Reynolds, company docks at Corpus Christi will be extended. The self-unloading facility there has an average discharge rate of 2,100-tons of ore per hour.

The new vessel will be 734 feet overall with a 102-foot beam. A geared-turbine propulsion plant of 18,000 shp will provide a speed of 17 knots .

Aluminum was used extensively throughout the steel-hulled ship. The pilothouse, internal sheathing, side ports, hatch covers and other items are aluminum.

Designed for quick, clean discharge of ore, the new ship will have a bow thruster which will assist in docking and undocking. The first cargo run is expected in early December of this year.

The J. J. Henry Co., Inc., New York naval architects, designed the ship and is serving as owner's representative during the construction.

David P. Reynolds is executive vice-president in charge of all sales and marketing activities for the world's third largest aluminum producer. He has held a variety of sales and marketing positions during his 32 years with the company and assumed his present position in 1958.

American Marine Corp. To Build Supply Boat

American Marine Corp., New Orleans, La., has received an order from Guzzetta Offshore Marine Service, Inc., for an offshore, oil-well supply boat. To be equipped with 2,000-total-bhp diesels, the boat will have a length of 176 feet, a beam of 40 feet, and a depth of 14 feet. It has been designated Hull No. 1053 and will be named Midnight Worker

Largest Ship Unloaders Being Built By Dravo For Bethlehem Ore Pier

The nation's three largest ship unloaders will serve Bethlehem Steel Corporation's new $50-million ore unloading pier and stockpiling complex now under construction at Sparrows Point, Md., site of the largest steel plant in the U.S.

The new unloaders, together with two bucket-wheel stacker-reclaimers, will greatly speed up the unloading procedure as well as keep pace with the growing size of giant ore carriers now in service and on the drawing boards.

Dravo Corporation, Pittsburgh, is designing and fabricating the three unloaders and two stacker-reclaimers.

Bethlehem has urged the deepening of the Baltimore harbor channel from the present 42 feet to 50 feet to permit the handling of ships comparable to those in service or on order for European and Japanese steel producers.

Each unloader will feature a cantilevered boom that provides for a bucket reach of 100 feet from the pier fenderline—believed to be the longest of any unloader now operating in the U.S. This compares with an average reach of from 70 to 90 feet for existing U.S. unloaders. Operating on cycles of 44 seconds for each pass, the three unloaders will have a combined free digging capacity of about 6,450 net tons an hour.

Each bucket-wheel stacker-reclaimer, operating in the ore storage yard, will be designed to stock iron ore or pellets equalling the output rate of the three unloaders. The reclaiming rate from the storage pile will range up to 4,000 net tons an hour per machine. Each machine has a capacity approximately 300 percent greater than the conventional ore bridge used in stocking and reclaiming operations.

The three unloaders will travel on rails along the new 1,020-foot-long pier complex. To make it possible for the machines to unload vessels on either side of the pier, the unloaders are designed so that the upper tower and boom can be rotated through a full circle.

The unloading buckets will be suspended on and operated by wire rope. The operator's cab will be suspended from the boom during unloading operations and can be retracted into the tower structure. Hoist speed of the bucket will be 340 feet per minute, and the trolley will move back and forth at a speed of 750 feet per minute.

R. Delaney Named GE Service Sales Engineer

Robert E. Delaney

Robert E. Delaney has been named a service sales engineer for the General Electric Apparatus Service Shop at 3422 First Ave., South, Seattle, Wash.

The appointment, effective immediately, was announced by **John D. Billings,** shop manager.

Mr. **Delaney's** responsibilities will include the service and sales for marine and government customers of the service shops department in the Seattle area.

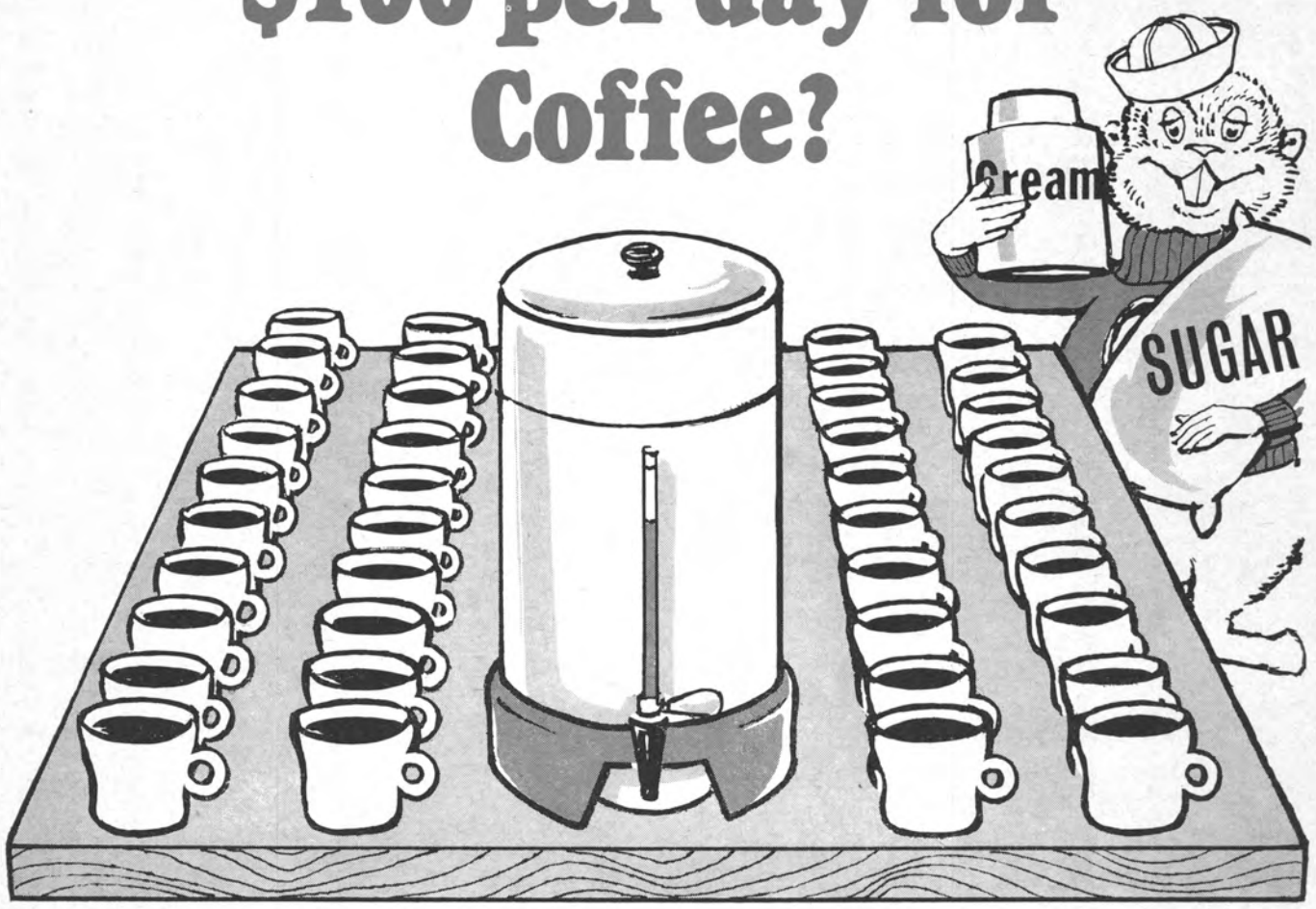
The service shops department operates 68 service and repair facilities, located in key industrial areas throughout the United States, which specialize in the repair, modification and maintenance of a wide range of electrical, electronic and mechanical equipment produced by all manufacturers.

Mr. **Delaney** attended both the University of Minnesota and Washington State University.

Prior to joining General Electric, he worked as a sales manager for a shipbuilding and construction company in Seattle and was also the chief of trade promotion for the Port of Seattle.

He is a member of the Propeller Club of the United States, Seattle Chapter, the Navy League, and is presently serving on the board of trustees of the Society of Port Engineers of Puget Sound.

$100 per day for Coffee?



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United Fruit Promotes Denver, Bourg & Luce

Robert A. Denver has been appointed general division manager of United Fruit Company, according to a recent announcement by Capt. **Charles B. McAuley,** vice-president—transportation operations. In this position Mr. **Denver** will supervise United Fruit's U.S. domestic divisions and will continue to have staff responsibility in connection with the company's worldwide banana discharging terminals. A career employee, Mr. **Denver** was named manager cargo operations in 1962, and in 1965 manager domestic terminal operations.

Two other appointments were also announced by Captain **McAuley.**

James M. Bourg has been appointed director of distribution for United Fruit. Mr. **Bourg** will be responsible for all inland banana traffic activities, including perishable freight inspection services. Mr. **Bourg** joined United Fruit last year as manager—distribution.

Stanley F. Luce, another career employee, has been named manager—transportation services. Mr. **Luce** will coordinate all vessel utilization in the company's worldwide services. Mr. **Luce** was named superintendent general cargo operations in 1962, and in 1966 assistant manager—domestic terminal operations.

All three men will be located in United Fruit's headquarters office in Boston.

Luckenbach Acquires Shaw Bros. Shipping

Edgar Luckenbach, president of Luckenbach Steamship Company, announced that his 119-year-old firm has acquired the marine operations of Shaw Brothers Shipping Company, one of the largest and oldest terminal operators, stevedores and agencies in the growing ports of Miami, Port Everglades, West Palm Beach and Port Canaveral.

The new addition to the rapidly expanding Luckenbach "family of companies" became effective on June 15. Mr. **Luckenbach** stated "this new acquisition . . . the fifth in as many years . . . will put the Luckenbach house flag in 11 Atlantic and Gulf Coast ports and will result in service to virtually every major American and foreign-flag steamship company trading with the ports of Philadelphia; Wilmington, Delaware; Camden, N.J.; Wilmington and Morehead City, N.C.; Jacksonville, Cape Canaveral, Port Everglades, West Palm Beach, Miami and Tampa, Fla."

Bureau Publishes Revised Cargo Gear Requirements

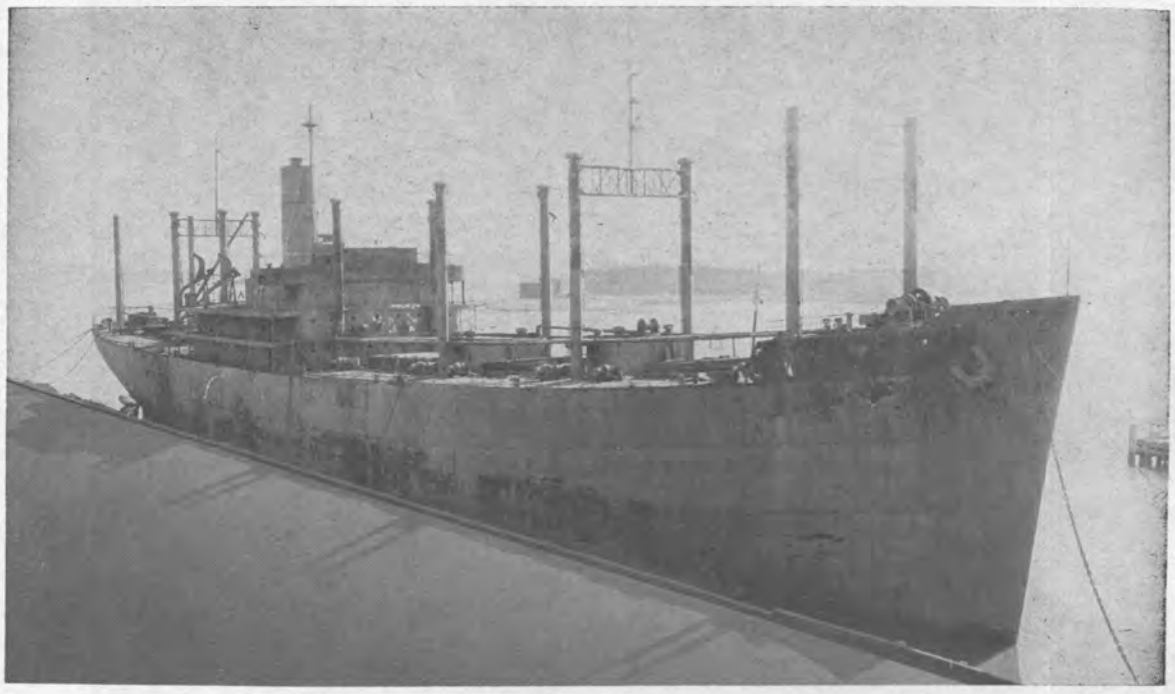
The American Bureau of Shipping has published a revised version of its "Requirements for the Certification of the Construction and Survey of Cargo Gear on Merchant Vessels." A number of changes have been made, including a complete new section on union purchase, or "Burtoning" as it is often called.

Costing $1.50, the booklet may be obtained from the nearest Bureau office or from circulation manager, American Bureau of Shipping, 45 Broad Street, New York, N.Y. 10004.

Levingston Shipbuilding To Convert Cargo Ship

Zapata Offshore Co., Houston, Texas, has awarded the Levingston Shipbuilding Co., Orange, Texas, a contract for conversion of a diesel-propelled cargoship into an offshore, oil-well drilling vessel. The ship, Navigator, is a war-built C-1-M-AVI-type vessel which will be able, when completed, to drill to water depths of 15,000 feet. Sponsons, 225-feet long, will be built and fitted port and starboard.

AP2/AP3 VICTORY C2/C3 NEW, USE RECONDI



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

MORMACSEA — Moore Hull 197 — some interchange with Federal Hull 198 — such as turbo generator sets. ALL EQUIPMENT AVAILABLE: 350 KW Turbo Generator sets—120/240 volts—Crocker-Wheeler generator driven by DeLaval turbine and gear—440#—740°TT—10,000 RPM/1200. Forced draft fans and motors—main circulators and motors—auxiliary circulators and motors—steering gear motors and pumps, etc.

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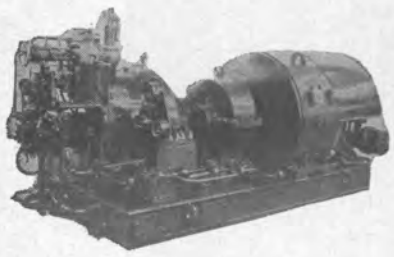


300 KW – From AP2 Ex-Medina Victory

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

300 KW – From AP3 Ex-Ridgefield Victory

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

300 KW Murray

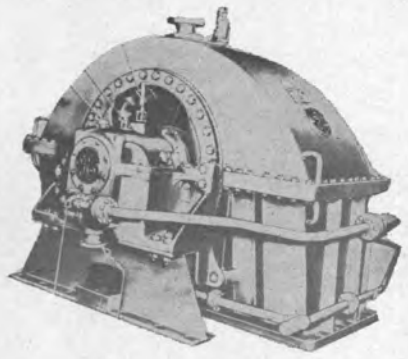
TURBINE: G.E.—DORV—325M—440#—740°TT—5645 RPM. GEAR: S-192—5645/1200. GENERATOR: Ideal—120/240 VDC—1250 amps—stab. shunt.

300 KW GENERAL ELECTRIC

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

TURN TO 3RD PAGE FOLLOWING FOR 300 KW SPARE ARMATURES

NEW AP2 VICTORY ENGI
6600 HP Main Propulsi



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For General Electric and Allis-Chalmers—

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Ex-Medina Victo
1620.

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Bell & Gossett — complete with brine and evaporator feed pump and motor—distillate pump and motor.

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Located Mobile

VICTORY AP3 RUDDER

Located Baltimore

VICTORY AP3 MAIN CIRCULATOR & MOTOR

PUMP: 20 VCM—13,000 GPM—24.5 ft.—635 RPM. MOTOR: Reliance—100 HP—230 volts—360 amps—475/635 RPM — Lt. Compound — Frame 1050T — Vertical.

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21' 8" Diameter
21.669 Ft. Pitch
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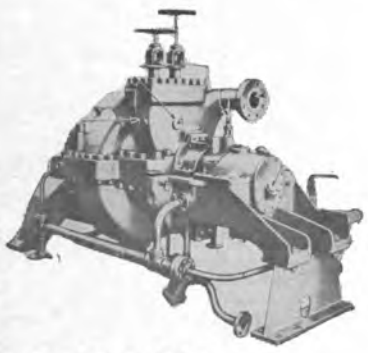

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AP2—6000 H.P.

NEW SPARE BLADING FOR WESTINGHOUSE L. P. TURBINE
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10/15 HP—230 VDC—250 GPM @ 43 lbs.—980/1750 RPM. MOTORS: G.E. or Reliance.

MAIN CIRCULATOR & MOTOR FOR AP2 VICTORY

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

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

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AP3—2VHM—150 GPM—1650 RPM

AP2—2VHM—120 GPM

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15 HP MOTORS: Reliance—G.E.—Crocker-Wheeler

TURBINES: Coppus type TF5 and Terry

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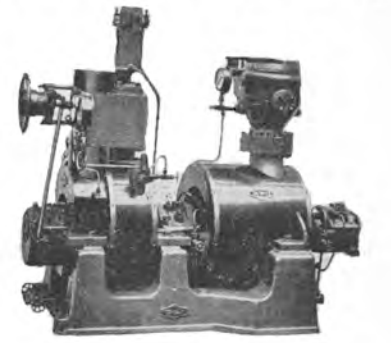
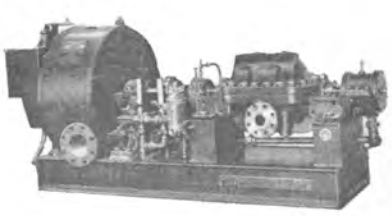
COFFIN MODEL F

Victory or T2, C3 etc.—control valve 1¼"—Form VI—constant pressure regulator—type C—150 HP—200 GPM—discharge pressure 575 PSI—7200 RPM—turbine 440 PSI 500°F—10 lb PSI exhaust pressure. Consumption 4280 lbs/hr—2 units available.



WEIR TURBINE DRIVEN FEED PUMPS TMFP7

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



MAIN FEED PUMPS

C2-S-J1—North Carolina—2 UQS-2—150 GPM @ 1465 T.D.H.—4000 RPM—115 H.P. Turbine. Form S2RM—Moore steam turbine—1½" steam inlet—440 lbs WP—750°F @ 10 lbs gauge. Water rate 26.8 lbs BHP/hr.

PACIFIC FEED PUMPS – TYPE JB – AP3 VICTORY

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

SPECIAL FROM RIDGEFIELD VICTORY

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

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

AIR COMPRESSORS

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From C2-SAJ-1—Model 15B—type 40—5 x 5 and 4 x 4—60 C.F.M.—110 lbs.—15 H.P.—230 volts D.C.—55.7 amps.—1750 R.P.M.

SULLIVAN

AP3—7 x 4½ x 4½—60 C.F.M.—15 H.P.—230 volts.

A 300 KW VICTORY SHIP & C-2 GENERATOR ARMATURES

CROCKER-WHEELER

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

ALLIS-CHALMERS

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

WESTINGHOUSE

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

GENERAL ELECTRIC

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

C-2 ARMATURES

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

T2-SEA-1 TANKER MAIN STEAM & AUXILIARY EQUIPMENT

B MAIN TURBINE ROTORS

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

C G.E. MAIN PROPULSION GENERATOR REVOLVING FIELD

G.E. reconditioned—June 1967

D G.E. MAIN GENERATOR STATORS

E REWOUND WESTINGHOUSE MAIN PROPULSION GENERATOR REVOLVING FIELD

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

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Reconditioned

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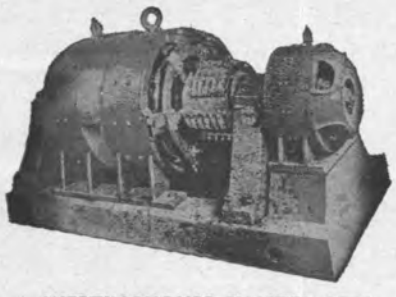

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110 KW—28 KW—5 KW available
110 KW—32.5 KW—5 KW available

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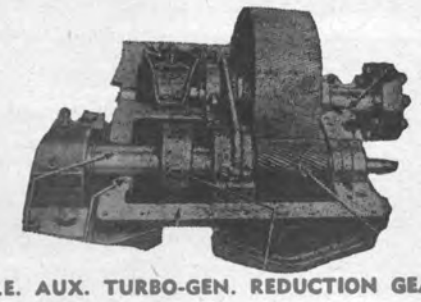
125 HP—Westinghouse—Frame 876C—type CS—squirrel cage — 440/3/60 — 585 RPM. Reconditioned to ABS. Ready to go immediately.



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Bull gear & pinion. With ABS

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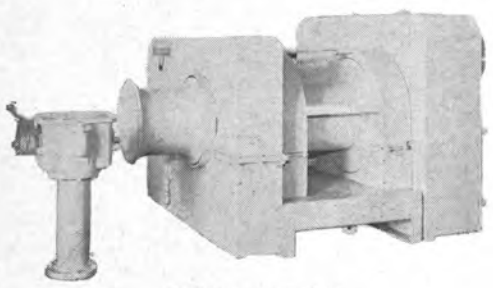
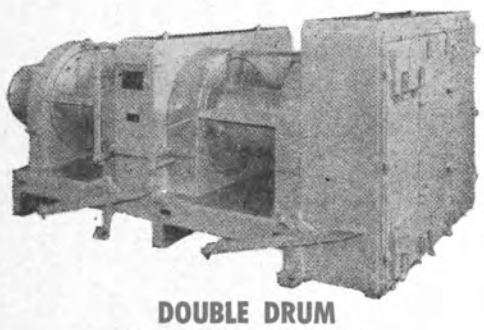


VICTORY TYPE UNIT WINCHES

50 HP—230 volts DC—Westinghouse, G.E. or Crocker-Wheeler. U-1, U-3 single speed—7450 lbs @ 223 FPM; U-2, U-5 double speed—19,000 lbs @ 96 FPM. We have both right and left hand. Send for flyer on these.



DOUBLE DRUM U-6 UNIT WINCHES

Double drum unit winch model U-6. DRUM: 16" diameter by 20" wide—with 28" flange. MOTOR: G.E. 50 HP — 230 volts — CDM — 1829 A.E.

AMERICAN ENGINEERING UNIT WINCHES

2 Full sets from "African Endeavor" and "African Enterprise." Winch duty: 7450 lbs at 223 FPM. MOTOR: G.E. 50 HP—230 volts DC—type CDM—1829 A.E.—181 amps—750 RPM.

A.E.—2-7/16" WINDLASS

Made by American Engineering — from Ex-African "Enterprise" and "Endeavor". 65 HP —230 volts—234 amps.

HYDE #12 WINDLASS FOR 2 11/16" CHAIN

Built for Beth Quincy 29,000 ton class tankers. 12 x 14 wp 125-150 lbs—handle 16,500 lb anchors. Wildcat centers 4' 8". Completely reconditioned — new cylinders — new throttle valves—new piping.

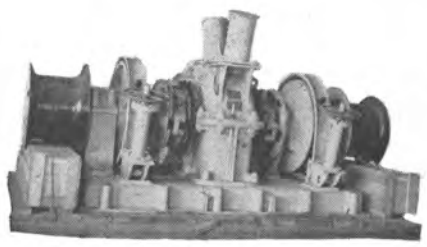
T-3 ANCHOR WINDLASS FOR 2⅜" CHAIN

American Engineering 13 x 14—handle two 13,000 lb anchors and 60 fathom chain at 35 FPM. Wildcat centers 6' 3".

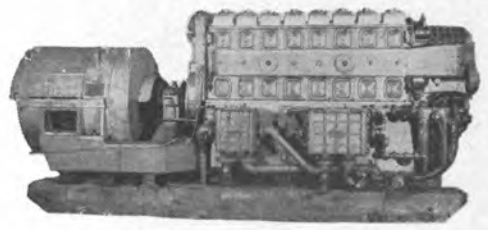
T-2 WINDLASS FOR 2-5/16" CHAIN

American Engineeirng type MALI-60-14—12 x 14—4' 8½" between wildcat centers.

UNUSED 1⅝" HEAVY DUTY LINK BELT WINDLASS



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



290 KW DIESEL GENERATOR SET

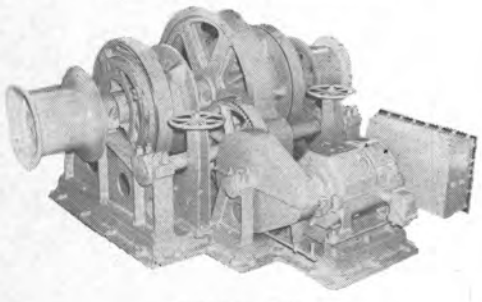
Westinghouse 290 KW generator—120/240 volts—1250 amps. ENGINE: GM 8-268A—6½ x 7—8 cylinder—1200 RPM.

G.E. 600 KW 440/3/60 TURBO GENERATORS

COMPLETELY RECONDITIONED BY G.E. SERVICE SHOPS WITH LLOYDS AND ABS CERTIFICATES

TURBINE: GE FN3-FN20 — condensing 6-stage — 525/565 lbs gauge. Super-heat 355/371 — 10033 RPM. GEAR: S-178—ratio 8.36:1—10033/1200. GENERATOR: 600 KW A.C.—type ATI—600 KW—750 KVA—450/3/60—1200 RPM—80% PF—totally enclosed—water cooled. EXCITER: 7½ KW—120 volts—62.5 amps—1200 RPM.

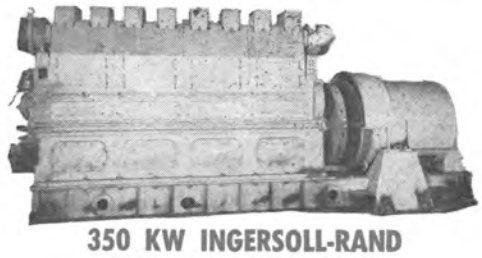
WINDLASSES



NEW 2¼" McKIERNAN-TERRY

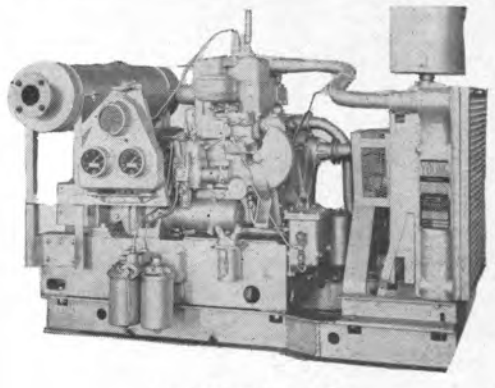
(2)—For 16,000 lb anchors—47½" center to center. 70 HP — 230 volt DC motors — with controls.

GENERATOR SETS



350 KW INGERSOLL-RAND DIESEL GENERATOR SETS

4 Available—engine type S—Ingersoll-Rand—1½ x 12—heat exchanger cooled—600 RPM. GENERATOR: General Electric—350 KW—120/240 volts DC—600 RPM. Complete with switchgear, coolers and air starting equipment.



UNUSED 10 KW SUPERIOR DIESEL GENERATOR SETS

Radiator cooled units—120 volts DC—83.3 amps. ENGINE: Superior diesel model GAB-1—4½" bore—5¾" stroke—16 HP—equipped with Young radiator. Overall dimensions—57" high—57" wide—75" long.

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Baltimore/Puerto Rico Barge Service Started

A regularly-scheduled barge service between Baltimore and Puerto Rico, designed to handle the variety of cargoes which cannot be handled efficiently in containers, was launched last month by Cymeon Barge Lines, Inc., of New York.

The operation will utilize a 6,500-dwt oceangoing barge and the 3,120-hp tug, Jesse James, both of which have been chartered by Cymeon. Sailings from Baltimore are planned every three weeks.

Ben F. Butler, president of Cymeon, said that a large number of industrial shippers already have been offering cargo for the barge. Complaints began to develop several months ago that the only regular link with Puerto Rico was by container service.

Mr. **Butler** said he expects the barge to transport such odd-size and high density items as tinplate, pipes, steel products, firebrick, boxboard, creosoted poles and components for industrial projects. Commodities of very low density also are handicapped, in terms of rates, when they must be shipped via container, he declared.

Southbound, the tug-and-barge combination will sail from Baltimore only to San Juan. On the return voyage it may visit some other Puerto Rican ports to pick up "backhaul" cargo.

A number of industrial plants on the island are already or soon will be shipping their products to the mainland, Mr. **Butler** said, adding that prospects for return cargoes look exceptionally good at this time. The comparatively shallow draft of the barge will enable it to call at many private industrial docks in Puerto Rico, he pointed out.

Actually the barge Mohawk, chartered from Indian Towing Co. of New Orleans, is a converted Great Lakes vessel. The 108-foot tug Jesse James was built in Manitowoc, Wis., and is now on charter from a Tampa, Fla. firm.

Two features will distinguish this type of barge service from the usual operation, in which individual barge owners find a barge available and undertake to obtain cargo to fill it themselves, which does not always result in the most economic venture on their part, as well as on the part of the shippers involved, Mr. **Butler** said. Cymeon sailings from Baltimore to Puerto Rico will be on a regular basis, he said, and a regular sales staff will be soliciting freight.

Termin Shipping Co., Inc., will act as local Baltimore agents for the service, and Motorships of Puerto Rico will be Puerto Rican agents.

Two gantry cranes, of 14- and 16-ton capacity, are at the Clinton Street pier in Baltimore where the barge will be berthed. There is also considerable shed space and two rail sidings, said Mr. **Butler.**

Cymeon Barge Lines is occupying offices at 29 Broadway, New York City.

Mr. **Butler** has been in the field of ship and barge chartering and brokering for several years. Cymeon Shipping & Trading Co., a brokerage firm, was established in September, 1967, and Cymeon Barge Lines is an affiliate.

Grace Line Elects George Schreiner To Board Of Directors

George H. Schreiner was elected to the board of directors of Grace Line it was announced by **Harold R. Logan,** chairman of the board and chief executive officer.

Mr. **Schreiner** joined Grace Line in 1968 as vice-president and chief financial officer after positions with Price Waterhouse & Co., Matson Navigation Co. as controller, and most recently, as vice-president, finance and treasurer, as well as a director of American President Lines Ltd., San Francisco.

A member of the American Institute of Certified Public Accountants, the Financial Executives Institute, and a director of American Steamship Owners Mutual Protection & Indemnity Association, Inc., New York, Mr. **Schreiner** has been very active in the industry's financial committees and is widely known for the innovative procedures credited to him.

A graduate of the University of Rochester, BA, and Harvard University, MBA, Phi Beta Kappa, Mr. **Schreiner** saw active duty in the Navy during World War II.

Largest Canadian-Built Crane Barge Commissioned At Burrard Dry Dock

Deck view of the huge offshore construction crane barge built by Burrard Dry Dock Company Limited for Raymond International. It is 350 feet long and 100 feet wide.

One of the largest offshore construction crane barges in the world was commissioned recently in a special ceremony at Burrard Dry Dock Company's North Vancouver (Canada) yard.

The 350-foot-long by 100-foot-wide giant was officially named the William Denny and turned over to the owners, Raymond International Inc.

Fabricated and assembled in a unique cooperative effort of western Canada's largest shipyards—Burrard Dry Dock Company in North Vancouver and Yarrows in Esquimalt—the $4.5-million vessel is the largest of its type ever built in Canada.

Its construction is related to the recent formation by Raymond, a major worldwide construction company, of an offshore construction division which is specifically oriented to the petroleum industry's needs. The William Denny will be assigned to the new division.

The barge was fabricated at the Burrard yard in three sections and the sections were towed to Yarrows where they were assembled in the large graving dock. The 'married' vessel was then towed back to Burrard for final outfitting, including the erection of the huge 500-ton diesel-electric revolving crane.

Raymond officials attending the commissioning ceremony praised the Burrard-Yarrows companies and Canadian workmanship on the huge, all-steel welded barge.

Mrs. William Denny, the vessel's sponsor, performed the traditional breaking of a champagne bottle on the auxiliary hook of the vessel's crane. It is named after **William Denny,** senior vice-president of Raymond.

J. W. Hudson, executive vice-president of Burrard, welcomed the guests and introduced the two speakers, **Clarence Wallace,** president of Burrard, and **Henry F. Le Mieux,** president of Raymond International.

E. D. Grandle, manager of Raymond's Offshore Construction Division, accepted the vessel on behalf of the owners, and Canon **Stanley Smith** blessed the vessel. Other senior executives of Raymond International in the official party were **H. C. Boschen,** chairman; **R. R. Helen,** vice-president, and Mr. **Denny.**

The barge is not self-propelled and requires towing from job site to job site. The huge crane towers about 300 feet above the deck from a position towards the after end of the vessel. The crane has a 500-ton capacity at 70-foot radius and 100-tons at 215-foot radius. Hoisting power is provided by two 560-hp diesel engines.

The crane boom is about 245 feet in length. The crane weighs 1,157,000 pounds. The rigging for the crane has over three miles of steel cable.

Power to rotate the crane through 360 degrees is provided by two 150-hp electric motors and it is also equipped with a 750-hp boiler to power the steam pile-driving hammers up to a rating of 125,000 foot-pound.

The barge has a pipe ramp on the starboard side and is capable of laying pipelines up to 48 inches in diameter. Complete welding facilities will handle both structural and pipeline work.

Completely air-conditioned quarters for the crew are located below the main deck leaving it clear as a heliport and for work space. Space is provided for a two-month supply of fuel and provisions.

The anchoring system has eight 25,000-pound anchors.

Olsen Gresser Assoc. Relocates Office

The Singapore marine consulting firm of Olsen Gresser Associates (Pty.) Ltd. has announced that it has relocated its offices at the Industrial & Commercial Bank Building, 2 Shenton Way, Singapore. The firm serves as naval architects, marine engineers and marine surveyors for the industry.

Sidney Newell Joins Albina Engine Staff

Sidney W. Newell

Sidney W. Newell, former representative for Union Diesel Engines, has joined the engineering staff at Albina Engine and Machine Works as assistant director of engineering under **Claude Butler.**

For the past two years, Mr. **Newell** has been working in the San Francisco area as a consulting engineer on a worldwide basis.

A graduate of Webb Institute of Naval Architecture, Mr. **Newell** will oversea general engineering work at Albina.

Sperry Purchases Doppler Sonar Line From Kollsman Ind.

Sperry Rand Corporation's, Sperry Marine Systems Division has announced that it has purchased the doppler sonar product line of Kollsman Instrument Company of Syosset, N.Y., a subsidiary of Standard Kollsman Industries, Inc.

The doppler sonar system is a highly sensitive speed and distance measuring device for commercial and military ships. It can materially improve the docking and navigation capabilities of large ocean-going and lakes vessels.

The price of the purchase was not disclosed. Key technical and marketing personnel on the doppler sonar program have transferred from Kollsman to Sperry Rand.

The doppler sonar system will be added to the product lines of Sperry Marine Systems Division, a leading supplier of maritime navigation and control systems. Headquartered in Charlottesville, Va., Sperry Marine Systems has more than 30 offices in the United States and Canada and is part of a worldwide network for the sale and service of Sperry marine products.

Johnson Marine Div. Names Schwartz Mgr. International Marketing

Laurence C. A. Schwartz

Laurence C. A. Schwartz has been appointed international marketing manager for the Marine Division of the Johnson Rubber Company, Middlefield, Ohio. He will be responsible for establishing world distribution for the division's products in underwater propulsion system components that include rubber propeller shaft bearings, demountable bearings, torque-journal hub propellers, and stuffing boxes for commercial vessels and workboats.

Main Iron Works To Build Twin-Screw Tug For Humble Oil

Main Iron Works, Inc., Houma, La., is scheduled to build a twin-screw tugboat for the Humble Oil & Refining Co., Houston, Texas. Designated Hull No. 225, the tug will measure 95 feet (BP) by 27 feet by 12 feet 4 inches, and will be equipped with 1,500-total-bhp diesels.

RCA Names Reidberger Field Operations Mgr.

Appointment of **Melvin F. Reidberger** as manager of field operations, Technical Products Service, was announced by **R. F. Adams,** division vice-president, RCA Service Company, Camden, N.J.

Mr. **Reidberger,** who will be located at company offices in Cherry Hill, N.J., succeeds **C. E. Johnson** who is retiring after 39 years of service with the company.

In his new post, Mr. **Reidberger** will be responsible for the direction and supervision of operations at all technical products regional and field offices throughout the United States. Technicians working out of the offices service business, industrial, teletype, theatre, mobile radio, microwave, broadcast and marine equipment.

Mr. **Reidberger** joined the RCA Service Company in 1947 as a television technician in Consumer Products Service. In 1950 he was named manager of the TV service branch in Oakhurst, N.J. He later held the same position in branches in Rahway, N.J.; St. Paul, Minn., and Chicago's north side. He was named manager of the Chicago District in 1956.

He transferred from Consumer to Technical Products Service in 1965, being named to his most recent previous position as manager of the Western Region, with offices in Hollywood, Calif.

Prior to joining RCA, Mr. **Reidberger** attended Texas A&M in College Station, Texas.

Patterson-Sargent/Vita-Var Elect Schubert And Pidlusky To New Company Positions

John E. Schubert

Bohdan Pidlusky

Patterson-Sargent/Vita-Var, North Brunswick, N.J., divisions of Textron, in expanding their Marine Division, announced the appointment of **John E. Schubert** to the post of assistant sales manager and **Bohdan Pidlusky** as field representative. Mr. **Schubert** comes to the company from Mobil Chemical's International Operations department where he filled the duties of marketing assistant. He is the author of several manuals on coating systems used in the marine field. A graduate of the United States Merchant Marine Academy at Kings Point, N.Y., Mr. **Schubert** holds a bachelor of science degree. An officer in the United States Naval Reserve, he also holds a third mate's license for oceangoing vessels of unlimited tonnage.

Mr. **Pidlusky,** who came to the company in 1958 from the Export Division of Sherwin-Williams, has held various positions with Patterson-Sargent/Vita-Var in its Trade, Industrial and Export Divisions. More recently, he has been active in the company's operation through its membership in the Transocean Marine Paint Association, a group of 18 paint manufacturers with standardized service around the world. To his appointment as field representative, Mr. **Pidlusky** brings a knowledge of several languages shared by many Association members.

Both men will be under the direction of **P. J. Milazzo,** the company's vice-president in charge of industrial and marine sales.

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Introducing the new Raytheon 2840 Radar

Presenting for the first time in American-made radar circles: continuous view, no more vanishing blips – image re-paints 60 times a minute. More transistorized solid state circuits and fewer tubes than any radar in commercial use. • 48-mile range. Ideal for all coastal and ocean-going vessels, tugs, fishing fleets and yachts. Braille "feel-safe" knobs for rapid, easy adjustment. See it all happen for under $6000. Backed by a Raytheon reputation for stand-behind-it service around the world. • Model 2840—the most advanced radar in its class. For full information including Bulletin R-1 write Raytheon Company, 213 East Grand Ave., South San Francisco, California 94080.

RAYTHEON

International Paint Appoints Three

Thomas E. Darnell

Frederick A. Ganter

Harold R. Jennings Jr.

William J. LeBlanc Jr., president of International Paint Company, Inc., announced the recent appointment of **Thomas E. Darnell** as vice-president. Mr. **Darnell** is well known in marine circles, having joined the company in 1941 as a sales and service representative. In recent years Mr. **Darnell** has served as senior sales executive, maintaining contact with the company's customers in the New York area.

Frederick A. Ganter has joined the staff of the International Paint Company, Inc., at the company's headquarters, 21 West Street, New York City. Mr. **Ganter** will assume the responsibilities of assistant sales manager, East Coast. He has served the marine industry in both engineering and sales capacities with the Standard Oil Company of California and the Amercoat Corp., respectively.

Harold R. Jennings Jr., who joined the company in 1966 as sales representative, has been appointed sales engineer for the Baltimore-Washington area. He will be domiciled in Baltimore effective August 1, 1969. Mr. **Jennings** will work in unison with the company's agent in Baltimore, Maryland Ceiling Co., Inc., which is so ably managed by Messrs. **Duke Adams** and **Ralph Shillingburg.**

Messrs. **Darnell, Ganter** and **Jennings** will work under the direction of **Thomas M. Reinhardt,** executive vice-president of the company.

Reynolds Metals Promotes C.H. Holtyn

Chester H. Holtyn

Chester H. Holtyn has been promoted to the newly created position of market manager, marine industry, Reynolds Metals Company, Richmond, Va.

The promotion was announced by **Warren W. Caskie,** director of the firm's defense markets. Mr. **Caskie** said the new position was established because of aluminum's growing importance in the marine industry.

In his new position, Mr. **Holtyn** will supervise the marketing of aluminum for commercial and military ships and boats, and also yachts.

Mr. **Holtyn** had been marine project director for Reynolds product development division since joining the firm in 1957. He was involved in all major marine programs including development of the first aluminum barges, the Navy's 165-foot gun boats and construction and lengthening of the world's largest aluminum ship, the 306-foot Sacal Borincano. He has been active in the development of technical data for aluminum construction and has authored many articles on the subject.

Mr. **Holtyn** received a bachelor of civil engineering degree from Marquette University. While employed at the Bureau of Ships, he continued studies in naval architecture at George Washington University. He is a former naval officer, a member of The Society of Naval Architects and Marine Engineers, the American Society for Metals, and the American Society of Naval Engineers.

SPECIALLY DESIGNED SAND BARGE—Technical Sands, Inc. of Moss Point, Miss., has placed in service a 120-foot by 30-foot by 7-foot 3-inch barge built by Conrad Industries of Morgan City, La. The barge's specially designed rakes will keep the head of the barge up and out of the water under a heavy load of sand. The barge was designed by **Fred Wood Jr.,** manager of Technical Sands, Inc., and **Parker Conrad,** owner of Conrad Industries. The barge is for use in the movement of sand from sand pits along the Pascagoula River to Moss Point where it is then removed and stockpiled. The barge has a special gate and pin system for easy access to the dredged sand.

Bahama Oil To Have Largest Offshore Dock In Western World

Offshore docking facilities, reportedly the largest in the western hemisphere, will be built for the Bahamas Oil Refining Co. in the Bahamas, it was announced in Freeport. The installation, which will be built by Micoperi, S.P.A. of Milan, Italy, will consist of two jetties located about three quarters of a mile from Borco's refinery site in Freeport's industrial area. The larger of the two jetties will be capable of accommodating tankers in excess of 300,000 dwt, according to Borco officials.

Honeywell Introduces Position Indicator For Offshore Works

Open auxiliary control panel of the RS-505 shows the normally covered controls and status indicators used for occasional adjustments and for selecting backup modes. Only four pushbutton switches are required for normal operation of the unit. The two blank switches in the cluster on the face of the unit are for optional riser angle indicator and subsea precision positioner operation.

An accurate, low-cost acoustic ship-position indicator designed to meet the stringent position requirements of offshore drilling operations was introduced by Honeywell, Inc.'s Marine Systems Center of Seattle, Wash. at the Offshore Technology Conference held in Houston, Texas.

Designated the RS-5, this unit also is applicable to a variety of other commercial marine activities such as coring, surveying, search and salvage operations. First deliveries are scheduled to be made about mid-year.

"The device accurately monitors and displays a vessel's surface position relative to a pinger on the ocean floor," said **I. G. Raudsep,** marine product planning manager at the Marine Systems Center.

For offshore drilling operations, the optional capabilities of the RS-5 can include marine riser-angle indication and highly accurate reentry guidance. The RS-5 can also provide sway, surge, roll and pitch data for vessel motion recording. Recent experience indicates such data to be essential for safe drilling operations in demanding environments, according to MSC officials.

"Position accuracy of better than one percent of water depth permits minimizing stresses on the costly marine riser systems used in offshore drilling," said Mr. **Raudsep.** "Adequate margins of safety can thus be maintained." By accurately indicating the position of a ship with respect to sea floor or moving subsea equipment, the RS-5 can also improve the efficiency of salvage, submersible operations, and oceanographic research tasks.

Simplicity and ease of operation of the unit is indicated by the fact that only four pushbutton switches provide the operator with all normally needed capabilities for operation and system self-test, the company said.

Major components of an RS-5 system are a subsea pinger and a shipboard system including an array of hydrophones, a control-indicator unit and a signal-processor unit. Standard pingers for the RS-5 have a life of 150 days and are suitable for drilling operations in water depths of up to 1,500 feet. Optional pingers are available for greater depths and longer-term uses.

An expanded version of the RS-5, the RS-505, which incorporates complete system redundancy for long-term applications requiring maximum assurance of uninterrupted position data, also is available. In the expanded system, each essential element is backed up by a built-in standby element.

"The RS-505 provides two independent sets of position outputs," said Mr. **Raudsep.** "The system monitors itself by a continuous comparison of these co-ordinate sets."

All components of the RS-5 and RS-505 undergo a "burn-in" test before delivery to assure reliability. For ease of maintenance at sea, built-in self-test provisions enable the operator to isolate any malfunction quickly. Once identified, a faulty electronic module may be replaced with a plug-in spare. The RS-505 incorporates an automatic switching capability that will bypass a faulty processor channel and shift to one that is functioning properly.

Additional features of the system include a high data rate with new position information computed 10 times per second, permitting any position deviation to be sensed immediately. The operating frequency range of the RS-5—45 to 55 kHZ—was selected to avoid interference by low frequency drilling and machinery noise.

The technique and components used in the RS-5 have been proven at sea in other Honeywell systems including the RS-3 acoustic position indicator in worldwide use on offshore drilling vessels.

Further information regarding the RS-5 position indicator may be obtained from the marine products manager, Honeywell Marine Systems Center, 5303 Shilshole Ave. N.W., Seattle, Wash. 98107.

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FUELS AND LUBRICANTS

Katy Industries Acquires Main Iron

Katy Industries has reported that it has acquired for stock Main Iron Works, a Louisiana tugboat builder and barge and marine equipment repairer.

Katy had earlier reported an agreement in principle to acquire the privately owned company. With facilities in Houma and Harvey, La., Main Iron Works had sales of $4.5-million for the year ended July 31, 1968.

Jacob Saliba, president of Katy Industries, said that **Horace J. Guidry,** president, and **Lawrence Mazerac Jr.,** vice-president of Main, will continue to head the company which will be operated as a wholly owned subsidiary of Katy.

Mr. **Saliba** said that Main Iron Works will complement the recently acquired Berry Brothers oil-well-servicing operations. This is the second of a number of intended acquisitions in the oil-field service and marine service and supply industry, he added.

Katy Industries, formed in March, 1968, is a diversified holding company listed on the New York Stock Exchange. It is the parent company of the Missouri-Kansas-Texas Railroad.

Pennington Forms Consulting Firm

The formation of a company of consultants on ports, integrated transportation as well as on marketing, distribution and management has been announced by former Maritime Administration aide **Maitland Pennington** and two associates. The firm known as Muller, Fox & Pennington Associates will have offices in Washington, San Francisco and Millburn, N.J.

Mr. **Pennington,** who served as head of port promotion in the government ship agency prior to his recent resignation, will be located at 910 Seventeenth Street, N.W. in Washington. Another office will be headed by **Fred Muller Jr.,** at 55 Main St., Millburn, N.J., while **J. Murray Fox** will operate at 332 Pine St., San Francisco, Calif.

Farrell Lines To Buy Two Cargoliners

The Maritime Subsidy Board has approved the purchase of two recently built United States Lines cargoliners by a second subsidized carrier—Farrell Lines—and cleared the way for later purchase of three more ships. The vessels involved are of the "Racer" class that United States Lines built in 1964 and 1965.

Farrell contracted to buy five of the ships for $6-million each and two—American Rover and American Resolute—have been acquired for the company's Australian service. The deadline for Farrell's purchase of the remaining three ships is now November 3.

Maritime Arbitrators Elects Officers

Ferdinand E. Sauer of Chilean Nitrate Sales Corp., has been elected president of the Society of Maritime Arbitrators, succeeding **John P. Besman,** Sagus Marine Corp. The society also elected **Hammond L. Cederholm** as vice-president. He is associated with James W. Elwell & Co.

Other officers assuming responsibilities include **John M. Reynolds,** secretary of the Association of Ship Brokers & Agents, Inc., as secretary, and **Jones F. Devlin Jr.,** a maritime consultant and retired officer of the U.S. Lines, as assistant secretary. **Eric Skoglund,** Lambert & Skoglund; **Bruno Augenti,** Marine Index Bureau, and **Max J. Ramsden Wolfson,** a maritime consultant, were named to serve on the board of governors until 1971.

NASSCO MOVES AHEAD

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Todd-CEA Develops Package For Boiler Management Systems

A system for converting engine rooms to automated burner-boiler management systems without extended removal from service has been announced by Todd-CEA, Inc., a subsidiary of Combustion Equipment Associates, Inc., New York, N.Y.

William Bohn, president, said automation packages will be assembled in advance and installed with piping and brick work at dockside during regular inspection and repair periods. Final electrical connections can be made at sea by an electrician assigned to sail with the ship.

Mr. **Bohn** said the basic installation of automated equipment with piping and brickwork could be completed within 10 days at dockside and the electrical work completed at sea in an additional four days.

Burner-boiler management system automation provided by Todd-CEA includes automatic controls for burner flames, water, fuel pressure, fuel temperature, atomizing steam pressure, fuel oil strainer cleaning, and optional automatic soot blowers.

A throttle station console provides continual information on automated functions, visual and audio alarms for failure in the automated system and a secondary safety system for automatic shutdown in case of air failure; extremely low water, or complete burner flame failure.

Barge Construction

American Marine Corp., New Orleans, La., is to build an 800-dwt deck cargo barge for undisclosed interests. Designated Hull No. 1042, it will have dimensions of 140 feet by 39 feet by 9 feet.

Dravo Corporation, Pittsburgh, will build 22 open hopper barges for Weirton, Steel Division of National Steel Corporation, designed specifically for operation on rivers with small lock chambers. The vessels, which will measure 175 feet by 26 feet by 11 feet, will be used for movement of coal on both the Monongahela and the upper Ohio Rivers. When the new barges, scheduled for completion in September, are delivered, Weirton Steel will have a fleet of 97 barges.

Jansen Machine & Boat Works, Troutdale, Ore., is to build a 2,200-dwt tank barge for Halvorson Towing, Inc., Bainbridge Island, Wash. Designated Hull No. 2025, it will have the following dimensions: 196 feet 8 inches by 52 feet by 12 feet.

Kearny Barge Co., South Kearny, N.J. is building three 1,200-dwt deck cargo barges for its own use. The barges, to be named KB-3, KB-4 and KB-5, will measure 150 feet by 40 feet by 12 feet.

Marinette (Wis.) Marine Corp. was awarded a $10,465,438 contract by NAVSHIPS for the construction of eight YRBMs (repair, berthing and messing barges).

Nashville Bridge Co., Nashville, Tenn., was contracted by Howard Barge Co., St. Louis, Mo., for the construction of two 3,600-dwt oil barges. Designated Hull Nos. 1994 and 1995, each barge will have the following dimensions: 264 feet by 54 feet by 12 feet.

Nashville Bridge is also building two oil barges, Hull Nos. 2011 and 2013, for Barge Baby Dean, Inc., St. Louis, Mo., and one oil barge, Hull No. 1996, for Coastal Towing Co. These barges will have dimensions similar to those being built for Howard Barge Co.

SBA Shipyards, Inc., of Jennings, La., has received an order from Steuart Transportation Co., Piney Point, Md., for the construction of a 3,400-dwt oil barge. Designated Hull No. 195, it will have the following dimensions: 285 feet by 64 feet by 23 feet.

Sewart Seacraft Christens Two Large Oilfield Crewboats

The Glyn L, the largest crewboat to be launched by Sewart Seacraft, and one of the fastest vessels of its size to ever be placed in oilfield service, makes a trial run on Bayou Teche, before its christening at the Sewart shipyards in Berwick, La.

In dual ceremonies, the largest crewboat yet to be launched by Sewart Seacraft, Division of Teledyne, Inc., and the thirtieth 85-foot crewboat to be delivered by this company were christened recently at the Sewart shipyards on Bayou Teche at Berwick, La.

The 100-foot Glyn L, one of the fastest vessels of its size ever to be placed in oilfield service, and the Anne D, the 85-foot aluminum hull, were christened by **Mrs. Glyn Levy Dupont** and **Miss Anne Daphne Munzer.**

The ceremonies were opened with a welcome to the sponsors and guests by **William Hidalgo,** chief engineer of Sewart Seacraft.

Accepting delivery of the boats from **Kenneth Hidalgo,** vice-president and general manager of Sewart Seacraft, was **Arthur Levy Sr.,** founder and president of Arthur Levy Boat Service, Inc.

Guest speaker at the dual christening was U. S. Rep. **Patrick M. Caffery** of Louisiana's Third Congressional District.

Mrs. Glyn Levy Dupont, for whom the Glyn L is named, is the daughter of **Arthur Levy Sr. Miss Anne Daphne Munzer,** sponsor of the Anna D, is the daughter of **R. J. Munzer,** president of Petrolane, Inc., of which Arthur Levy Boat Service, Inc., is a subsidiary.

The Glyn L, with normal speed rated at 24 mph and a range of 500 miles, was specifically designed and build for transporting personnel and light cargo to far offshore exploration and production sites.

The superstructure is arranged with bus-type cabins, providing seats for 71 passengers. The beam is 23 feet 2 inches, with a depth amidships of 10 feet 3 inches. Maximum displacement is 160,000 pounds. The vessel carries 2,400 gallons of fuel fully loaded and 600 gallons of fresh water.

A matched pair of Detroit Diesel 12-V-149 marine engines provide propulsion through Twin Disc MG-527 reverse and reduction gears. Two Detroit Diesel-Delco 3-71 generator sets are installed, each with 30-kw capacity.

The Anne D is one of Sewart Seacraft's most popular crewboat designs and is the thirtieth such 85-foot hull to be constructed either for military or commercial service.

In its civilian configuration, the boat carries 49 passengers who ride in aircraft-type reclining seats. In addition, the boat is fitted with eight bunks in the passenger stateroom, a complete galley, and separate quarters for the crew of four, providing maximum comfort and convenience on long offshore runs.

The main engines are two Detroit Diesels Series 71 V-16 rated at 635 shp each. The electrical system is powered by two Detroit Diesel-Delco 20-kw generator sets.

Normal speed is rated at 25 mph, with cruising range at normal displacement figured at 410 miles. Full load displacement is 104,000 pounds. The beam is 20 feet 11¾ inches.

Living spaces are all-weather air conditioned. An aft steering station, complete with engine controls, is located on the weather deck above the passenger compartment for convenience in docking at offshore rigs.

With the delivery of these two crewboats, Arthur Levy Boat Service, Inc., will begin an accelerated expansion of its services to Louisiana's offshore oil industry and delivery in the near future of three large cargo vessels will equip the firm to fill assignments anywhere in the world. The Glyn L is already leased to Shell Oil Company and the Anne D to Mobil.

When the 100-footer Glyn L took to the water, she was the 1,669 hull to be delivered by Sewart Seacraft since its organization in 1945 and is the forerunner of even bigger crewboats presently being planned at Sewart Seacraft.

A division of Teledyne, Inc., Sewart Seacraft is one of the world's largest builders of high performance steel and aluminum boats. The company has built a large number of patrol and assault vessels for the U.S. Navy and several friendly foreign nations.

Recently, Sewart Seacraft entered the pleasure boat field with a luxurious 56-foot "house-yacht" and at present is finalizing plans for a line of all-aluminum pleasure boats and sports fisherman.

Southern Building Tug For Nolty J. Theriot

Southern Shipbuilding Corp., Slidell, La., is building a twin-screw tugboat for Nolty J. Theriot, Inc., Golden Meadow, La. The tug, to be equipped with 5,750-total-bhp diesels, will be 135 feet long with a 35-foot beam, and will be 21 feet 9 inches deep.

Enjay Chemical Issues Oil-Dispersant Report

Up-to-date information on Corexit 7664, an oil dispersant, is provided in a new report issued by Enjay Chemical Company. The report describes the product's performance experience as well as giving details on dispersant techniques and the most recent data on toxicity tests.

Corexit 7664 was introduced commercially in the spring of 1968. It has been effective in dispersing oil slicks at sea during field tests and under actual emergency conditions. In addition, laboratory studies and examination after application of the material at sea have shown Corexit 7664 to be essentially harmless to marine life.

Corexit 7664 was developed by Esso Research and Engineering Company, the principal research affiliate of Standard Oil Company (New Jersey). It has been used in many ports and is carried on board many tankers.

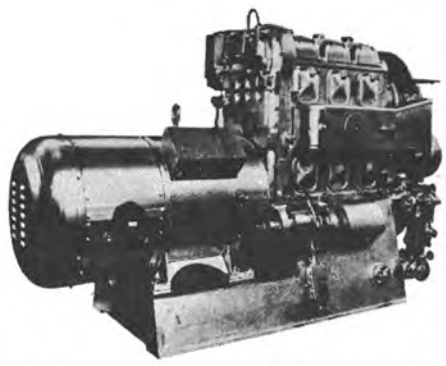
Copies of this report can be obtained from the Public Relations Department, Enjay Chemical Company, 60 West 49th Street, New York, N.Y. 10020.

Halter Marine Awarded Tugboat Contract

Tidewater-Twenty Grand, Inc. has awarded a contract for the construction of a twin-screw tugboat to Halter Marine Fabricators, Inc., Moss Point, Miss. Designated Hull No. 231, the tug will be equipped with 4,500-total-bhp diesels and will be 109 feet long (BP), 16 feet 4 inches deep, and will have a beam of 31 feet.

MARINE DIESEL GENERATORS

SUPERIOR, 10 KW, 120 Volts DC.
HERCULES, D0OC, 10 KW, 120 DC, Radiator cooled.
CATERPILLAR, radiator cooled, 15 KW, 120/240 Volts DC.
FAIRBANKS-MORSE, radiator cooled, 25 KW Continental Generator, 120/208/3/60.
Hercules DJXC, 25 KW, 120 DC.
GM 3-71, 30 KW, 120 DC.
Cummins A1, 30 KW, 120 DC.
MURPHY, Model ME 66, radiator cooled, 75 KW, 120/240 Volts DC.
CATERPILLAR DIESEL ENGINE, Model D17000, 167 HP, 900 RPM, with Louis-Allis Generator, 85 KW, 220/3/60.
LORIMER, F5SS, 75 KW, 120/240 DC, radiator cooled.
COOPER-BESSEMER, JS-5, 250 KW, 240 DC.



LORIMER 100 KW
450/3/60 Volts DC.

BUDA 6DHG691, 60 KW, 120 Volts DC.

GM-3-268A, 100 KW, 240/120 Volts DC.

SUPERIOR GBD-8, 100 KW, 240/120 Volts DC.

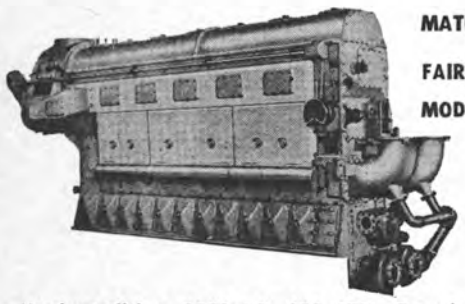
SUPERIOR, Model IDB-8, 100 KW, 450/3/60.

GENERAL MOTORS Model 3-268A, 152 BHP, 1200 RPM, with 100 KW Generators, 450 volts AC, 3 phase, 60 cycles.

GM 8-268A, radiator cooled, air start with Westinghouse Generator, 250 KW, 440/3/60, complete with switchboard.

GENERAL MOTORS DIESEL ENGINES, Model 8-278, with 500 KW Generators, 115/230 DC.

MARINE DIESEL ENGINES



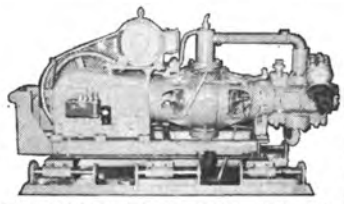
MATCHED PAIR . . .
FAIRBANKS-MORSE
MODEL 38D8-⅛
1 Port;
1 Starboard

Used condition, 1800 HP, 800 RPM, 2 cycle, 8½" bore, 10" stroke, Air Start. Complete with Westinghouse Reduction Gears, 2.216:1 ratio—with hydraulic coupling.

4—COOPER-BESSEMER, MODEL LS-8-DR
1300 HP, 277 RPM, direct reversing, turbo charged.

HYDRAULIC PUMPS (STEERING)
Hele Shaw, Type JLP 12, 1000 PSI, 850 RPM. Northern radial piston. Size 5430, 44 GPM, 1500 PSI, 850 RPM.

AIR COMPRESSORS



JOY CLASS WG82

JOY Air Compressors Class WG82, 2-stage rated 100 CFM at 300 PSI, water cooled, size 7" x 3⅜" x 7" Typical Shop #75652, with Reliance motor, 30 HP, 220/440/AC/3/60.

WORTHINGTON, 60 CFM, 110 PSI, with 15 HP Motor, 440/3/60.
WORTHINGTON, 60 CFM, 15 HP, 230 DC.
INGERSOLL-RAND, 150 CFM, 600 PSI, Model 75, with Westinghouse Motors, 75 HP, 230 DC.
INGERSOLL-RAND, 194 CFM, 110 PSI, 40 HP, 230 DC.
INGERSOLL-RAND, 50 CFM, 600 PSI, Model 30, with Westinghouse Motors, 15 HP, 230 DC.
CHICAGO-PNEUMATIC, 161 CFM, 100 PSI, 40 HP, 230 DC.
WESTINGHOUSE Air Brake, 246 CFM, 140 PSI, with 50 HP Motors, 440/3/60.
WORTHINGTON, 175 CFM, 125 PSI, with 50 HP Motors, 440/3/60.
STEAM AIR COMPRESSORS
Westinghouse Air Brake Company, Size 9½ x 9 x 10 Vertical.

REDUCTION GEARS . . .

FARREL-BIRMINGHAM, as orig. used on two 1375 HP electric motors, in submarine, 2 pinions, single output gear, Pinion RPM 1302, Gear RPM 280; ratio 4.65:1.

WESTINGHOUSE, 2.216:1 ratio, with hydraulic coupling; as used with 1800 HP, 800 RPM Fairbanks-Morse engine—Starboard.

FALK REDUCTION GEARS . . . Port and Starboard, interchangeable with T-3 Tanker Gears, Falk No. 148-300. Also interchangeable with Falk Gears on A051 Class Tankers (14 ships). Also on A097 to A0100 Tankers. Gears are available as complete assemblies and/or rotating elements in sets. Gears offered with a current inspection report of condition by a representative of Falk Corporation.

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

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

TURBINE GENERATORS

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

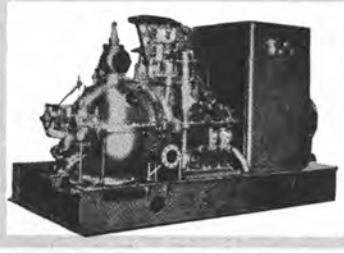
WORTHINGTON Turbines, Form S-4, 440 PSI, 740° F, driving on same comman shaft a 250 KW Generator, 440/3/60, and a 90 KW Generator, 125 Volts DC.

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

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

JOSHUA HENDY Turbines, with Westinghouse Generators, 150 KW, 120 volts DC.

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



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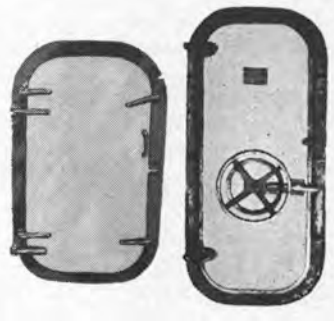
As removed from reserve "mothballed" vessels. Huge inventory of practically all sizes and types ready for immediate delivery . . . and more on the way. These doors have the frame trimmed and are suitable for re-use. Doors are available in 4, 6, 8 and 10 dog types; many are "Quick-acting-wheel controlled."

Save over new replacement costs as shown in the **"Typical Price"** listing below . . .
26" x 48"—4 dog type $ 60.00 ea.
26" x 66"—6 dog type $100.00 ea.
26" x 66"—Quick Acting $175.00 ea.



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AC PUMPS—Horizontal Centrifugal

2—Goulds, 2000 GPM, 470' head, Size 8x10, with Westinghouse Motors, 350 HP, 2300/3/60.

1—Ingersoll-Rand, 3000 GPM, 250' head, Size 8ALV, with Westinghouse Motor, 250 HP, 2200/3/60, 1775 RPM.

1—Worthington, 400 GPM, 150 PSI, 5½" suction, 3½" discharge, with G.E. Motor, 75 HP, 440/3/60, 3550 RPM.

2—Goulds, 300 GPM, 336' head, 3" suction, 2" discharge, with G.E. Motors, 50 HP, 440/3/60, 3550 RPM.

7—J.C. Carter, 365 GPM, 250' head, stainless steel, 3" suction, 3" discharge, with 220/440/3/60 Motors, 25 H.P.

6—326 GPM, 138' head, C.I. pump housing, 3" suction, 3" discharge, with Westinghouse Motors, 20 HP, 220/440/3/60, 1755 RPM.

6—682 GPM, 60' TDH, C.I. pump housing, 5" suction, 5" discharge, with Westinghouse Motors, 15 HP, 220/440/3/60, 1700 RPM.

2—Worthington, 80 GPM, 60 PSI, 2½" suction, 2" discharge, with G.E. Motors, 8 HP, 440/3/60, 3450 RPM.

3—Worthington, 650 GPM, 9 PSI, 6" suction, 6" discharge, with Star Motors, 6 HP, 440/3/60.

1—Worthington, 175 GPM, 20 PSI, 3½" suction, 3" discharge, with G.E. Motor, 3.74 HP, 440/3/60, 3450 RPM.

4—Worthington, 60 GPM, 22 PSI, 3½" suction, 2" discharge, with G.E. Motors, 3 HP, 440/3/60, 3450 RPM.

3—Allis-Chalmers, 35 GPM, 100' head, 2" suction, 1½" discharge, with Allis-Chalmers Motors, 3 HP, 440/3/60, 3500 RPM.

1—Allis-Chalmers, 65 GPM, 80' head, 1½" suction, 1½" discharge, with Allis-Chalmers Motor, 3 HP, 220/440/3/60, 3500 RPM.

2—Worthington, 13 GPM, 51 PSI, 1½" suction, 1½" discharge, with G.E. Motors, 2.64 HP, 440/3/60, 3490 RPM.

1—Worthington, 75 GPM, 22', 3" suction, 2½" discharge, with G.E. motor, 1.9 HP, 440/3/60, 3450 RPM.

5—Worthington, 30 GPM, 30 PSI, 1½" suction, 1½" discharge, with G.E. Motors, 1.75 HP, 440/3/60.

14—Warren, 6 GPM, 36 PSI, 1¼" suction, 1" discharge, with G.E. Motors, 1.25 HP, 440/3/60, 3450 RPM.

AC PUMPS—Vertical Centrifugal

6—Worthington, 275 GPM, 56.6 PSI, 8½" suction, 3½" discharge, with G.E. Motors, 22.9 HP, 440/3/60, 1180 RPM.

4—Worthington, 490 GPM, 35 PSI, 7" suction, 4½" discharge, with G.E. Motors, 19.6 HP, 440/3/60, 1175 RPM.

6—Chicago Pump Co., submersible, 400 GPM, 6 # suction, 30 # discharge pressure, with Wagner Motors, 15 HP, 440/3/60, 1740 RPM.

6—Dayton-Dowd, 1160 RPM, 15 PSI, 10" suction, 8" discharge, with Wagner Motors, 10 HP, 440/3/60.

4—Worthington, 100 GPM, 40 PSI, 5" suction, 3" discharge, with G.E. Motors, 7.37 HP, 440/3/60, 1750 RPM.

4—Warren, 135 GPM, 35 PSI, 6" suction, 3" discharge, with G.E. Motors, 6 HP, 440/3/60.

1—Worthington, 35 GPM, 62.4 PSI, 3" suction, 2" discharge, with G.E. Motors, 5.83 HP, 440/3/60, 1150 RPM.

7—Allis-Chalmers, 68 GPM, 114' head, Type SSV-C, 3" suction, 1½" discharge, with Wagner Motors, 7½ HP, 440/3/60, 1750 RPM.

3—Worthington, 350 GPM, 11.1 PSI, 10" suction, 3½" discharge, with G.E. Motors, 5 HP, 440/3/60, 1150 RPM.

12—Allis-Chalmers, 10 GPM, Size 2"x2½", with Wagner Motors, 3 HP, 440/3/60, 3600 RPM.

AC PUMPS—Horizontal Rotary

4—Warren, 197 GPM, 175 PSI, with Electro Dynamics Motors, 30 HP, 440/3/60, 1750 RPM.

2—Northern, 10 GPM, 350 PSI, 3" suction, 2" discharge, 200 RPM, with G.E. geared Motors, 5 HP, 440/3/60.

3—DeLaval, 25 GPM, 50 PSI, with G.E. Motors, 1.8 HP, 440/3/60.

AC PUMPS—Vertical Rotary

2—DeLaval, 550 GPM, 50 PSI, with G.E. Motors, 27.4 HP, 440/3/60, 1180 RPM.

7—Quimby, Size 2½, 10/6 GPM, 350 PSI, 2½" suction, 1½" discharge, with Wagner Motors, 6/3 HP, 440/3/60, 1160/865 RPM.

8—Blackmer, 50 GPM, 35 PSI, 420 RPM, with G.E. geared Motors, 2 HP, 440/3/60, 1750 RPM.

DC PUMPS—Horizontal Centrifugal

6—Worthington, Size 8L1, 2100 GPM, 138.5 TDM, with Westinghouse Motors, 100 HP, 230 DC, 1310/1750 RPM.

6—Worthington, Size 12 LA1, 4000 GPM, 67.3 TDM, with Westinghouse Motors, 100 HP, 230 DC, 1310/1750 RPM.

6—Worthington, Size 3UB1, 400 GPM, 280' head, with Westinghouse Motor, 50 HP, 230 DC, 1310/1750 RPM.

2—Weil, 400 GPM, 100 PSI, with 40 HP Motors, 230 DC.

1—Goulds, Figure 3380, 4" suction, 3" discharge, 250 GPM, 100 PSI, with 30 HP Motor, 230 DC, 2200 RPM.

6—Worthington, Size 4L1, 400 GPM, 83' head, with Westinghouse Motors, 15 HP, 230 DC, 1225/1750 RPM.

1—Aldrich, 8" suction, 6" discharge, with G.E. Motor, 12/25 HP, 115 DC.

3—Warren, 1175 GPM, 11.2 PSI, with Reliance Motors, 10 HP, 230 DC.

4—Gardner-Denver, 900 GPM, 30' head, with Crocker-Wheeler Motors, 10 HP, 230 DC.

1—Westco, 100 GPM, 100 PSI, 2" suction, 2" discharge, with 10 HP Imperial Motor, 115 DC.

DC PUMPS—Horizontal Centrifugal

2—Yeomans, 135 GPM, 3" suction, 115' head, 3" discharge, with Kimble Motor, 10 HP, 230 Volts DC.

2—Warren, size 5, 600 GPM, with Electro-Dynamics Motors, 8/4.5 HP, 230 Volts DC.

1—Warren, 5" suction, 4" discharge, with Reliance Motor, 7½ HP, 115 Volts DC.

1—Dayton-Dowd, 3" suction, 2½" discharge, with Crocker-Wheeler Motor, 5 HP, 120 DC.

1—Ingersoll-Rand, Model A, 45 GPM, 125' head, with G.E. Motor, 5 HP, 115 Volts DC.

3—Ingersoll-Rand, Size 1MVR, 50 GPM, with Electro-Dynamics Motors, 3.9 HP, 230 DC.

1—Fairbanks-Morse, 250 GPM, 13' head, with Fairbanks-Morse Motor, 3.72 HP, 230 Volts DC.

2—Worthington, 150 GPM, 22 PSI, 3½" suction, 3" discharge, with Diehl Motors, 3.47 HP, 230 Volts DC.

DC PUMPS—Horizontal Centrifugal

1—Yeomans, 40 GPM, 75' head, 1½" suction, 1" discharge, with Master Motor, 2 HP, 230 Volts DC.

2—Westco, 20 GPM, 50 PSI, with Century Motors, 1½ HP, 120 Volts DC.

2—Worthington, 60 GPM, 23.7 PSI, 2½" suction, 2" discharge, with Diehl Motors, 1.43 HP, 230 Volts DC.

7—Warren, 4 GPM, 38 PSI, 1½" suction, 1" discharge, with Century Motor (4-230 DC, 3-115 DC), 1.25 HP.

DC PUMPS—Vertical Centrifugal

2—Buffalo, Size 3 SAV, 400 GPM, 125 TDH, with Electro-Dynamic Motors, 50 HP, 230 Volts DC, 1350/1800 RPM.

1—Gardner-Denver, 1500 GPM, 56' head, 8" suction, 6" discharge, with Century Motor, 30 HP, 230 Volts DC, 1750 RPM.

1—Ingersoll-Rand, Size 18VCM, 8500 GPM, with Electro-Dynamic Motor, 20/40 HP, 230 Volts DC, 410/545 RPM.

2—Worthington, 16" LAS-2, 5600 GPM, 10 PSI, with G.E. Motor, 20/40 HP, 230 Volts DC, 540/720 RPM.

1—Ingersoll-Rand, 10" suction, 10" discharge, 1050/2000 GPM, with G.E. Motor, 20 HP, 230 Volts DC, 805/1150 RPM.

1—Worthington, 340 GPM, 33.6' 6" suction, 3" discharge, with G.E. Motor, 15 HP, 230 Volts DC.

1—Ingersoll-Rand, 1050 GPM, ... 5" suction, 5" discharge, with Crocker-Wheeler Motor, 15 HP, 230 Volts DC. 1150 RPM.

2—Ingersoll-Rand, 450 GPM, 15' head, 4" suction, 3" discharge, with G.E. Motors, 10/15 HP, 230 Volts DC, 1300/1750 RPM.

1—Allis-Chalmers, 750 GPM, 30.3' head, 5" suction, 5" discharge, with Star Motor, 10 HP, 230 Volts DC, 1750 RPM.

2—Buffalo, Size 3SLV, 425 GPM, 35 TDH, with Electro Dynamic Motors, 7½/15 HP, 230 Volts DC, 1310/1750 RPM.

3—Ingersoll-Rand, Size 1VHM, 18 GPM, 75 PSI, 3¼" suction, 1½" discharge, with G.E. Motors, 7½ HP, 230 Volts DC.

1—Worthington, 175 GPM, 50 PSI, 4" suction, with G.E. Motor, 7½ HP, 230 Volts DC.

2—Ingersoll-Rand, Size ..... 8 VCM, 1400 GPM, with Electro Dynamic Motors, 5/10 HP, 230 Volts DC, 950 RPM.

2—Ingersoll-Rand, Size 1½ VBM, 70 GPM, with Electro Dynamic Motors, 5/10 HP, 230 Volts DC, 1500/2000 RPM.

2—Ingersoll-Rand, Size 1MVR, 20 GPM, with Electro Dynamic Motors, 3/1.5 HP, 230 Volts DC, 1950/2600 RPM.

2—Worthington, 8" LS-1, 1400 GPM, 10 PSI, with G.E. Motors, 5/10 HP, 230 Volts DC, 875/1200 RPM.

2—Worthington, Type 1½ UZS-3, 20 GPM, 75 PSI, with G.E. Motors, 5 HP, 230 Volts DC, 1800 RPM.

2—Weil, 20 GPM, 40 PSI, 1½" suction, 1¼" discharge, with G.E. Motors, 3 HP, 230 Volts DC.

DC PUMPS—Horizontal Rotary

3—Worthington, Size 5GES, 400 GPM, 50 PSI, with Westinghouse Motors, 20 HP, 230 Volts DC, 1750 RPM.

1—DeLaval, 15 GPM, 350 PSI, 2½" suction, 2½" discharge, with Diehl Motor, 10 HP, 230 Volts DC.

2—Viking, Type EKK, 60 GPM, 70 PSI, 2" suction, 2" discharge, with Diehl Motors, 5 HP, 230 Volts DC.

3—National Transit, 50 GPM, 50 PSI, 3" suction, 2½" discharge, 3 HP, 230 Volts

DC PUMPS—Vertical Rotary

6—Quimby, Size 5, 400 GPM, 60 PSI, 6" suction, 5" discharge, with Westinghouse Motors, 30 HP, 230 Volts DC.

1—DeLaval, IMO, 250 GPM, 40 PSI, with G.E. Motor, 15/20 HP, 230 Volts DC, 1310/1750 RPM.

3—Worthington, Model 4GRVS, 225 GPM, 35 PSI, with G.E. Motors, 15/20 HP, 230 Volts DC.

4—Worthington, Model 4GRVS, 175 GPM, 50 PSI, with G.E. Motors, 7½/10 HP, 230 Volts DC.

1—Quimby, Size 4, 175 GPM, with Electro Dynamic Motor, 7.5/10 HP, 230 Volts DC, 865/1150 RPM.

2—Worthington, Type 3GRVS, 90 GPM, 75 PSI, 2¾" suction, 2½" discharge, with Diehl Motors, 7½ HP, 230 Volts DC.

1—Quimby, Size 2, 8 GPM, with Electro Dynamic Motor, 2/5 HP, 230 Volts DC, 575/1150 RPM.

2—Worthington, Type 2GRVS, 7 GPM, 400 PSI, with G.E. Motors, 2½/5 HP, 230 Volts DC, 900/1800 RPM.

BOILER FEED PUMPS — TURBINE & ELECTRIC

4—Worthington, Vertical type, single acting, triplex, constant speed, size 2¼ x 4, 47 GPM, 525 PSI, with G.E. Motors, 20 HP, 230 Volts DC.

2—Worthington, 5" UFD, 460 GPM, 750 PSI, 5" suction, 5" discharge, driven by Sturtevant Steam Turbine, Size CC-22', Type 21, 2½" steam inlet, 5½" exhaust.

2—Aldrich Pump Co. Triplex, Vertical, Size 2½ x 4, 65 GPM, 575 PSI, with G.E. Motors, 25 HP, 230 Volts DC.

2—Ingersoll-Rand, 165 GPM, 575 PSI, with turbine drives.

TURBINE DRIVEN PUMPS — Various

2—Worthington, Size 20-LAL-18, Main Condenser, Centrifugal, 10500, 27' head, Vertical, with Whiton Turbines, 95 HP.

1—Ingersoll-Rand, Size 5UV, Centrifugal, Horizontal, 1200 GPM, 225' head, 6" suction, 5" discharge, with Elliot Turbine, 84.3 HP.

1—Worthington, Fire, Flushing & Emergency Bilge, Centrifugal, Horizontal, Rating—Fire: 500 GPM, 150 PSI, Flushing: 1000 GPM, 60 PSI, Bilge: 750 GPM, 25 PSI, 5½" suction, 4½" discharge, with Whiton Turbines, 72.9 HP.

1—DeLaval, Fuel Oil Transfer, Vertical, Rotary, 250 GPM, 150 PSI, 7" suction, 6" discharge, with DeLaval Turbine, 35 BHP.

8—Goulds Main Circulating, Vertical, Centrifugal, 3700 GPM, 13 PSI, Size 12", with Elliot Turbines, 30 HP.

2—DeLaval Fuel Oil Service, Vertical, Rotary, 50 GPM, 350 PSI, 3½" suction, 3½" discharge, with DeLaval Turbines, 14.4 HP.

4—DeLaval—IMO, L.O. Service, Vertical, Rotary, 300 GPM, 45 PSI, 6" suction, 6" discharge, with DeLaval Turbines, 14.1 HP.

8—Allis-Chalmers, Type SSC-V, 68 GPM, 114' head, 3" suction, 1½" discharge, with Carling Turbines, 7½ HP, 1750 RPM.

2—Warren, 85 GPM, 60 PSI, For Lube Oil Service, Turbine Driven.

2 — Warren, Main Circulating, 3500 GPM, 13.5 PSI, Turbine Driven.

STOCKLESS ANCHORS

USED, GOOD QUALITY . . . SAVE!

3,000 pound size
8,000 pound size
10,000 pound size

ANCHORS.. Unused, surplus 3000 # size Danforth

ANCHOR CHAIN . . . Used, good, with or without test certificate . . .
1 1/2" size
1 3/8" size
2 1/16" size
2 1/4" size

ANCHOR WINDLASS

1—LIDGERWOOD horizontal Anchor Windlass, double wildcat—for 2 1/16" Chain, double gypsy, with 50 motors, 230 volts DC, complete with controls.

1—Horizontal, of German Mfg., double wildcat—for use with 3" anchor chain, double gypsy with 230 VDC motor, complete with electrical control equipment.

American Engineering, horizontal, double 2⅛" Chain, 65 HP, 230 DC, complete.

7—American Hoist and Derrick Company, horizontal, double wildcat—for 2¼" chain double gypsy, 70 HP, 230 Volts DC, with electric controls.

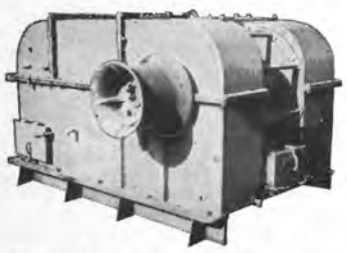
3—Hesse-Ersted, horizontal, double wildcat, 2⅛" chain, 60 HP, 230 DC.

1—Hyde Horizontal Anchor Windlass double wildcat—for use with 2⅛" Anchor Chain, and with General Motors Electric Motor, 60 HP, 230 volts DC, 560/1700 RPM, Type CDM 18831 AE. Complete with Contractor Panel, Resistors, and Master Switch.

ANCHOR WINCHES

2—Jaeger, single drum—capacity approximately 900' of 1½" wire rope, double gypsy, with 35 HP Motors, 230 Volts DC, complete with electricals.

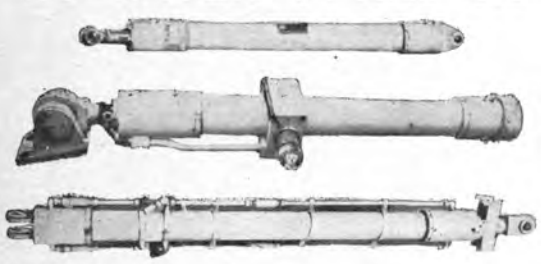
UNIWINCHES



LAKESHORE UNWINCHES, with Allis-Chalmers Motors, 50 HP, 230 Volts DC, complete with Control Equipment.

Single speed, double drum, 7450 # at 220 FPM.
Single speed, single drum, 7450 # at 220 FPM.
Two speed, single drum, 7450 # at 220 FPM, 14400 # at 105 FPM.

HYDRAULIC CYLINDERS



3000 PSI

Bore	Stroke	Rod Diameter	Overall retracted length	Action
10"	12"	3.75"	45½"	double
10"	26"	3.75"	58½"	single
2"	8"	1½"	20"	double
2.5"	15"	1.12"	25½"	double
3"	8"	1.37"	15½"	double
6"	8'	4"	144"	double
13"	9'7"	5½"	14'	double

STEERING STANDS

Brass Steering Stands. Complete with angle indicator on top, used, 11" base diameter by 35½" high, and with 42" overall, 8-spoke brass steering wheel.

$195.00 each

CAPSTAN WINDLASSES

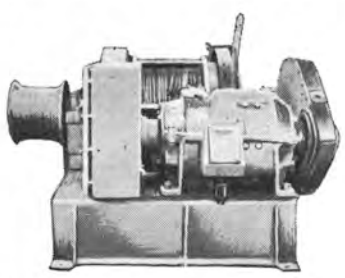
Model CWP-3, Vertical 24" Planetary Capstan Windlasses, Single Wildcat — using 1¼" Anchor Chain, Single Gypsy with 20 HP motor, 230 volts DC, complete with Contactor Panel, Master Switch, and Resistors.

3—Hesse-Ersted Vertical, Single Wildcat—for 1⅜" Anchor Chain, single gypsy, with HP General Electric Motor, 230 Volts DC, complete with Controller equipment.

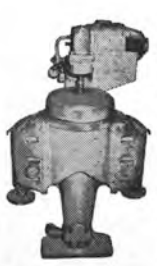
Hyde, Vertical, Single Wildcat, for 1⅛" Anchor Chain, single gypsy, with 20/5 HP Motor, 440/3/60.

McKiernan — Terry, Single Wildcat — for ¾" chain, Single Gypsy, with underdeck drive with Star Motor, 7½ HP, 115 DC, with Electrical control equipment.

CARGO WINCHES



American Hoist and Derrick Company Winches with Westinghouse Motors, 50 HP, 230 Volts DC, complete with Contactor Panels, Master Switches, and Resistors.
Type 66—single speed, single drum.
Type 67—two speed, single drum.



CENTRIFUGES

Sharples Purifiers—For Diesel Service or for Lube Oil Service.

150 GPH—440 AC, 230 DC
350 GPH—230 DC
600 GPH—230 DC

FAIRLEADS

Designed and Manufactured by ZIDELL EXPLORATIONS, INC.

To Give You These Features:

One size fairlead with universal type sheave to accommodate wire rope sizes 1" up to and including 2".

Self Aligning, Swivel Type Head.

Dependable and Ruggedly built to perform consistently year after year with minimum maintenance.

Standard Design $995 each

Deluxe Design $1250 each

Model Design $1350 each

PRICES ARE F.O.B. PORTLAND, ORE.

SPECIAL ITEMS

COUPLINGS

(Flexible Couplings between Turbines and Reducing Gear)

1—Set from C3-S1-A3 Vessel
1—Set from C2-S-B1 (Moore built)
1—Set from AP2 Victory Ship

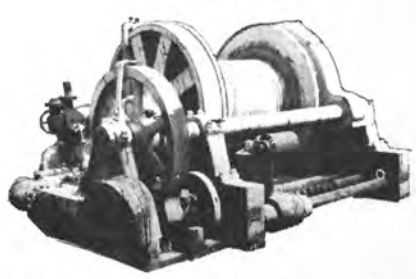
PROPELLERS

From C3-S1-A3 Vessel
From C2-S1-B1 Vessel
From AP2 Victory Ship
From Liberty Ships and LST Vessels

PROPELLER SHAFTS

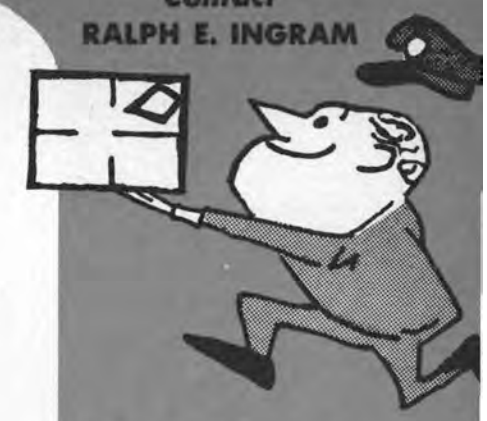
From C3-S1-A3 Vessel
From C2-S-B1 Vessel (Moore built)
From C2-SU Vessel
From Liberty Ships and LST Vessels

STEAM TOWING WINCH



Single drum, capacity 2000' of 2" wire rope, cylinder size 9" bore by 10" stroke.

Contact
RALPH E. INGRAM



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on all your needs!

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AXIAL FLOW FANS

Rebuilt—Guaranteed

LaDel, STURTEVANT etc.

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

EXAMPLE LISTING:

Size A¼	**@ $160 each**
Size A½	**@ $185 each**
Size A1	**@ $215 each**
Size A2	**@ $290 each**
Size A3	**@ $350 each**
Size A4	**@ $410 each**
Size A5	**@ $500 each**
Size A6	**@ $550 each**
Size A8	**@ $630 each**
Size A10	**@ $695 each**
Size A12	**@ $750 each**
Size A16	**@ $900 each**

PRICES ARE F.O.B. PORTLAND, OREGON

SPERRY GYRO COMPASSES

SPERRY MARK 14, Model 1 Gyro Compasses, used, good, complete with Master Compass, with Binnacle, Amplifier panel, control panel, carbon pile voltage regulator, motor generator set, alarm panel, repeater panel, and repeaters with mounts.

Machinery and EQUIPMENT

as removed from

S. "JAMES O'HARA"

(AP-179) C3-S1-A3

NOW . . . Also dismantling identical companion ship . . .

The

S. "FREDERICK FUNSTON"

for Immediate Sale!

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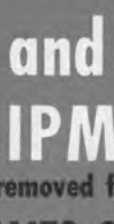


CARGO HOISTER BLOCKS

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

$34.50 each

$39.50 each with pull test certificates.

HP TURBINE, Allis-Chalmers, Impulse Reaction type, 5003 RPM, 740° F, 440 PSI, Serial #1737.

LP TURBINE, Allis-Chalmers, Straight Reaction, Type, 4289 RPM, 740° F, 440 PSI, Serial #1738.

2 – TURBINE GENERATORS, Allis-Chalmers, Turbines: Impulse Condensing Type, 740° F, 440 PSI, 8000 RPM, Generators: 300 KW, 240 Volts DC, 2 wire, 1200 RPM.

CARGO WINCHES
2—Jaeger, 2 drum, 2 speed, 50 HP, 230 DC.
2—Parkersburg, 2 drum, 1 speed, 50 HP, 230 DC.
2—O.C.S., 2 drum, 1 speed 50 HP, 230 DC.
2—Vulcan, 1 drum, 2 speed, 50 HP, 230 DC.
2—American Hoist & Derrick, 1 speed, 1 drum, 50 HP, 230 DC.

SALT WATER EVAPORATOR, Davis, Size 36-17, rated 2500 lbs. per hour.

MAKE UP FEED EVAPORATOR, Davis, Size 26-8, rated 1500 lbs. per hour.

LAKESHORE TOPPING WINCHES, single speed, capacity 10,000 # at 67 FPM, 5 HP, 230 DC.

ANCHOR WINDLASS, Markey, Type CWA-4, horizontal, double wildcat—for 2 5/16" anchor chain, 70 HP, 230 DC.

MAIN CONDENSER, Allis- Chalmers, 7800 sq. ft. cooling service, 2 pass, horizontal.

LUBE OIL PURIFIER, Sharples, Type M-34-W-22U43, 350 GPH, 230 Volts DC Motors.

FUEL OIL STANDBY PUMP, Worthington, horizontal duplex, Size 5½" x 3" x 6", 13 GPM, 410 PSI.

GENERAL SERVICE PUMP, Worthington, vertical simplex, Size 12 x 14 x 18, 600 GPM, 50 PSI.

BOILER FEED PUMP, Worthington Auxiliary, vertical simplex, Size 11 x 7 x 24, 120 GPM, 550 PSI.

FRESH WATER PUMPS, 2—Worthington, Size 4x6, horizontal duplex, 100 GPM, 80 PSI, 7½ HP, 230 DC.

BALLAST PUMP, Allis-Chalmers, Type SGV, Size 5 x 5, double suction, vertical centrifugal, 600 GPM, 30 PSI, 20 HP, 230 DC.

SUBMERSIBLE BILGE PUMPS, 2—Worthington, 5", vertical centrifugal, 600 GPM, 30 PSI, 20 HP, 230 DC.

BILGE PUMP, Allis-Chalmers, Size 5 x 5, Type SGV, double suction, vertical centrifugal, 600 GPM, 30 PSI, 20 HP, 230 DC.

EVAPORATOR TUBE NEST DRAIN PUMPS, 2—Allis-Chalmers, Type SS-LH, horizontal, Size 2½ x 2, 17 GPM, 127' head, 5 HP, 230 DC.

MAIN CONDENSATE PUMPS, 2—Allis-Chalmers, Type CF-2V, vertical volute, Size 6 x 3½, 170 GPM, 208' head, 20 HP, 230 DC.

DISTILLER CONDENSATE PUMPS, 2 – Allis-Chalmers, Type SS-L, horizontal centrifugal, Size 4 x 2, 45 GPM, 2 HP, 230 DC.

AUXILIARY CONDENSATE PUMPS, 2—Allis-Chalmers, Type CF-2V, vertical volute, Size 2½ x 1½, 30 GPM, 208' head, 7½ HP, 230 DC.

DIESEL OIL PUMP, Viking, Type ZKK, gear type, Size 3 x 2½, 40 GPM, 30 PSI, 2 HP, 230 DC.

DISTILLER FRESH WATER DISTRIBUTION PUMPS, 2—Allis-Chalmers, Type SS-DH, horizontal centrifugal, Size 2½ x 2, 55 GPM, 51' head, 2 HP, 230 DC.

FIRE PUMPS, 2—Allis-Chalmers, Type B2-V, vertical centrifugal, Size 4 x 3, 400 GPM, 280' head, 50 HP, 230 DC.

MAIN FEED PUMP, Terry Turbine, Type ZS-1, 124 HP, with Ingersoll-Rand horizontal pump, Size 4 x 3½, 4 stage, 250 GPM, 1340' head.

STEERING GEAR PUMP, Waterbury, Size 5, Type K, with Westinghouse Motor, 55 HP, 230 Volts DC.

LUBE OIL SERVICE PUMPS, 2—Quimby, vertical screw, Size 5, 400 GPM, 48 PSI, 6 x 5, 25 HP, 230 DC.

FUEL OIL TRANSFER PUMP, Quimby, vertical screw, Size 4D, 225 GPM, 50 PSI, 15 HP, 230 DC.

FUEL OIL SERVICE PUMP, Quimby, vertical screw, Size 2½, 20 GPM, 400 PSI, 2½ x 1½, 10 HP, 230 DC.

ICE WATER CIRCULATING PUMP, Allis-Chalmers, Type SS-RH, 10 GPM, 81' head, 1" x ¾", vertical volute, 1 HP, 230 DC.

HOT WATER CIRCULATING PUMP, Allis-Chalmers, Type SS-HH, 35 GPM, 70' head, 1¼ x 1¼, vertical volute, 2 HP, 230 DC.

REFRIGERATION CONDENSER CIRCULATING PUMPS, 2—Allis-Chalmers, Type SJK, 180 GPM, 81' head, 2½ x 2, horizontal volute, 7½ HP, 230 DC.

MAIN CONDENSER CIRCULATING PUMP, Allis-Chalmers, Type LS-V, 12,550 GPM, 20' head, 20 x 20, vertical volute, 100 HP, 230 DC.

AUXILIARY DISTILLER CIRCULATING PUMPS, 2—Allis-Chalmers, Type SG, 650 GPM, 29' head, 5 x 5, horizontal volute, 7½ HP, 230 DC.

AUXILIARY CONDENSER CIRCULATING PUMPS, 2—Allis-Chalmers, Type SE-V, 2820 GPM, 29.2' head, 12 x 12, vertical volute, 40 HP, 230 DC.

FORCED DRAFT BLOWERS, 2—American Blower, Sirocco capacity 17560 CFM, 5½ SP, 75 HP, 230 DC.

LIFEBOAT DAVITS, 2—sets, Welin, gravity trackway type, Size 135, capacity 21,500#.

FORGED STEEL LINE SHAFTING

Excellent buys on used—good shafting for re-machining to your requirements:

All items flanged

6—Sections 19" diameter, 23'—11" long,
1—Section 19" diameter, 23'—8" long,
3—Sections 19" diameter, 22'—10" long,
12—Sections 19" diameter, 22'—6" long,
6—Sections 14⅛" diameter, 26'—6" long,
2—Sections 14⅛" diameter, 18'—6" long,
2—Sections 14⅛" diameter, 13'—9" long,
39—Sections 13½" diameter, 22'—0" long,
15—Sections 13½" diameter, 14'—0" long,

OVERHAULED—TESTED

SALT WATER EVAPORATORS

Used, Davis Engineering or equal, with ABS and/or Coast Guard certification. 5 sizes available:

SIZE 48-23 **SIZE 26-8**
SIZE 36-17 **SIZE 20-5**
SIZE 36-14

PROMPT QUOTATIONS & DELIVERY

MACHINERY AND EQUIPMENT FROM C2-S-B1 SHIPS

TURBINES, High Pressure and Low Pressure, manufactured by G.E., develop 6,000 HP (2 sets Available)

REDUCTION GEARS, G.E., 6,000 HP, RPM 6072-4048-882-92 (2 available)

MAIN CONDENSERS, Worthington, 5500 sq. ft. (2)

LUBE OIL PURIFIERS, De Laval, Model 55-13, 2 HP, 230 DC.

MAIN FEED PUMP, Worthington, Size 4 x 6, 35/50 HP, 230 DC (2)

AUXILIARY FEED PUMP, Worthington, steam, Size 11 x 7 x 24 (2)

PORT FEED PUMP, Worthington, steam, Size 9½ x 6 x 24 (2)

MAIN CIRCULATING PUMP, Allis-Chalmers, Size 18 x 18, Type SEV, 8500 GPM, 20.2' head, with 60 HP motor, 230 DC (1)

AUXILIARY CIRCULATING PUMP, Worthington, Size 8LS-1, 1240 GPM, 24.6' head, 10 HP, 230 DC (6)

MAIN CONDENSATE PUMP, Worthington, Size 2½-UZ-1, 120 GPM, 208 TDH, 15 HP, 230 DC (6)

AUXILIARY CIRCULATING PUMP, Worthington, Size 1½-UZS-3, 20 GPM, 208 TDH, 5 HP, 230 DC (6)

LUBE OIL SERVICE PUMP, De Laval-Imo, 250 GPM, 40 PSI, 15 HP, 230 DC (2)

LUBE OIL SERVICE STANDBY PUMP, Worthington, steam, Size 5½ x 2¾ x 6 (2)

FUEL OIL TRANSFER PUMP, De Laval, 225 GPM, 50 PSI, 15 HP, 230 DC (2)

FIRE PUMP, Worthington, Size 3-UBS-1, 400 GPM, 280' head, 50 HP, 230 DC (2)

STANDBY FIRE PUMP, Worthington, Steam, Size 12 x 11 x 18 (2)

BILGE PUMP, Worthington, Size 5LS-1, 415 GPM, 78.5 TDM, 20 HP, 230 DC (2)

BALLAST PUMP, Worthington, Size 5LS-1, 415 GPM, 78.5 TDM, 20 HP, 230 DC (2)

GENERAL SERVICE PUMP, Worthington, Steam, Size 10 x 11 x 18 (2)

SANITARY PUMP, Worthington, Size 2½ x 2, 2HP, 230 DC (4)

DRINKING WATER PUMPS, Size 2⅛ x 2, ¾ HP, 230 DC (4)

VACUUM PRIMING PUMPS, size MD537, 1½HP, 230 DC (4)

FORCED DRAFT FAN, Size 3½ AHS, 7880/5970 CFM, S.P.—6.2/14 with G.E. motors 5/25 HP, 230 DC, 1910/3120 RPM (7)

STEERING GEAR WATERBURY PUMP, Type A, Size 5, with 20 HP G.E. motor, 230 DC (4)

1 Only
ORTON WHIRLEY CRANE

Lifting Rate: 25 tons @ 50 Ft. Radius @ 50 to 60 FPM.—
Boom: 80' to headblock (with 10' whip)
Whip: 10 tons @ 125 FPM—2 part line
Track Centers: 20'—Engine: Cummins HBIS 601, 180 HP supercharged, elec. start—
Motors: Each leg (4 tot.) 7½ HP, 230 DC.—
Power: Diesel electric (DC)

ELECTRIC MOTORS

230 VOLT D.C. MOTORS

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

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

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

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

6—50 HP, Westinghouse, 600 RPM, Compd. Wd., Type CK, FR 9, Horizontal 2 B.B.

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

1—40 HP, G.E., Type CDM, FR 95, Model 35A1663, 1800 RPM, Compound Wound, Horizontal, 2 B.B.

1—18/25 HP, Electro-Dynamic, 1225/1750 RPM, Compd. Wd., FR. 7½ S, Horizontal, 2 B.B.

6—15 HP, Allis-Chalmers, 1225/1750 RPM, Stab. Sh. Wd., Type EB90, Horizontal, 2 B.B.

2—10 HP, Allis-Chalmers, 1225/1750 RPM, Compd. Wd., Type EB80, Horizontal, 2 B.B.

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

120 VOLT D.C. MOTORS

1—304 HP, Westinghouse, 900 R.P.M., Shunt Wound, Horizontal, Pedestal Bearing.

3—25 HP, G.E., Type CDM, 1200 R.P.M., Horizontal, 2 B.B., unused. Removed from M.G. Sets.

20—7½ HP, Westinghouse Type SR, FR 43, Stab. Sh. Wd., 1750 RPM,.

STEERING GEAR MOTORS

2—General Electric, 30 HP, 230 V, DC, 600 RPM, Stab. Sh. Wd., Type CDM, Fields Continuous Duty, Armature 1 Hr.

1—Westinghouse, 35 HP, 230 V, DC, 850 RPM, Stab. Sh. Wd., Type SK, Fr. 123, Fields Continuous Duty, Armature 1 Hr.

SHIP'S LIGHTING M-G SETS

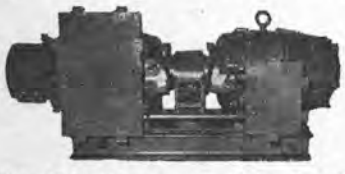
230 V, DC/115 V, DC. Ship's Lighting M.G. Sets for C3-S1-A-3 150 K.W. and Moore built C2 100 K.W.

SPECIAL D.C. GENERATORS

3—Unused, G.E., 15 KW, 100 A, 15 V, Type CDM, 1200 RPM, 2 B.B., D.P. Generators.

MOTOR-GENERATOR SETS

Unused Surplus in Original Boxes



Janette M-G Sets. Input: 1.75 HP, 230 V, DC, 7.2 Amperes, 1800 RPM. Output: 1-KVA (.85 KW), 115/1/60, 4 ball bearing, with speed regulator, and with noise filters. Navy Type CJM-21151, continuous duty. Net weight 435 #, Dimensions 44" L, 19½ W, 18⅝" H. Instruction book and parts list included.

Also Radio, Radar & Electronic Equipment. Motor-Generator Sets. Let us have your inquiries.

D.C. MARINE CONTROLLERS

1—Cutler-Hammer, 250 HP, 230 V, DC, No. 232 793A14.
2—General Electric, 225 HP, 230 V, DC, CR 5430-B32D.
6—Westinghouse, 100 HP, 230 V, DC, Type 8585A SO-1B4636.
1—Cutler-Hammer, Unused, 50 HP, 230 V, DC, No. C280981A290, Contactor Panel for Stern Anchor Haulage Winch. Many others from ¼ HP & up—115 and 230 V.

ROTOTROLS

15—Westinghouse Rotorols, driven by 5 HP, 440 V, 3 phase, 60 cycle, 1700 RPM, AC Motors.

D.C. TRANSFER PANEL

Cutler-Hammer, 3-pole, 300 A, 120/240 V, DC, Bul. 6007, No. B870102A2.

SPARE ARMATURES

For C-3-S1-A3 Auxiliaries . . . Send for List A-1. Many others — Let us have your inquiries.

SWITCHBOARDS

Westinghouse Propulsion Control Switchboards as used on S-4 Vessels. AC and DC Switchboards. Let us know of your requirements.

CIRCUIT BREAKERS

2 and 3 Pole Air Breakers, 2 and 3 Pole Molded Case Navy Type Breakers. 2 and 3 Pole Trip Elements for Molded Case Breakers.

Need 3 Wire 120/240 Volts DC for Shore Power? Motor-Generator Sets and Engine Driven Units from 15 KW to 500 KW . . . Let us quote.

D.C. GENERATORS

2—500 KW, 120/240 V, Westinghouse FR. CB813.7, 750 RPM, 2 Pedestal Bearing, with Balance Coils. Removed from GM 8-278 Engines.

2—250 KW, 120/240 V, Westinghouse, 1200 RPM, Single Pedestal Bearings. Balance Coils not available, Type 12S18P107PH, removed from Turbines.

2—150 KW, 120 V, G.E., Type CDM-1348-S, Form HA, Model 25G 340, 1800 RPM, Compound Wound, Horizontal 2 B.B.

1—150, 120 V, GE, Type CDM, Form AA, Model 24G, 1200 RPM, Compound Wound, Horizontal, 2 B.B.

6—100 KW, 120/240 V, Westinghouse, Type SK, FR. 143.8, 1800 RPM, Single Ball Bearings. Balance Coils available.

3—100 KW, 120/240 V, Delco, 1200 RPM, Single Bushed Bearings, with Balance Coils. Removed from Superior GDB-8 Engines.

1—100 KW, 120/240 V, Allis-Chalmers, 1200 RPM, Single Sleeve Bearing, Shunt Wound, Type 4-14-45-13, removed from GM 3-268A Engine.

10—90/165 KW, Westinghouse, 125/400 Volt, Type SK, FR. 185, Shunt Wound, separately excited (120 V), 1200 RPM, Horizontal, 2 B.B.

4—75 KW, 120 V, G.E., Type CDM-1234, Mod. 24GA71, 1200 RPM, 2 Ball Bearing, Tapered Shaft. Removed from Motor-Generator Sets.

6—60 KW, 120 V, Westinghouse, Type SK, FR 143, Style 3B2855-PH, 1800 RPM, 1 B.B. Removed from Turbines.

6—60 KW, 120 V, Westinghouse, Type SK, FR. 153-L, Style 1B4632, 1200 RPM, Compound Wound, Horizontal, 2 B.B.

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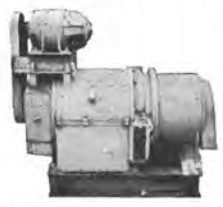

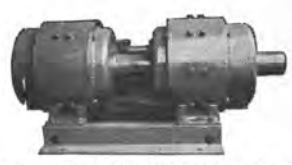

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Hertner. Input: 230 V, DC, 24A. Output: 3.5 KVA, 440 V, 60 cy., 3Ø.
Hertner. Input: 230 V, DC, 28A. Output: 5 KVA, PF .85, 115 V, 60 cy., Ø1.
Continental. Input: 230 V, DC, 28A. Output: 7.5 KVA, 3.5 KW, 120 V, 1Ø, 60 cy., 62.5A.
Century. Input: 10 HP, 230 V, DC. Output: 7.5 KVA, 3.75 KW, 120/1/60.
Bogue. Input: 230 V, DC, 57A, 15 HP. Output: 10 KVA, PF .8, 120 V, 60 cy., 1Ø.
Fidelity. Input: 15 HP, 230 V, DC. Output: 12.5 KVA, 10 KW, 120/1/60.
Bogue Electric. Input: 15 HP, 230 V, DC. Output: 12.5 KVA, 10 KW, 120/1/60.
Burke Electric. Input: 20 HP, 230 V, DC. Output: 25 KVA, 12.5 KW, 120/1/60.
General Elec. Input: 25 HP, 230 V, DC. Output: 18.75 KVA, 15 KW, 120/1/60.
Star Kimble. Input: 30 HP, 230 V, DC. Output: 25 KVA, 20 KW, 120/1/60.
Ideal. Input: 40 HP, 230 V, DC. Output: 31.3 KVA, 25 KW, 450/3/60.
Star Elec. Input: 40 HP, 230 V, DC. Output: 33.4 KVA, 25 KW, 450/3/60.
General Elec. Input: 230 V, DC, 40 HP. Output: 25 KW, 480 V, 60 cy, 3Ø, 24A, 1800 RPM.
Star Elec. Input: 125 HP, 240 V, DC. Output: 93.75 KVA, 75 KW, 450/3/60.

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Bludworth. Input: .75 HP, 115 V, DC. Output: .500 KVA, .450 KW, 115/1/60.
Elec. Spec. Input: 1 HP, 90/130 V, DC. Output: .500 KVA, .500 KW, 115/1/60.
Century. Input: 1.5 HP, 115 V, DC. Output: .750 KVA, .600 KW, 102/1/60.
Janette. Input: 13 Amp, 115 V, DC. Output: 1 KVA, 110/1/60.
Elect. Prod. Input: 1.5 HP, 115 V, DC. Output: 1 KVA, 115/1/60.
Allis-Chalmers. Input: 14 Amp, 115 V, DC. Output: 1.250 KVA, 1 KW, 115/1/60.
Cont. Elect. Input: 6 HP, 115 V, DC. Output: 2.9 KW, 440/3/60.
Louis Allis. Input: 10 HP, 105/130 V, DC. Output: 7.5 KVA, 440/3/60.
Cont. Elect. Input: 12 HP, 120 V, DC. Output: 7.5 KVA, 440/3/60.
Star Elect. Input: 12½ HP, 115 V, DC, 1800 RPM. Output: 7½ KW, 120 V, 60 Cy.
Ideal. Input: 40 HP, 115 V, DC. Output: 31.3 KVA, 25 KW, 450/3/60.
Continental. Input: 50 HP, 115 V, DC. Output: 50 KVA, 25 KW, 120/3/60.
Burke. Input: 20 HP, 115 V, DC. Output: 25 KVA, 12½ KW, 120/1/60.
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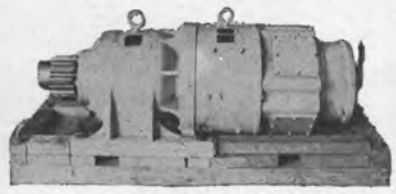

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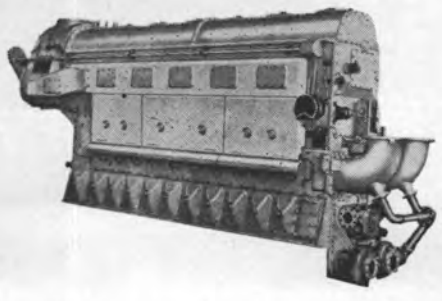

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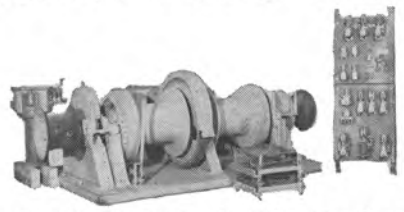

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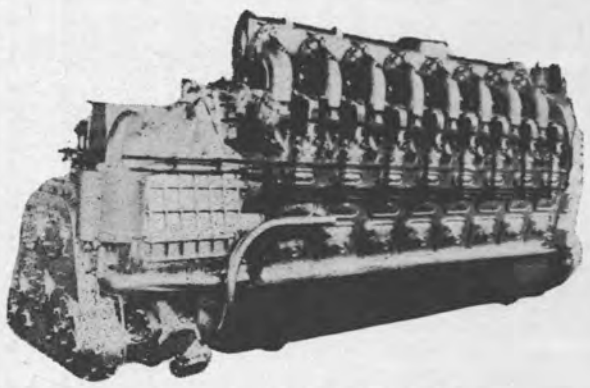

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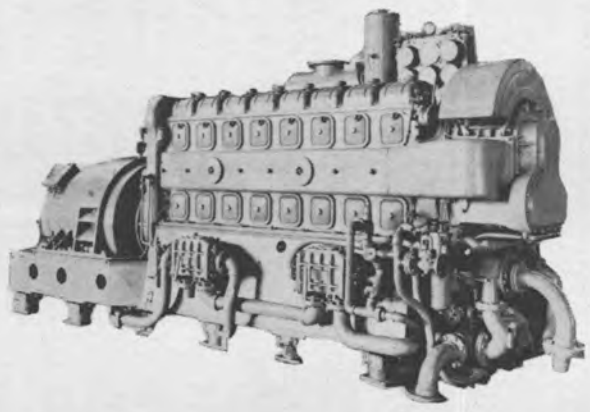

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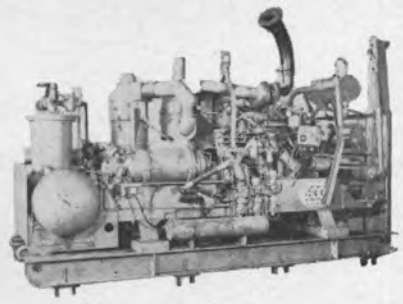

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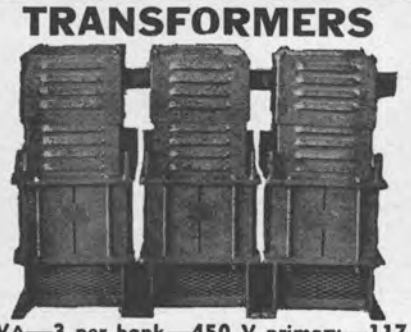

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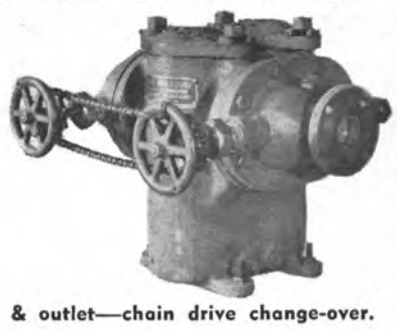

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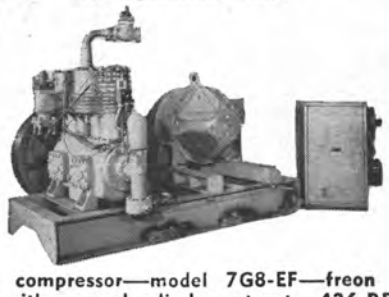

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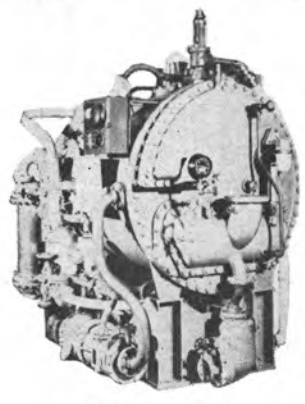

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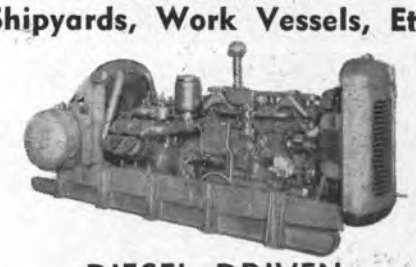

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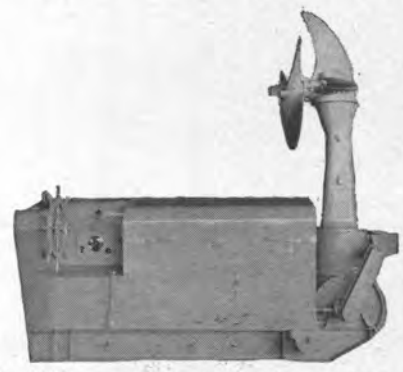
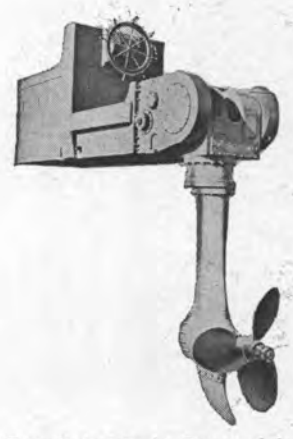
DIESEL PROPULSION UNITS

JUST ARRIVED — 7 UNITS



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



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

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National Metal

We are now dismantling two C-2 vessels.*

Just for the hull of it.

*Former "S.S. American Chief" (Hull No. 281) and "S.S. American Planter" (Hull No. 225) C-2 SB-1 built by Moore Drydock Co., Oakland, California.

National Metal AND STEEL CORP.

1251 New Dock Street, Terminal Island, California 90731 • Telex: TWX 213 548-0990

Call Collect Area Code (213) 775-3321

NOW DISMANTLING
AIRCRAFT CARRIER "TARAWA"
CV-40—Essex Class—Built Norfolk

CALL FOR ANY ITEMS

Axial Flow Fans, Pumps, Navy, Auxiliary Condensers, Boiler Parts, Catapult Hydraulic Equipment, Armored Door Hatches, Winches, MG Sets, Motors, Etc.

NAVY YARDS PLEASE NOTE!

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NEW – UNUSED 10 H.P. REVERSING CAPSTANS

Shipboard Use
Duty 10,000 lbs @ 60 FPM

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

6 IN STOCK FOR IMMEDIATE DELIVERY

$1675

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MARINE PUMPS
Fire – Bilge – General Service

AUXILIARY CONDENSATE

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

RECIPROCATING PUMP

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

$1250.00

BRONZE FEED-WATER BOOSTER PUMPS

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

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UNUSED SURPLUS BERGER
Self-Aligning
MARINE FAIRLEADS

$1175

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

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

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

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

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NEW ALLIS-CHALMERS
WINCH CONTROL PANELS

(7) 50 HP—230 volts DC—right hand—mfg by Allis-Chalmers. Resistors, control and brake. Dwg EK9231—U.S.M.C.—820-2—1404 ALT.

(6) As above, but left hand units.

$1195 each

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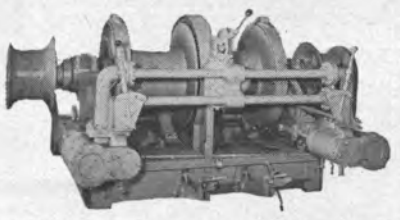
7 x 10 CLYDE DOUBLE DRUM
WINCHES



Drum 8500 lbs @ not less than 120 FPM; 13,000 lbs at no specified speed. Gypsy head 22,500 lbs. static pull. Foot brake to hold 17,000 lb. pull. Steam cylinders with standard 250 PSI.
DIMENSIONS:
9' 5¾" wide over winch heads
5' 10½" wide on bedplate
4' 1" deep over bedplate
6' 5" overall—brake pedal, etc.
2" steam—2½" exhaust.
Drums 16" diameter—20" wide—33 13/16" over flanges. Rebuilt by U.S.N. equal to new.

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NEW 7" RADIUS PANAMA CHOCKS

(Meet Panama Regulations)

With Extended Legs For Welding To Deck

Clear opening 10" x 14" — 7" radius — with extended legs for welding to deck. Use as double or single bow chock. OAL 28" on base — OAW 14" — OAH 27¾" — Cast Steel.

IMMEDIATE DELIVERY FROM STOCK

BULWARK-MOUNTED CHOCKS

for curved or flat plate

7" RADIUS—14" x 10" opening

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M.G. SETS

NEW JANETTE 1 KVA SETS

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

$179.50

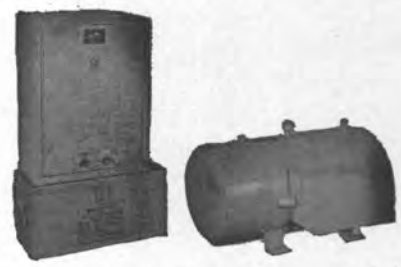
1.24 KW G.E. MG SETS

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

$339.50

25 KW IDEAL M.G. SETS

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



UNUSED SURPLUS 1 KVA SETS

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

$189.50

NEW 0.5 KVA HERTNER SETS

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

$127.50

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

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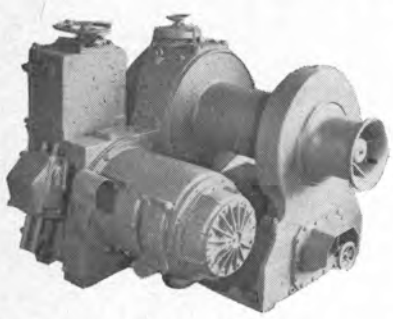
NEW YORK OFFICE: 11 Broadway — New York, N. Y. 10004 PHONE: 943-2640

SPECIAL WINCH OFFER



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

$1850 EACH

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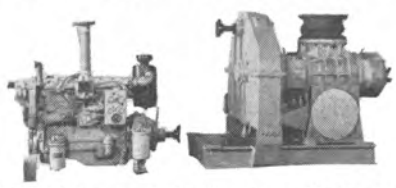
14" R-2418 WATEROUS CARGO PUMP

With Reduction Gear & Diesel Drive



PUMP: All bronze body & rotors. Shaft and gears of Hi Tensile steel. Suction and discharge 14". Top discharge—side suction. CAPACITY: Bilge service 2500 GPM @ 20 PSI @ 71 HP. Oil service 2400 GPM @ 75 PSI @ 130 HP. Gear input at top (12 o'clock). Length of pump and gear: 75⅜" long by 51" wide. ENGINE: Cummins diesel model JN-130-M—6 cyl.—4⅛ x 5—130 HP @ 2500 RPM with power takeoff. Weight 2080 lbs.—reduction gear ratio 10.059:1—air starting but can be converted to electric starting. Typical serial No. 5289.

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20 KW NORDBERG

"Power Chief"

DIESEL GENERATOR SET

2 Available. Kato 20 KW 120/240 single phase AC Gen. driven by 30 HP Nordberg 2-cylinder diesel engine—4½" bore—5½" stroke—4-cycle —1800 RPM—167 cu. inch displacement. Electric starting. Panel boards have Regohm voltage regulator. Panel is rigged for automatic standby control.

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Robert H. Macy, P.O. Box 758, Pascagoula, Miss. 39567
Marine Applications Co., Inc., P.O. Box 167, Mineola, N.Y. 11502
Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, Ohio 44114
Merine Design Inc., 1180 Ave. of Americas, N.Y., N.Y. 10036
Rudolph F. Matzer & Associates, Route 1 - Box 314 D, Jacksonville, Fla. 32211
John J. McMullen Associates, Inc., 17 Battery Pl., New York, N.Y.
George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
Robert Moore Corp., 350 Main St., Port Washington, N.Y. 11050
Gunnar Nelson, 2185 Lemoine Ave., Ft. Lee, N.J. 07024
Pearlson Engineering Co., Inc., 2825 Oak Ave., Miami, Florida 33133
Research & Design Corp., 17 Battery Place, Suite 1227 New York, N.Y. 10004
Philip L. Rhodes, 369 Lexington Ave., New York, N.Y. 10017
M. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013 and 45 Second St., San Francisco, Calif.
Saunders & Thomas, Inc., 1st-Federal Bldg., Pottstown, Pa. 19464
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George Slifer, 1422 Lakewood Rd., Jacksonville, Fla. 32207
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R. A. Stearn, Inc., 100 Iowa St., Sturgeon Bay, Wisc. 54235
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Peck Equipment Co., 3500 Elm Avenue, Portsmouth, Virginia 23704

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Esso International Inc., Esso Bldg., 15 West 51 St., New York, N.Y.
Gulf Oil Trading Co., 1290 Ave. of the Americas, New York, N.Y.
Mobil Oil Co., Inc., 26 Broadway, New York, N.Y. 10004
Refineria Panama, S. A., 277 Park Ave., New York, N.Y. 10017
Shell Oil Co., 50 W. 50 St., New York 10020
Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017

PAINT—Marine—Protective Coatings
Amercoat Corp., 201 N. Berry St., Brea, Calif. 92621
Devoe & Raynolds Co., Inc., Marine Division, Newark, N.J. 07105
Enjay Chemical Co., 60 West 49th St., New York, N.Y. 10020
International Paint Co., 21 West St., New York, N.Y. 10006
Mobil Chemical Company, Metuchen, N.J. 08840

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

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Atlas Minerals & Chemical Div., ESB, Inc., Mertztown, Pa. 19539
Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231
Philadelphia Resins Co., 20 Commerce Dr., Montgomeryville, Pa. 18936

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Enjay Chemical Co., 60 West 49th St., New York, N.Y. 10020

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Baldwin-Lima-Hamilton Corp., Phila., Pa. 19142
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
Bird-Johnson Co., 883 Main Street, Walpole, Mass. 02081
Escher Wyss, G.M.B.H., 798 Ravensburg, Germany

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Colt Industries, Inc., Fairbanks Morse Pump & Electric Div., 3601 Kansas Ave., Kansas City. Kansas 66110
De Laval Turbine, Inc., 853 Nottingham Way, Trenton, N.J. 08602

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American Forge & Mfg. Co., McKees Rocks, Pa. 15136
W. W. Patterson Co., 830 Broket St., Pittsburgh, Pa. 15233

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Frigitemp Corp., 329 Herzl St., Brooklyn, N.Y. 11212
York Corp., Grantley Road, York, Pa. 17405

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American Mfg. Co., Inc., Noble & West Sts., Brooklyn, N.Y. 11222
Cating Rope Co., 309 Genesee St., Auburn, N.Y. 13022
Columbian Rope Co., Auburn, N.Y. 13022
Jackson Rope Corp., 9th & Oley, Reading, Pa. 19604
Plymouth Cordage Company, Plymouth, Mass. 02364
Tubbs Cordage Company, P.O. Box #709, Orange, Calif. 92669
Wall Rope Works, Inc., Beverly, N. J. 08010

RUBBER PRODUCTS—Dock Fenders, Hose, Life Preservers
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RUDDER ANGLE INDICATORS
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Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

SEALS
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Syntron, a division of FMC Corp., 398 Lexington Ave., Homer City, Pa. 15748

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Portable Light Co., Inc., 67 Passaic Ave., Kearny, N.J. 07032
Snelson Oilfield Lighting Co., 1201 E. Daggett St., Forth Worth, Texas 76104

SEWAGE DISPOSAL
Youngstown Welding & Engineering Co., 3708 Oakwood Ave., Youngstown, Ohio 44509

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

SHIP BROKERS
Gulf Coast Marine, Inc., P.O. Box 52987, Houston, Texas 77052
Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
Mowbray's Tug and Barge Sales Corp., 21 West St., N.Y., N.Y. 10006
Oaksmith Boat Sales, Inc., Fisherman's Terminal, Seattle, Wash. 98119

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Albina Engine & Machine Works, 2100 N. Albina Ave., Portland, Ore. 97227
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Astilleros de Cadiz, S.A., Zurhono 72, Madrid 10, Spain
Atlantic Gulf & Pacific Co. of Manila Inc., 45 Muelle De La Industria, Manila
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
Barbour Boat Works, Inc., P.O. Box 1069, New Bern, N.C. 28560
Bender Ship Repair, Inc., 265 So. Water St., Mobile, Ala. 36602
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
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Brewer Dry Dock Co., Mariners Harbor, Staten Island, N.Y.
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Dillingham Corp., P.O. Box 3288, Honolulu, Hawaii 96801
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Groignard Shipyards, P.O. Box 829 Colbert, Marseilles, France.
Halifax Shipyards, Ltd., P.O. Box 640, Halifax, Nova Scotia, Canada
Halter Marine Services, Inc., Route 6, Box 287H, New Orleans, La. 70126
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Jacksonville Shipyards, 644 E. Bay St., Jacksonville, Fla.
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Wyatt Industries Inc., Port Houston Shipyard Div., P.O. Box 3052, Houston, Texas 77001
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Boucher-Lewis Precision Models, Inc., 36 E. 12 St., N.Y., N.Y. 10003

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Mechanical Marine Company, 45-15 37th St., Long Island City, N.Y.
Todd Products, Div. of Todd Shipyards Corp., Halleck St., Brooklyn, N.Y. 11231

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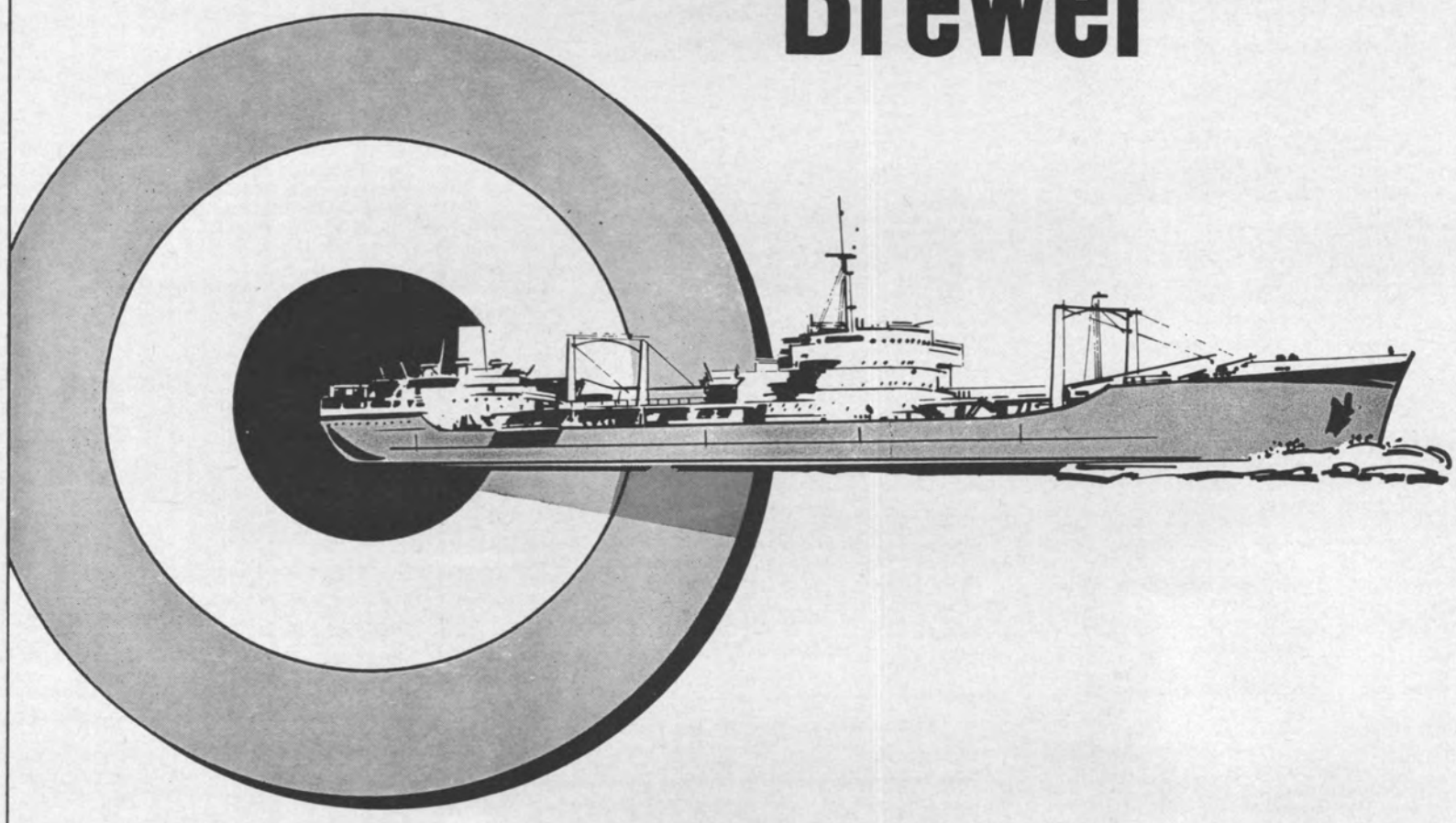

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