THE ELMER A. SPERRY AWARD 1975

...for advancing
the art of
transportation

Purpose of the Award

☐ The Elmer A. Sperry Award shall be given in recognition of a distinguished engineering contribution which, through application, proved in actual service, has advanced the art of transportation whether by land, sea or air.

The Elmer A. Sperry Medal

In the words of Edmondo Quattrocchi, the sculptor of the Elmer A. Sperry Award Medal:

"This Sperry medal symbolizes the struggle of man's mind against the forces of nature. The horse represents the primitive state of uncontrolled power. This, as suggested by the clouds and celestial fragments, is essentially the same in all the elements. The Gyroscope, superimposed on these, represents the bringing of this power under control of man's purposes."

Presentation of

THE ELMER A. SPERRY AWARD 1975

to

Jerome L. Goldman

Frank A. Nemec

James J. Henry

with citations to

The Naval Architects and Marine Engineers
of Friede and Goldman, Inc.
and to
Alfred H. Schwendtner

by

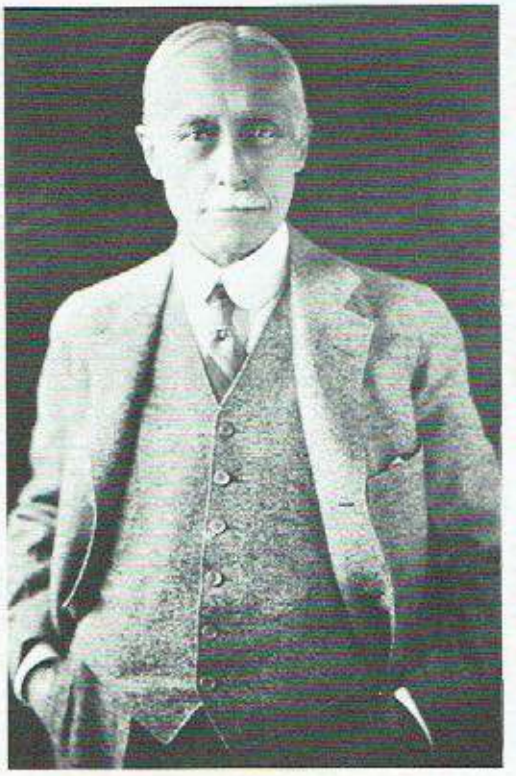
The Board of Award under the sponsorship of

The American Society of Mechanical Engineers
Institute of Electrical and Electronics Engineers
Society of Automotive Engineers
The Society of Naval Architects and Marine Engineers
American Institute of Aeronautics and Astronautics

At the SNAME Annual Meeting Banquet

Friday, November 12, 1976 □ New York Hilton □ New York, N.Y.

Founding of the Award



Elmer Ambrose Sperry, 1860-1930

☐ The Sperry Award commemorates the life and achievements of Dr. Elmer A. Sperry (1860-1930) by seeking to encourage progress in the engineering of transportation. Much of the great scope of the inventiveness of Dr. Sperry contributed either directly or indirectly to advancement of the art of transportation. His contributions have been factors in improvement of movement of men and goods by land, sea and air.

The award was established in 1955 by Dr. Sperry's daughter, Mrs. Robert Brooke Lea, and his son, Elmer A. Sperry, Jr.

Elmer A. Sperry Board of Award

1975

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SPERRY LEA

Jerome L. Goldman

Frank A. Nemec

James J. Henry

Award Citation

☐ To Jerome L. Goldman of Friede and Goldman, Inc.,
☐ Frank A. Nemec of Lykes Corporation, and
☐ James J. Henry of J.J. Henry Co., Inc.,
for their leadership in revolutionizing marine cargo transport through the design and development of barge carrying general cargo vessels

Certificates of Citation

☐ To the Naval Architects and Marine Engineers of Friede and Goldman, Inc., for their contributions to the advancement of marine cargo transport through the design and development of barge carrying general cargo vessels

☐ To Alfred H. Schwendtner of J.J. Henry Co., Inc., for his contribution to the advancement of marine cargo transport as project manager for the design of barge carrying general cargo vessels

Elmer A. Sperry Award □ Foreword

□ Since the time of the ancient Phoenicians, the seas have provided man with a livelihood, wealth and knowledge. The speed and capacity of man's transport systems have advanced remarkably since those early days.

Within the last twenty years, sea trade between nations has increased dramatically as more diplomatic doors have been opened. In providing goods and services for untold millions around the world, three men stand out for their development of faster and more economical cargo handling systems. They are Jerome L. Goldman, of Friede and Goldman, Naval Architects, for his concept of LASH; Frank Nemec, of Lykes Corporation, for his concept of SEABEE and J.J. Henry, of J.J. Henry Co., Inc., for his unique role in the development of the SEABEE system.

□ □ □

"But O ship the immortal ship! O Ship aboard the ship." — *Walt Whitman*

□ By coincidence or otherwise, the minds of men often are concerned with the same broad subject in which their daily lives are involved. The subject of the American shipping industry was of concern to several men, each of whom had for years devoted his mind to the single subject of transportation.

Transportation in all its forms — railroading, trucking, barging and ocean shipping — had, for generations, changed little in the movement of general cargo, largely because the same problems afflicted each of the transportation groups. The two basic difficulties were rapidly increasing labor costs and exceedingly slow rates of cargo handling which tied up expensive prime movers of cargo.

Coastal and intercoastal shipping had all but disappeared from the American scene when in 1955 one of these men decided it was time for a change. The idea of containerization was born a year later. The immediate impact was on trucking and coastal and intercoastal shipping.

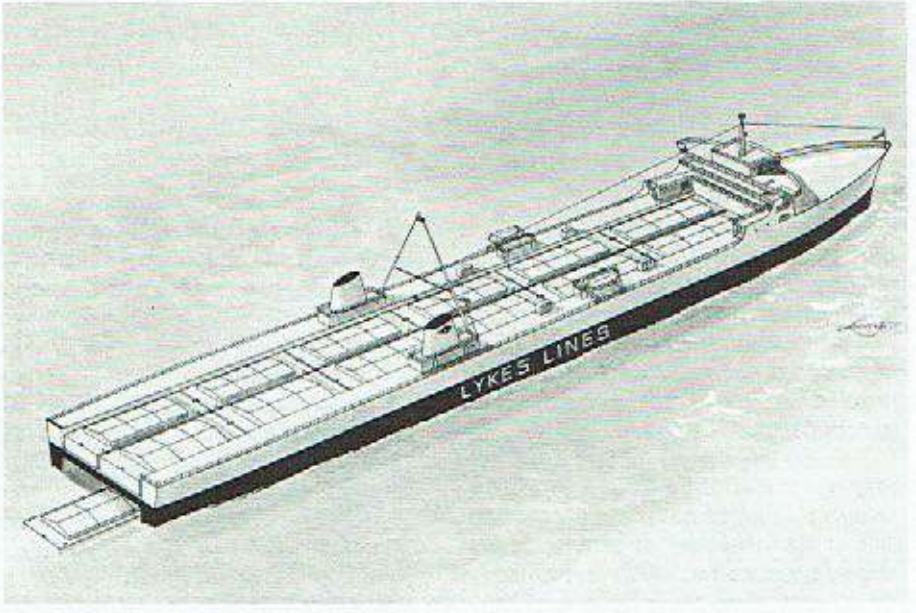
The dramatic change was not accomplished without opposition, but it did succeed and its growth is well known. Containerization caught on rapidly, its greatest growth at North Atlantic and West Coast ports of the United States. It was slow to come to the Gulf of Mexico because many of the cargos moving through the Gulf of Mexico ports would

not readily lend themselves to being containerized.

One of these concerned men was Frank A. Nemec of New Orleans, then President of Lykes Brothers Steamship Co., Inc. He too was thinking of containerization, but in a form far removed from the idea of ships hauling only boxes across the world's oceans. And he was studying maps of the interior waterway systems of the United States and Europe. His mind stayed with the compatibility of the vast inland water networks of the two continents.

Nemec, born in New York City, showed himself to be a leader in discharging this vast undertaking of improving the cost and efficiency of sea-going freight. Having a Master's degree in accounting from the City University of New York, and having done graduate work at Columbia University, he joined the firm of Price Waterhouse in 1938. In 1945 he went to work for Lykes Brothers Steamship Co., Inc., of New Orleans. He was appointed treasurer, and in this position he set the wheels in motion for the eventual contribution he and Lykes Brothers would make to the shipping industry.

Could a ship system be developed to provide service to many ports, achieve economics of scale by increased cargo capacity, offer general cargo and specialty cargo availability, provide optimum cargo handling methods, and keep loading and discharging time to an acceptable cost level? With these goals in mind, Frank Nemec and his Board of Directors had the courage to commit their company's resources to what were larger and higher powered ships than any existing general cargo vessels. Fulfillment of this endeavor by Nemec and his Lykes team has given international traders the



This was the first Lykes barge-carrying concept. This idea had the carrier being submerged and the barge floating on through the stern. The idea had to be changed because submerging the ship required more water depth than was possible in some European areas.

unique and only SEABEE Class ship that can not only ferry loaded barges across the Atlantic, but simultaneously provide ocean transport for any mix of cargo, including bulk, utilized, containerized and oversized shipments.

Containerization Ushers in Efficiency

☐ Development of the Lykes SEABEE Barge System gave birth to an entirely new concept of ocean freight transportation at a time when conventional cargo liners faced diminishing success in Gulf of Mexico-Europe trade, and it became increasingly clear that the container concept was not fully suited to the commercial cargo mix and to the geography of the U.S. Gulf of Mexico coast, where 19 ports span 1,000 miles and multiple port calls were necessary for the accumulation of voyage tonnage.

Nemec's original idea for an ocean-going barge transport was one in which the ferrying vessel would be submerged while the loaded cargo barges were floated into barge decks on the ship through a stern gate. J.J. Henry and his associates determined that the concept was feasible. This idea was first disclosed to MARAD and the Navy in 1964. It was abandoned, however, when it became clear that the submerging process was impractical because water depths in Europe were not sufficient to permit maximum operation of this system.

Nemec and other members of the Lykes Brothers in-house staff stayed with the idea of the barge-carrying ship but returned to J.J. Henry Co., Inc., for a new design to eliminate the water depth problem. The submersible elevator and deck transporter system was decided upon and the design carried forward by J.J. Henry and his associates, working with the Lykes Construction Division, headed by S.W. Thayer.

The Versatile SEABEE

☐ The Lykes SEABEES are 875 feet long with a beam of 106 feet. At maximum draft of 39 feet their deadweight is 38,400 long tons, and they have a displacement of 57,000 long tons. Draft in normal commercial operations is 32 feet at a speed slightly in excess of 20 knots. They have single screw installations powered by steam turbines developing 36,000 shaft horsepower. The design lines are highly suitable for multiple screw and increased horsepower installations should they ever be required for commercial or military needs. Power plants can be augmented to 120,000 shaft horsepower without reducing the barge cubic capacity of the ships.

Three cargo decks run the full length of the vessel. The lower and middle decks can accommodate 12 barges each and the upper deck 14 barges. Each SEABEE barge is 97½ feet long, has a beam of 35 feet and a bale cubic capacity of 40,000 feet or a cargo dead weight of 840 long tons. The total cubic of all 38 barges is 1,500,000 feet; this is increased to 1,750,000 cubic feet when the containers are stowed on top of the barges on the upper deck.

A fleet of 246 SEABEE barges has been built to serve the requirements of the SEABEE System operating between terminals in the U.S. Gulf of Mexico, Northern Europe and the United Kingdom. All of the barges were constructed with double bottoms and are double skinned to provide maximum cargo safety. Watertight, completely interchangeable hatch covers have been designed and built for both protected and full ocean service. With the ocean service covers, the barges are certified for ocean towing.

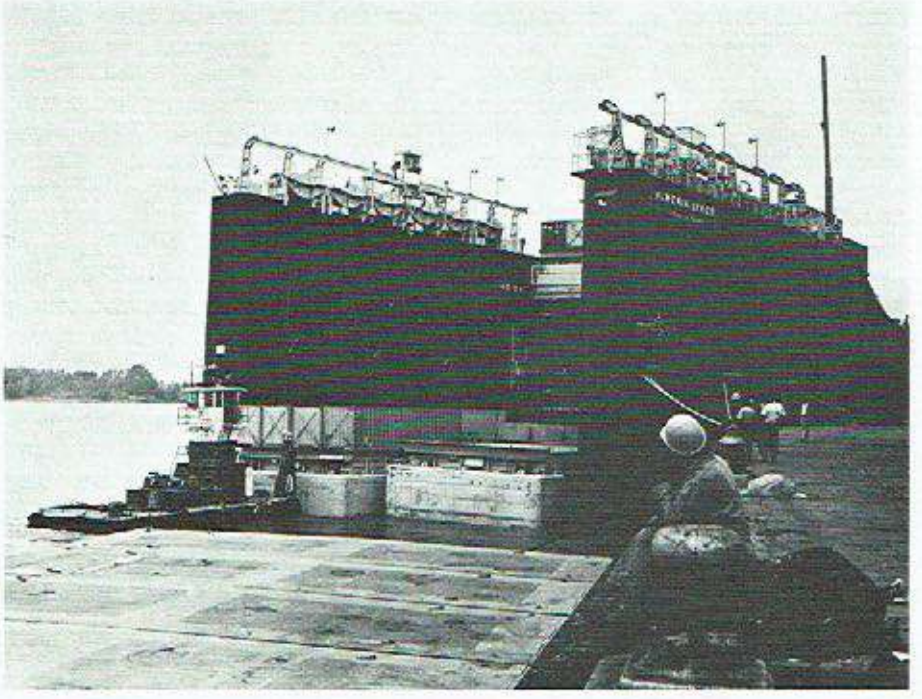
The size of the SEABEE barges was determined only after lengthy discus-

sions with shippers and rivermen and following an analysis of the types of cargo expected to move over the Gulf of Mexico-Europe trade route and the likely sizes, shapes, and weights of the shipments. The final result was a barge that towboatmen look upon as ideal for river tows — exactly half the size of a conventional jumbo river barge and easily fitted into any tow. The size has also been well received by shippers because the barge can accommodate almost anything they have to move in a manner that is well secured and safe from pilferage and damage. Additionally, the size of the barge is suitable for ocean load-line requirements.

Cargo can be stowed inside the SEABEE barge in any form or any mix including containers, heavy lifts and unusual shapes and sizes. Each barge is equipped with an exceptional array of securing devices proven effective by the rapid decline in cargo damage claims in comparison with conventional ships operating in the Gulf of Mexico-Europe trade.

SEABEE barges have loaded or discharged cargos along most of the inland waterway areas of the United States and Europe. The barges have gone as far west into the interior of the United State as the Port of Catoosa in Oklahoma; as far east as Pittsburgh, Pennsylvania; as far north as St. Paul, Minnesota and Chicago on the banks of Lake Michigan. With the available ocean-going covers, they can be towed on and across the Great Lakes. They have also handled cargos in ports throughout the U.S. Gulf of Mexico,

Here a tug pushes two loaded barges into the stern well. The elevator will then lift them to a deck level, and the transporter will move under the barges, delivering them to their stowage position.



ranging from Brownsville on the Mexican border to Florida.

Enormous, pre-assembled, modular-constructed units can be carried on the upper deck. These units can be as large as 100' x 70' and practically unlimited in height and weigh as much as 2,000 tons.

In normal commercial operations, the Lykes SEABEES operate as combination barge-and-container ships. Containers may be stowed inside the barges, atop the barges on the upper deck of the ship on removable container beams, and also loaded to the upper deck on container adapters. All conventional sized containers can be handled. As many as sixteen 40-foot containers can be stacked atop each barge on the upper deck. In normal operations each SEABEE can transport as many as 600 twenty-foot equivalents on the upper deck adapters. The total container capability of each SEABEE transport is 990 twenty-foot equivalents. A unique feature of the ship configuration permits its ready utilization for roll-on/roll-off or for heavy lift cargos.

In addition to the standard SEABEE barge, Lykes Brothers has designed almost every type of barge that can be constructed within SEABEE specifications to meet any special requirement. The range and type of special barges that can be built and transported are almost without limit.

James J. Henry, Chairman of the Board, J.J. Henry Co., Inc., brought a wealth of experience in helping to solve the problems encountered in the SEABEE program. His firm, founded in 1947, is one of the leading naval architecture firms in the world, providing service here in the U.S. as well as in Germany, Holland, Italy, Spain, the United Kingdom, Japan and Taiwan.

Henry graduated from the Webb Institute of Naval Architecture in 1935. He immediately joined the Technical Division of the United States Bureau of Marine Inspection. Later, he joined the Design Division of the United States Maritime Commission. In 1941, he went to work for the firm of Consolidated Steel Corporation, Wilmington, California as Naval Architect and Superintendent of Construction.

Mr. Henry is responsible for many 'firsts' in ship design for the Marine Industry, such as:

Design for the alternate carriage of oil and iron ore and coal in C-4 vessels, in 1954;

Design of the world's largest self-unloading bulk carrier, the S.S. RICHARD, in 1957;

Design of the METHANE PIONEER, first vessel to carry liquefied natural gas (LNG) at low temperatures (-250°F) at atmospheric pressure, in 1959;

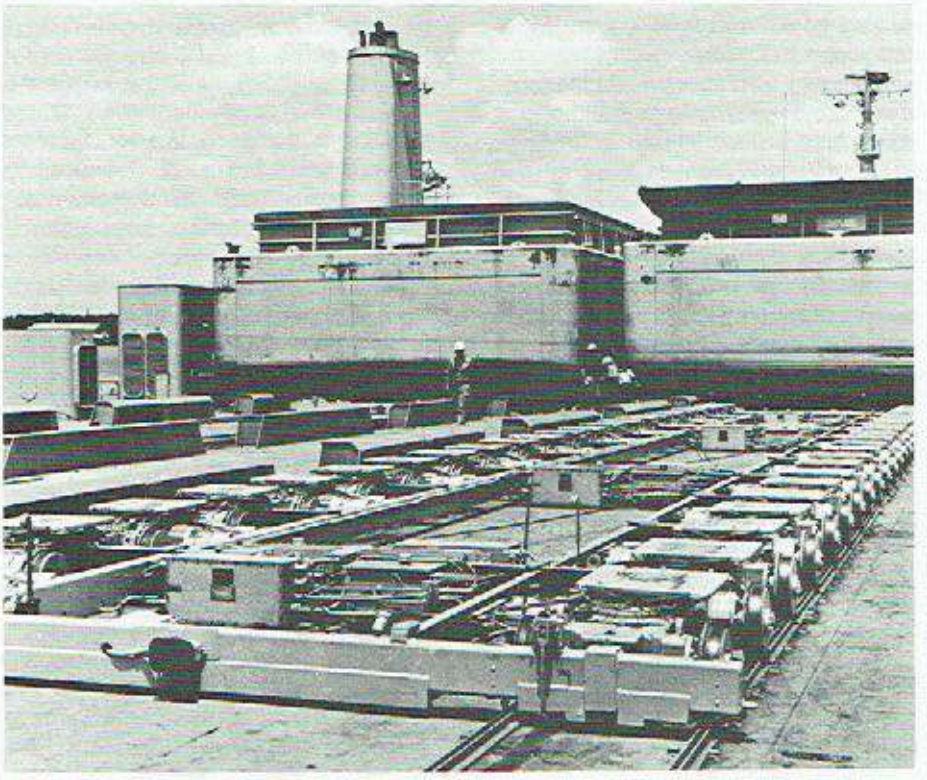
Design of American Mail Line's record breaking trans-Pacific liners, M.A. Design No. C-4-S-1 in 1965, as well as M.A. Design No. C-5-S-75a, the largest general cargo vessel ever to be constructed;

Design of the first automated steam plant for the Navy;

Design of the Lykes Brothers Steamship Company's unique *Sea Barge Carrier*, "SEABEE."

Under Mr. Henry's leadership the company today is one of the top designers of various categories of cargo ships, including container ships, bulk carriers, tankers, hot sulphur-carrying vessels, chemical carriers and many special designs, such as missile-tracking vessels, floating nuclear power-generating plants, ice breakers, the jumboizing of different types of ships to increase their capacities, etc.

The following papers have been presented by Mr. Henry before the Society of Naval Architects and Marine Engineers: *U.S. Cargo Ship Cost Consider-*



This deck transporter system lifts the barges from the elevator and delivers them to their proper position of stowage on any of the three decks running the full length of the ship.

ation; Modern Ore Carriers and *Container Ships*, co-authored with Henry J. Karsch. In 1966 Mr. Henry was awarded jointly with Karsch the *Capt. Joseph H. Linnard Prize* for the best paper contributed to the proceedings of the Society for that year.

In 1966 Mr. Henry received the 16th Award of the Vice-Admiral "Jerry" Land Medal, presented for "Outstanding Accomplishments in the Maritime Field."

Henry currently serves on the Board of Managers of the American Bureau of Shipping and is a member of the Executive Committee and past president of the Society of Naval Architects and Marine Engineers. He has been past chairman and is currently vice chairman of the Board of Trustees of his alma mater, Webb Institute. Henry is also a member of the Oceanographic Advisory Committee to the Secretary of the Navy and the Academic Advisory Board of the U.S. Coast Guard Academy.

Submersible Elevator Carries Idea Through

☐ Unlike all other barge-carrying ships, which use deck cranes (such as the LASH system) to load and unload their barges, the design which Nemec and J.J. Henry and his associates developed is a submersible stern elevator capable of lifting two fully loaded barges to any one

of the ship's three decks. Alfred H. Schwendtner, the Project Manager for the Lykes SEABEE Barge Carrier, deserves special recognition for his outstanding performance under the inspiration and guidance of J.J. Henry.

The cantilevers which support the elevator are each 114 feet long, 70 feet high and 12 feet in width. The cantilever depth permits the elevator to be guided in both the fore-and-aft and transverse directions even when the elevator is at the bottom of its travel. A deep cantilever design was also chosen because of the superior barge tendering and simple elevator guidance. The lifting capacity of the elevator is 2,000 long tons.

The horizontal movement of the barges between the elevator and the interior of the ship is accomplished by moving the barges into the 600-foot long cargo area on a railroad-type transporter consisting of 24 electrically driven dollies. The elevator-transporter loading cycle makes it possible to handle 2,500 tons of cargo per hour. To date the Lykes Brothers SEABEES have handled well in excess of 6,000,000 tons of cargo since they were first introduced in 1972.

The SEABEE can handle fast cargo operations and is particularly advantageous in congested ports. It is a ship with maximum versatility and flexibility in the transportation of all types of cargo. It combines the characteristics of barge carrier, roll-on/roll-off vessel, container ship, unitized or pallet carrier, heavy-lift vessel and quasi-tanker. It has Panama Canal transit capability and can serve both established ports and unimproved shore locations.

Nemec's idea became a design concept in 1964. It passed through a number of stages of development until the final specifications were made in 1968. In October of that year Lykes Brothers and General Dynamics Corporation, Quincy Shipbuilding Division entered a contract for the construction of three SEABEE vessels with delivery of the first ship in June 1972.

The shipyard constructed the SEABEE using a modular principle. The ship was erected from 149 packages of ship structure with each being as complete as possible. Modules fabricated in this way could be positioned and turned to utilize down-hand welding and automatic welding equipment to the fullest possible extent. Items normally fastened to the overhead, such as piping and lighting, could be installed with more ease because the module could be turned upside down.

A conventional vessel in trade between the U.S. Gulf of Mexico and Northern Europe is usually required to spend close to 50 percent of its time either in port or plying coastwise between ports on both ends of a voyage. This schedule is mandatory in order that the vessel accumulate tonnage to utilize its full capacity.

Both the SEABEE and LASH systems are capable of allowing a cargo-carrying vessel to spend more time on trans-oceanic crossings than pier loading and unloading. With this type of system, the container ship and barges are cousins in that they separate the warehousing of ocean freight from its transit, allowing both operations to take place independently and/or simultaneously.

The Lykes Brothers SEABEE — which had its origin in the mind of Frank A. Nemec — comprises one of the most flexible cargo-carrying systems yet devised and indicates the degree to which United States technology can effectively optimize the economics for sea-lifting all types of cargo from producer to consumer.

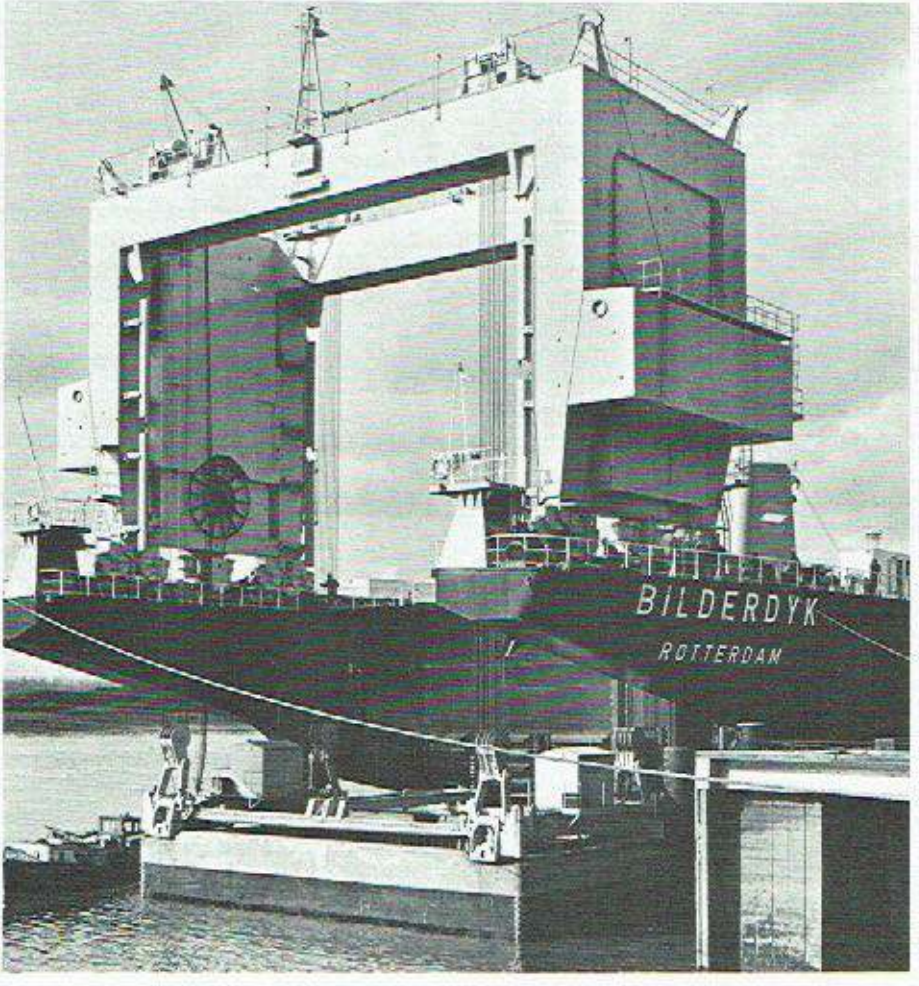
"I must down to the seas again, for call of the running tide
Is a wild call and a clear call that may not be denied."

—John Masefield

☐ Lighter Aboard Ship — LASH — is a concept which also utilizes barge-type lighters that can hold up to 415 short tons of cargo which are lifted to and from the "mother" ship by crane.

The lighters are of such size that they can handle virtually all types of cargo. As with SEABEE, the LASH system lessens time and cost of in-harbor loading and unloading by depositing the barges outside the harbor for pickup and immediately loading new barges outside the main vessel that have already been filled and readied for transport.

View of the aft section of the LASH "mother" vessel. This crane, pictured above, is the principal cargo handling device.



The LASH ship is a vessel of single deck construction having large hatches and tank arrangements. All accommodation and navigation facilities are located in the fore section of the ship while the cantilevered crane and other machinery are in the aft.

LASH Lighters and Crane Offer Quick Service

☐ The LASH crane is the basic cargo-handling device aboard the vessel. It conveys the lighters from the stowed location aboard the vessel to the stern region and then lowers the lighter into the water. A LASH vessel can load and unload in one port call 83 lighters, equivalent to 60,000 long tons of cargo, within 52 hours.

The crane is mounted on heavy-duty rails which in turn are located directly over heavy longitudinal bulkheads. It has four independent gantry drives which move the crane and its load fore and aft. Positive rack-type drives assure full traction under all operating conditions. Should one or even two of the gantry drives break down, the crane could still move at a reduced speed. The hoisting arrangement consists of four hoisting drums and associated pairs of blocks. Each hoist is driven by its own electric motor.

The LASH lighter is 61½ feet in length, 31 feet in width and 13 feet in depth. It has a bale capacity of 19,900 cubic feet and a grain capacity of 20,600 cubic feet. As of 1975 over 4,000 lighters had been constructed.

This remarkable feat was brought about by Jerome L. Goldman and his associates from the firm of Friede and Goldman, Inc., New Orleans, Louisiana. A graduate of the University of Michigan, Goldman received his Bachelor of Science in Naval Architecture in 1944. Between 1944 and 1946 he worked as a naval architect for Higgins Industries, New Orleans, in charge of ship designs of cargo ships, military craft, amphibious craft and many other unusual vessels requiring specialized design.

In 1946 Goldman began private practice as a consulting naval architect doing design work for deep sea service, offshore operations, inland waterways, etc. In 1949 he combined his offices with those of the late V.M. Friede, forming the present firm.

Goldman holds patents on his designs for the "Triple Hatch" or "All Hatch" ship. A number of recent United States flag cargo vessels are of this type.

In 1973, Goldman received the David W. Taylor Gold Medal, the highest honor bestowed by the Society of Naval Architects and Marine Engineers. It should be noted that in 1949 Goldman founded and was elected the first chairman of the Gulf Section of the Society of Naval Architects and Marine Engineers. The author of numerous articles and papers, Goldman was cited by the University of Michigan for a special award acknowledging his many contributions to the field of naval architecture. From here he also received, in 1973, an Honorary Doctor of Science degree.

Goldman's LASH vessels made up the largest maritime order of ships for peace time use in recorded history in 1967. In that year an order for eleven giant LASH ships was made. Five orders were placed by Prudential Lines, Inc., and six by Pacific Far East Line, Inc.

LASH is Flexible

Goldman's LASH system can transport all manner of cargo including agricultural products, raw materials, finished and semi-finished products, bulk or odd-size and awkward pieces. LASH lighters can be towed throughout coastal and

The mother ship ranges in size up to 893 feet in length with a draft of up to 40 feet at a maximum dead weight of 46,000 tons. Twenty-four LASH ships have been placed in service around the world.

waterway systems in which they operate, providing direct overseas shipment of cargo from ports hundreds or thousands of miles away from the main port. Thus, shallow-water ports are enabled to share in the benefits of a large transoceanic shipping system.

The "mother" ship ranges in size up to 893 feet in length with a draft of up to 40 feet at a maximum dead weight of 46,000 tons. Since 1969 when the first LASH vessel went into service, 24 LASH ships have been placed in service around the world.

Depending upon the port and the requirements of the vessel operator, the LASH ships can be either anchored or moored. In a paper written by J.V. Borkowski, Vice President, LASH Systems, New Orleans, and N.H. Baker, Vice President, LASH Operations, Waterman Steamship Corporation, New Orleans, a description of the LASH (barge) lighter fleeting is given: "One of the most critical elements of any LASH port operator is the marshalling of loaded barges awaiting stripping, the storage of empty barges and the marshalling of stuffed barges awaiting the next mother vessel call."

According to Borkowski and Baker there are two kinds of fleeting — sea and harbor. In the case of sea fleeting, prior to the mother vessel's arrival, barges are arranged in a fleet in the order in which they will be placed on the LASH ship. In some ports such as Houston, Texas, Savannah, Georgia, and Calcutta, India, the local port authority has provided a facility for fleeting. These fleets are

located close by the stern discharge station of the vessel to minimize towing time. In both Houston and Savannah the LASH facility for fleeting consists of fixed piling arrays where barges are banked in tiers. In Calcutta, buoys are used to nest barges in clusters of 6 or 8.

In the case of harbor fleeting, the mother vessel moors adjacent to or at the cargo terminal. This type of loading and unloading arrangement can be found in such harbors as New Orleans, New York, Jeddah, Saudi Arabia, Columbo, Sri Lanka and Madras, India.

Wide Area Coverage With Lighters

☐ There are approximately 1,300 miles of waterway systems in the United States navigable by a LASH barge. This network extends from New Orleans in the South to Chicago in the North, to Catoosa in the West on the Arkansas River and to Pittsburgh in the East on the Ohio River. On the East Coast the Intercoastal Waterway connects Jacksonville, Florida to Norfolk, Virginia, enabling LASH lighters to cover 695 miles. As well, the Gulf of Mexico Intercoastal Waterway extends eastward to Carrabelle, Florida and westward to Brownsville, Texas, connecting the ports of Mobile, New Orleans, Houston, Galveston and Corpus Christi, to name a few. All of these networks offer the LASH operator a direct market coverage.

For example, a LASH vessel calling inbound at New Orleans will discharge barges to towage to Mobile, Pensacola and Baton Rouge. Calling next at Houston, lighters will go to Port Arthur, Galveston, Lake Charles and Corpus Christi. When these lighters are unloaded and consequently reloaded they return to the base ports for loading on the next LASH vessel calling. The next call would be Charleston for discharge of lighters going to Savannah and Wilmington, North Carolina. The Savannah lighters when unloaded would be reloaded and then towed on the Intercoastal Waterway to Norfolk, via Charleston, South Carolina for further loadings. From Norfolk the lighters would be towed to Baltimore. Baltimore and New York calls round out the trip of the LASH "mother" ship.

On this one voyage, 18 ports were serviced with only 5 calls by the LASH "mother" vessel at base ports in 13 days. This is eight days less than if a conventional vessel had covered the same five base ports. The conventional vessel having a dead weight for cargo of 8,000 tons would average 380 tons per day while the LASH vessel at 26,000 tons dead weight for cargo would average 3,000 tons per day maximum load out.

The high productivity shown in this example is dependent upon the availability of towboat service provided by carriers on the rivers and waterways which connect inland and coastal ports. LASH operators and the various carriers who provide towage service as part of their barge operations have worked together to develop rates and services for the growth of the LASH system. These rates have been published by common carriers in their Waterway Freight Bureau tariffs. Space in tows has been allocated specifically for the integration of LASH lighters with conventional river barges. The spirit of cooperation has resulted in both efficiency for the LASH operator and high levels of service to the shipper who chooses to utilize the LASH system.

Goldman's LASH system has provided goods and services through hundreds of miles of American and European waterways and to many ports all of the benefits of modern transoceanic shipping by this unique and dynamic means.

Conclusion

☐ In a review of the accomplishments that Messrs. Nemec, Henry and Goldman have made, it must be noted that they were very effective in aiding maritime progress.

Sir Alexander Fleming, the discoverer of penicillin, made an address at Edinburgh University (Scotland) in 1951 in which he said:

"It is the lone worker who makes the first advance in a subject: the details may be worked out by a team, but the prime idea is due to the enterprise, thought and perception of an individual."

Sir Alexander could have been talking about these three gentlemen. Through each of their own unique contributions and inspirations, maritime progress has been greatly enhanced for the benefit of all.

As a businessman, engineer and prognosticator, each man used his talents in his attempt to provide faster, more economical and efficient shipping systems.

As established nations grow and emerging nations enter into world politics and economics, it will become an even greater necessity to meet the needs of the world's citizens through improved transportation and communication systems. Energy, food, durable goods and industrial goods will be in demand at ever increasing rates. These ever increasing demands will continue to tax and challenge the minds of men.

LASH Lighters can be towed throughout the coastal and waterway systems in which they operate. Shallow-water ports can share in the benefits of a large transoceanic shipping system.

Previous Elmer A. Sperry Awards

1955 to WILLIAM FRANCIS GIBBS and his Associates for development of the S.S. United States.

1956 to DONALD W. DOUGLAS and his Associates for the DC series of air transport planes.

1957 to HAROLD L. HAMILTON, RICHARD M. DILWORTH and EUGENE W. KETTERING and Citation to their Associates for the diesel-electric locomotive.

1958 to FERDINAND PORSCHE (in memoriam) and HEINZ NORDHOFF and Citation to their Associates for development of the Volkswagen automobile.

1959 to SIR GEOFFREY DE HAVILLAND, MAJOR FRANK B. HALFORD (in memoriam) and CHARLES C. WALKER and Citation to their Associates for the first jet-powered aircraft and engines.

1960 to FREDERICK DARCY BRADDON and Citation to the Engineering Department of the Marine Division, SPERRY GYROSCOPE COMPANY, for the three-axis gyroscopic navigational reference.

1961 to ROBERT GILMORE LETOURNEAU and Citation to the Research and Development Division, FIRESTONE TIRE AND RUBBER COMPANY, for high speed, large capacity, earth moving equipment and giant size tires.

1962 to LLOYD J. HIBBARD for application of the ignitron rectifier to railroad motive power.

1963 to EARL A. THOMPSON and Citation to his Associates for design and development of the first notably successful automatic automobile transmission.

1964 to IGOR SIKORSKY and MICHAEL E. GLUHAREFF and Citation to the Engineering Department of the Sikorsky Aircraft Division, UNITED AIRCRAFT CORPORATION, for the invention and development of the high-lift helicopter leading to the Skycrane.

1965 to MAYNARD L. PENNELL, RICHARD L. ROUZIE, JOHN E. STEINER, WILLIAM H. COOK and RICHARDS L. LOESCH, JR. and Citation to the Commercial Airplane Division, THE BOEING COMPANY, for the concept, design, development, production and practical application of the family of jet transports exemplified by the 707, 720, and 727.

1966 to HIDEO SHIMA, MATSUTARO FUJII and SHIGENARI OISHI and Citation to the JAPANESE NATIONAL RAILWAYS for the design, development and construction of the New Tokaido Line with its many important advances in railroad transportation.

1967 to EDWARD R. DYE (in memoriam), HUGH DeHAVEN and ROBERT A. WOLF and Citation to the research engineers of CORNELL AERONAUTICAL LABORATORY and the staff of the Crash Injury Research projects of the CORNELL UNIVERSITY MEDICAL COLLEGE.

1968 to CHRISTOPHER S. COCKERELL and RICHARD STANTON-JONES and Citation to the men and women of the BRITISH HOVERCRAFT CORPORATION for the design, construction and application of a family of commercially useful Hovercraft.

1969 to DOUGLAS C. MACMILLAN, M. NIELSEN and EDWARD L. TEALE, JR. and Citations to Wilbert C. Gumprich and the organizations of GEORGE G. SHARP, INC., BABCOCK AND WILCOX COMPANY, and the NEW YORK SHIPBUILDING CORPORATION, for the design and construction of the N.S. Savannah, the first nuclear ship with reactor, to be operated for commercial purposes.

1970 to CHARLES STARK DRAPER and Citations to the personnel of the MIT INSTRUMENTATION LABORATORIES, Delco Electronics Division, GENERAL MOTORS CORPORATION, and Aero-Products Division, LITTON SYSTEMS, for the successful application of inertial guidance systems to commercial air navigation.

1971 to SEDGWICK N. WIGHT (in memoriam) and GEORGE W. BAUGHMAN and Citations to William D. Hailes, Lloyd V. Lewis, Clarence S. Snavely, Herbert A. Wallace, and the employees of GENERAL RAILWAY SIGNAL COMPANY and the Signal & Communications Division, WESTINGHOUSE AIR BRAKE COMPANY, for development of Centralized Traffic Control on railways.

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