

TOW LINE

Winter 1970



ON THE COVER—



TRANSAMERICAN TRAILER TRANSPORT'S big, white and busy trailership *Ponce de Leon*—unloading cargo at Pier 13, Staten Island—is artist Albert Brenet's beautiful cover subject for this issue of *Tow Line*. The 24,000-ton *Ponce de Leon* will soon be joined by a new sistership now undergoing trials, the *Eric K. Holzer*. The two highly versatile ships, capable of carrying 'anything that can roll on U.S. highways', have a service speed of 26 knots. Each has a capacity of 240 40-foot trailers and 400 other-type wheeled vehicles. A new feature on the *Eric K. Holzer* is her ability to accommodate oversized wheeled cargo of up to 200-ton units.

Transamerican Trailer Transport's 58-hour New York/Puerto Rico service will be stepped up to twice weekly sailings when the *Eric K. Holzer* begins her run.

IN THIS ISSUE—

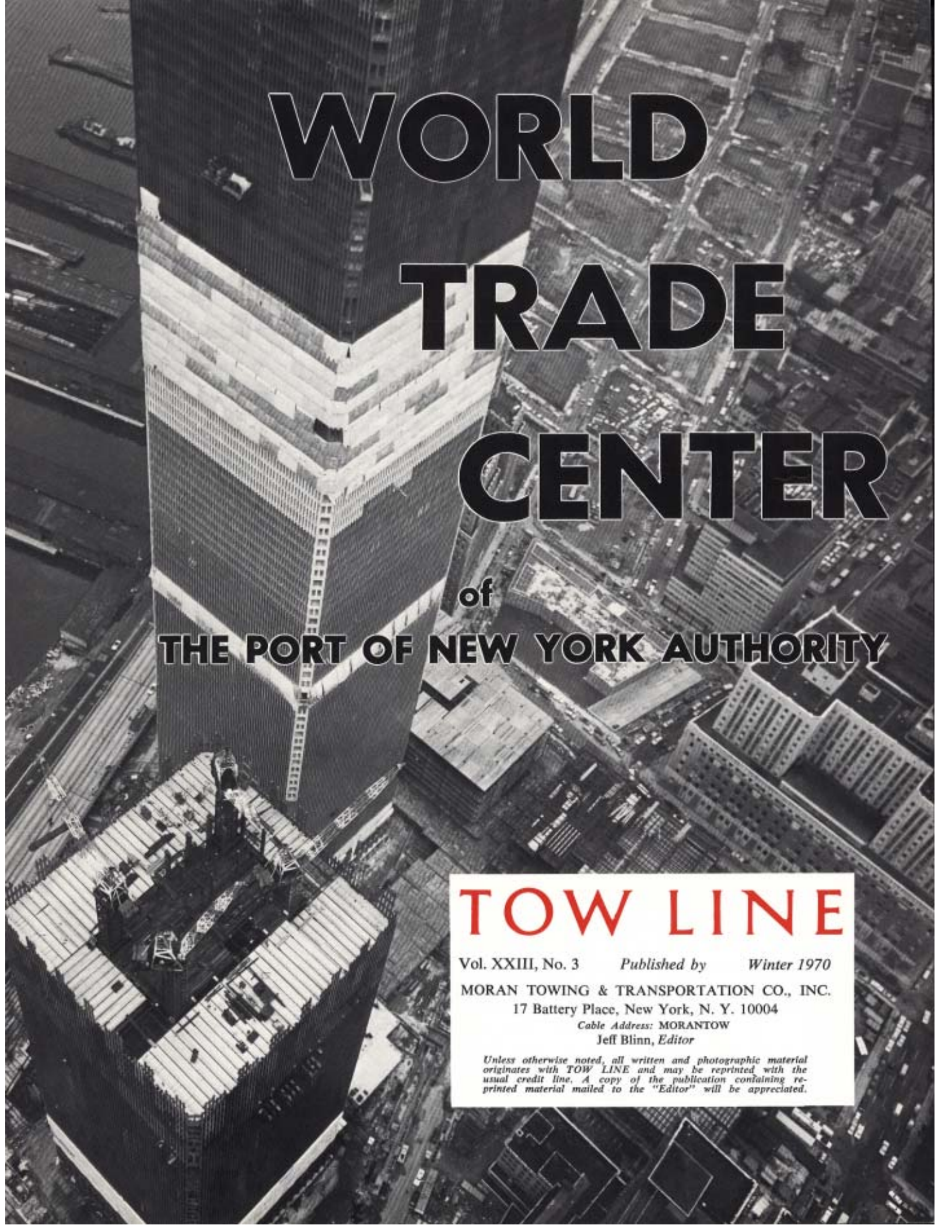
| | |
|------------------------------------|--------------------|
| On the Cover | 2 |
| World Trade Center | 3, 5, 6, 7, 14, 16 |
| Port of New York Looks Ahead | 4 |
| 50 Fabulous Years | 8, 9, 15, 16 |
| NATO Ships Thread Narrows | 10, 11 |
| Ships in the News | 12, 13 |
| Recommended Reading | 17 |
| Ashore & Afloat | 18, 19 |



TRANSAMERICAN TRAILER TRANSPORT's new SS *Eric K. Holzer* launching at Sun Shipbuilding and Dry Dock Company, Chester, Pennsylvania November 11, 1970.

Moran's European Agents.

ENGLAND: James A. McLaren & Co., Ltd., 2 Bevismarks, London, E. C. 3; SCOTLAND: Henry Abram, Ltd., 17 Sandylford Place, Glasgow, C. 3; NORWAY: Henning Astrup A/S, Fridtjof Nansenplass 4, Oslo; Birger Gjestland A/S Kong Oscars Gate 62, Bergen; DENMARK: Jørgen A. Rasmussen, 33 Amaliegade, Copenhagen K.; SWEDEN: Gösta Sandström A. B., Postgatan 2, 411 13 Gothenburg; FINLAND: O. Y. Lars Krogius A. B., Box 18, Helsingfors; BELGIUM: Muller-Thomsen N. V., Borzestraat 21, 2000 Antwerp; Bourse, Antwerp; GERMANY: Ernst Glassel, GmbH, Altenwall 21, P.O. Box 305, Bremen; SPAIN: Rafael Navajas, Alameda de Recalde 30, Bilbao; ITALY: Paola Scerni, Piazza Portello 10 (P.O. Box 1857), Genoa; GREECE: National Hellenic American Line, 83 Kolokotroni Street, Piraeus.



**WORLD
TRADE
CENTER**
of
THE PORT OF NEW YORK AUTHORITY

TOW LINE

Vol. XXIII, No. 3 *Published by* *Winter 1970*

MORAN TOWING & TRANSPORTATION CO., INC.

17 Battery Place, New York, N. Y. 10004

Cable Address: MORANTOW

Jeff Blinn, Editor

Unless otherwise noted, all written and photographic material originates with TOW LINE and may be reprinted with the usual credit line. A copy of the publication containing reprinted material mailed to the "Editor" will be appreciated.

The Port of New York Looks Ahead

LOOKING AHEAD has long been a full-time occupation of those agencies responsible for the Port of New York's role in international commerce. And we believe the dividends of this practice can be measured today in such tangibles as the massive container terminals that have made the New Jersey-New York port the pace setter for intermodal facilities throughout the world.



Austin J. Tobin

But looking ahead must be an on-going process if the port is to retain its reputation for outstanding service to the international transportation community.

For that reason, construction of the Elizabeth-Port Authority Marine Terminal, the facility renowned for pioneering modern container operations, is forging ahead toward completion in 1973, two years ahead of schedule. At that time the vast terminal will span a 919-acre area of what was once useless cattails. The Elizabeth facility will have in operation 25 containership berths, and it is anticipated that more than 9 million tons of cargo will move annually through this terminal. Of this tonnage, 95 per cent will be in containers. Last year the big terminal handled 4.3 million tons of cargo.

Facilities at Elizabeth presently include 13 vessel berths on the Elizabeth Channel and two on Newark Bay as well as 297 acres of paved upland area. At this writing, construction is progressing on ten containership berths and 378 acres of paved upland. Thus far, the Port Authority has invested over \$98 million on development of the big terminal. It is anticipated that the bi-state agency's total investment at the facility will reach \$175 million by the time of its completion in three more years.

Port Newark, which is adjacent to the Elizabeth facility is also undergoing impressive development to enable it to meet future shipping needs. Presently boasting 31 deep-water berths, the terminal, when completed will have 36 berths including two which will accommodate large containerships. It is expected that the terminal's annual cargo capacity at that time will be almost

5.7 million tons. During 1969, approximately 4.1 million tons of cargo arrived or departed New York Harbor via Port Newark.

In addition to these Port Authority marine facilities, a 62-acre terminal — Port Jersey — is being built at Bayonne, New Jersey by Global Container Services, a consortium of Columbus Line, Dart Containerline and Fabre Line. The terminal, which will have 1,800 feet of berthing space for containerships, is expected to be in operation by late 1971.

Another major terminal under construction to accommodate future containership activity at the port is American Export Industries' 700-acre facility in the Howland Hook area of Staten Island, which will be able to accommodate three 1,000-foot-long containerships at a single time.

Building for future shipping requirements is not restricted to the New Jersey side of the harbor. In Brooklyn, where the Port Authority has invested over \$95 million in its busy new, 12-pier Brooklyn Marine Terminals, work is proceeding on the Northeast Marine Terminal, developed by the City of New York, which will be the borough's first marine facility specifically designed for containership operations.

And while discussing transportation projects on the New York side of the harbor, there is one which quite literally rises above all others — The World Trade Center. This project will include two 110-story tower buildings which will soar 1,350 feet above a five-acre plaza area which will contain additional buildings. The Center will bring together the services of business and government agencies involved in the processing and marketing of world trade, including the New York offices of the U.S. Bureau of Customs. Thus, it will function as a clearing house for the handling, development and expansion of export as well as import shipments. The Center will open its doors to the international trade community later this year with the entire complex scheduled for completion in 1973.

The World Trade Center and the new intermodal cargo terminals underscore the forward looking improvements taking place at the New York-New Jersey port as the big harbor prepares to meet the challenges of tomorrow's commerce. And, as in the past, each new challenge will serve to spur the Port of New York on to further and more impressive achievement.

*Austin J. Tobin
Executive Director
The Port of New York Authority*

THE MAGNIFICENT WORLD TRADE CENTER

THE STRUCTURALLY SOLID, superbly functional and aesthetically pleasing lofty twin 110-story towers of the Port of New York Authority's World Trade Center and its complex of buildings is fast becoming a reality in Lower Manhattan.

Responsible for the beauty of the two tallest buildings in the world and their setting is a Seattle-born architect of the Troy, Michigan firm of Minoru Yamasaki & Associates—"Yama" Yamasaki.

Much in the traditional practice of the Japanese artist, "Yama" labored a year in creating over a hundred models and arrangements of the buildings before finding the one which pleased him most.

A full decade of his personal attention to the design and selection of features and a multitude of components will make the World Trade Center attractive both within and without.

To work out the details of the Yamasaki design the prominent New York architectural firm of Emery Roth & Sons was selected.

Small Plot—Big Money

On a roughly keystone-shaped 16 acres of land bounded by Barclay and Vesey Streets on the North, by Liberty and Church Streets on the South and East, and adjoining the West Side Highway, some 230 acres of office space is being created primarily to facilitate and promote global trade for the bi-state area known as the Port of New York.

When final touches are put to the World Trade Center's spacious five-acre Plaza Park, the Port of New York Authority will have spent nearly \$650-million on one of the costliest civilian building constructions ever undertaken.

From the original impetus by the Downtown Lower Manhattan Association in January 1960 to create such a facility for commerce, the economic feasibility of the project was favorably reported by the Port of New York Authority in March 1961.

The legislatures of New York and New Jersey in 1962 authorized the construction and work on the site was begun in August 1966.

The target year for completion is 1973 but, as this issue of TOW LINE goes to press, early tenants to the first-to-be-finished North Tower are already on the move.

MORAN'S FUTURE HEADQUARTERS — THE WORLD TRADE CENTER

THE NEW YORK OFFICES of the Moran Towing Corporation and its subsidiaries will overlook the harbor from a new perspective in 1971. The view will be from the 53rd floor of the lofty North Tower building of the Port of New York Authority's new World Trade Center. A full half-floor on the south side of the building will be decorated "in a manner suitable to the world's largest towing organization" according to the decorators, JFN Associates of Manhattan. The target date for the move is October 1st. TOW LINE will report more details in future issues.

Trade Hub of the World

The growing roster of tenants for the North and South Tower buildings and adjacent smaller structures are

(Continued on page 14)

THE WORLD TRADE CENTER — View of a model of the trade center as it will look from the Hudson River.





FORMER TOW LINE ARTIST Lili Rethi began a series of progress sketches of the World Trade Center for the Port of New York Authority prior to her recent death. We feel fortunate to be able to reproduce two of these early renditions. The upper drawing shows the demolition underway in June 1967 of some of the 164 buildings on the site and the dismantling of the Central New Jersey Railroad ferry building at Liberty Street and abandoned Hudson River Piers. By October 1968, as shown in the highly detailed lower drawing, the North Tower building is emerging with only two of her four 'Kangaroo' cranes yet in place. The Hudson River landfill project is being filled with earth and rock while, in the immediate foreground, the north tube of the Port Authority Trans-Hudson (PATH) railroad lies fully exposed and supported on a steel truss. The photograph to the right was taken two years later looking south from above the North Tower building as it nearly equaled the height of the Empire State Building (1,250 feet).





50 FABULOUS YEARS

The Port of New York Authority

TOW LINE congratulates the Port of New York Authority on its vision and great constructive service to the port in anticipation of the bistate agency's 50th Anniversary—April 30, 1971. It is TOW LINE's intention in this Winter 1970 Issue to no more than call attention to some of the accomplishments of these dedicated PA-men and, perhaps, to supplement their own extensive port promotion readership.

THE PORT OF NEW YORK AUTHORITY was born at a time when our great port was plagued with political and private rivalries and jurisdictional feuds.

Little was being done to coordinate the great influx of commerce after World War I; no unified plans were being outlined for the port's future; near chaos threatened with jammed harbor traffic and obsolete or non-existent port facilities.

Governors Alfred E. Smith of New York and Walter E. Edge of New Jersey were making public pleas for interstate cooperation.

"... I would like to see a joint commission representing the two states . . .", Governor Edge averred in a speech to the New York Chamber of Commerce prior to World War I, "with one thought; their responsibility is to develop the Port of New York."

A Joint Commission was formed in the port district (an area encompassed that a permanent interstate agency, corporate in form, be created under the 'compact clause' of the United States Constitution.

The Port Compact was signed April 30, 1921 in the Great Hall of the Chamber of Commerce of New York. As the Federal Government had already designated the port as 'The Port of New York' for customs and other purposes the new bi-state agency was called 'The Port of New York Authority'.

Basic Aims

The legislative action which created the Port Authority also charged it with two basic responsibilities: the development and operation of transportation and terminal facilities in the port district (an area encompassing approximately 1,500 square miles within a 25-mile radius from the Statue of Liberty) and, the promotion and protection of the commerce in the port.

Control of the bi-state agency was given to a board of twelve Commissioners who elects its own Chairman and Vice Chairman each year.

Six leaders in the business, professional or public life of each state are appointed by their respective Governors to serve overlapping terms of six years without pay.

(The late Chairman of the Board of Moran Towing Corporation, Eugene F. Moran, served 17 years as a Commissioner.

Mr. Moran was originally appointed by New York Governor Herbert H. Lehman in 1942 and re-appointed by Thomas E. Dewey in 1948 and 1954.

At the age of 87 years and after serving the Board of Commissioners as its Vice Chairman from 1955 until his retirement in 1959, Mr. Moran was awarded the Port of New York Authority's 'Distinguished Service Medal' for his lifetime devotion to the port.)

A Public Corporation

To carry out the policy decisions of the Board of Commissioners and to manage the day-to-day operations of the Port Authority is the responsibility of the Executive Director and his professional staff.

Austin J. Tobin, who has been elected annually by the Board of Commissioners since 1942, is the Executive Director.

Mr. Tobin has the same responsibility for executive action and administration as does a president of a private corporation. An important

facet of these responsibilities is the requirement that the Port Authority's projects become self-sustaining financially for "the Port Authority shall not pledge the credit of either state," says the Port Compact, nor does it have the power to levy taxes.

As the pioneer of all such public corporations in America, the Port Authority has invested well over \$2.1 billion in bridges and tunnels, marine and inland terminals, airports and heliports, in trade development of the port, in improvement of an interstate rapid transit system and in the World Trade Center now under construction.

For the most part these costly undertakings were financed by bonds and notes secured by the Port Authority's own general reserve fund.

It was from very modest beginnings that the Port of New York Authority has grown to encompass a career staff of some 8,000 specialists in many fields and to attain a position of financial strength.

Bridges and Tunnels

In the middle 1920's legislative action authorized the new agency to "build, operate and maintain" four essential crossings of the port's waterways: the Outerbridge Crossing, the Goethals Bridge, the Bayonne Bridge (all linking Staten Island with New Jersey) and the George Washington Bridge spanning the Hudson River between Fort Lee, New Jersey and Upper Manhattan.

Simultaneously on June 29, 1928 the bridges named to honor Eugenius H. Outerbridge, first Chairman of the Port Authority, and Major General George W. Goethals, builder of the Panama Canal, were opened to traffic.

The George Washington Bridge, designed by the world-famous Othmar Amman, opened October 25, 1931 followed by the opening of the Bayonne Bridge on November 15.

Under the 'Bridge and Tunnel Unification Act' passed by the legislatures of New York and New Jersey in 1931, control and operation of the Holland Tunnel passed to the Port Authority and the way was cleared to construct the Lincoln Tunnel.

The Holland Tunnel, a vehicular passage under the Hudson River with exits at Canal Street in Manhattan and 12th and 14th Streets in Jersey

City, was originally opened by the New York State Bridge & Tunnel Commission and the New Jersey Interstate Bridge and Tunnel Commission on November 13, 1927. It bears the name of its engineering genius, Clifford M. Holland.

The new link, to be called the Lincoln Tunnel, was begun in 1934 between Midtown Manhattan and Weehawken, New Jersey.

The only three-tube vehicular underwater tunnel in the world, the Lincoln tunnel, was to have three official openings: center tube, December 22, 1937; North tube, February 1, 1945; South tube, May 25, 1957.

(The George Washington Bridge had a 'second opening' August 29, 1962 when the six-lane lower level was completed making it the world's only 14-lane suspension bridge.)

Airports and Seaports

After 25 years of building transportation links between New York and New Jersey, the Port of New York Authority entered a new era in its development of the port.

In 1946, in response to the City of Newark's request, the Port Authority presented a proposal for the development of Newark Airport and Seaport.

Newark Airport was opened by the City of Newark October 1, 1928 on 68 acres of land. Since the Port Authority began operations in 1948 it has invested over \$153.2 million in this airport with a \$200 million major redevelopment program underway at the present time. Designed for domestic operations, Newark Airport now encompasses 2,300 acres of land.

Port Newark, located on Newark Bay about 8 miles from the Narrows by way of the Kill Van Kull, was opened in 1915. Almost \$112 million has been invested since 1948 by the Port Authority to provide 31 deep-water berths adjoining 707 acres of land.

When its development is completed, Port Newark will have 36 berths including two full container-ship berths with 292 acres of paved upland area.

Another proposal submitted in 1946 was requested by the City of New York whereby the Port Authority, under lease, would develop and operate LaGuardia and Idlewild (John F. Kennedy International).

LaGuardia, New York's first commercial airport, was opened by the City of New York December 2, 1939. The Port Authority began operations in 1947 and instituted a \$120 million redevelopment program which was completed in 1967.

As a part of this program, the airport's two runways over water were extended into Flushing Bay on a unique pile-supported platform.

Construction of the John F. Kennedy International Airport was begun by the City of New York in 1942 and opened July 1, 1948, a year following the Port Authority's leasing it from the city.

At the heart of the 4,900 acre airport is its 'Terminal City,' an area the size of Central Park in Manhattan which will contain an eleven-block-long International Arrival Building, two Airline Wing Buildings for foreign-flag airlines and seven individual terminal buildings for United States-flag airlines.

Upon completion of present plans, the Port of New York Authority will have invested upwards of \$440.8 million in this single facility.

Specialized Airports

One of the oldest flying fields in the United States lies twelve miles by highway from Manhattan's Times Square—Teterboro Airport, New Jersey.

The historic airport is the center for private and business-owned small aircraft and for training and personal flying in the Port District.

It was purchased by the Port Authority in 1949 from its private owners. In 1965 the Port Authority and Pan American World Airways jointly announced plans for its revitalization and redevelopment including its future operation by Pan American.

The Port Authority-Midtown West 30th Street Heliport was opened in 1956 on a strip of land along the Hudson River. It was Manhattan's first commercial heliport.

A second commercial heliport was opened by the Port Authority to serve the needs of Manhattan's Downtown financial district at Pier 6, East River in 1960.

Marine Terminals

The Port of New York Authority has invested close to \$337 million in

construction and improvements to six important marine terminals, three in Brooklyn and three in New Jersey, including previously mentioned Port Newark.

The largest containership terminal in the world is the Elizabeth-Port Authority Marine Terminal on Newark Bay adjacent to Port Newark.

Under the guidance of Lyle King, Director of Marine Terminals for the Port Authority, the transformation of 919 acres of formerly unused marshland into a vast terminal capable of handling more than 9-million tons of cargo annually with 25 deep-water ship berths will be completed in 1973.

Construction on this tremendous new asset to the Port of New York was authorized in 1956 when ship operators were still lukewarm to the idea of containerization.

With an eye to the future equal in vision to the Port Authority's own prophetic eye, Sea-Land Service transferred its pioneering intermodal operations from adjacent Port Newark to become Elizabeth's first tenant in 1962.

Today Elizabeth is bustling with activity with most of the port's major containership operators using the completed 7,700-foot south side of the 815-foot wide Elizabeth Channel.

At the south end of the Elizabeth-Port terminal construction has begun on a 3,870-foot wharf to provide five additional vessel berths by Fall 1971.

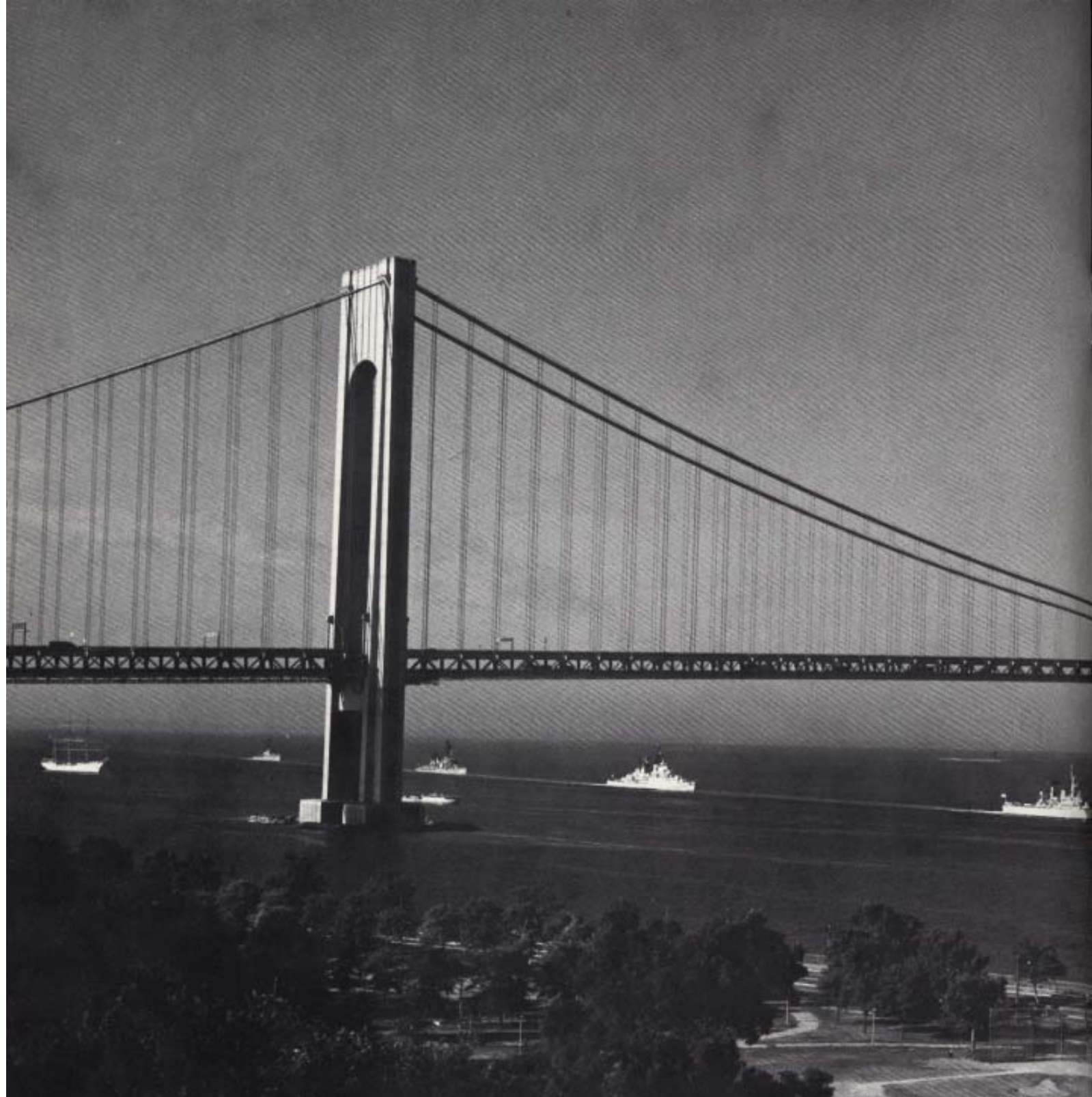
The 185 acres of upland area adjacent to these berths will be completed and paved in 1973.

A new method of turning this former tidal marsh into a suitable construction site is already underway. Some 320-million gallons of seawater is pumped into plastic-lined reservoirs to compress and stabilize the tidal marsh for about a year before paving the area. Heretofore the weight of a 12-foot-high surcharge of sand was used to compact the soil with its subsequent removal necessary.

Hoboken

Some 1,700 feet of New Jersey's Hudson River waterfront was financed and developed under a 50-year, three-party lease between the Port Authority, the U. S. Maritime Administration and the City of Hoboken October 1, 1952.

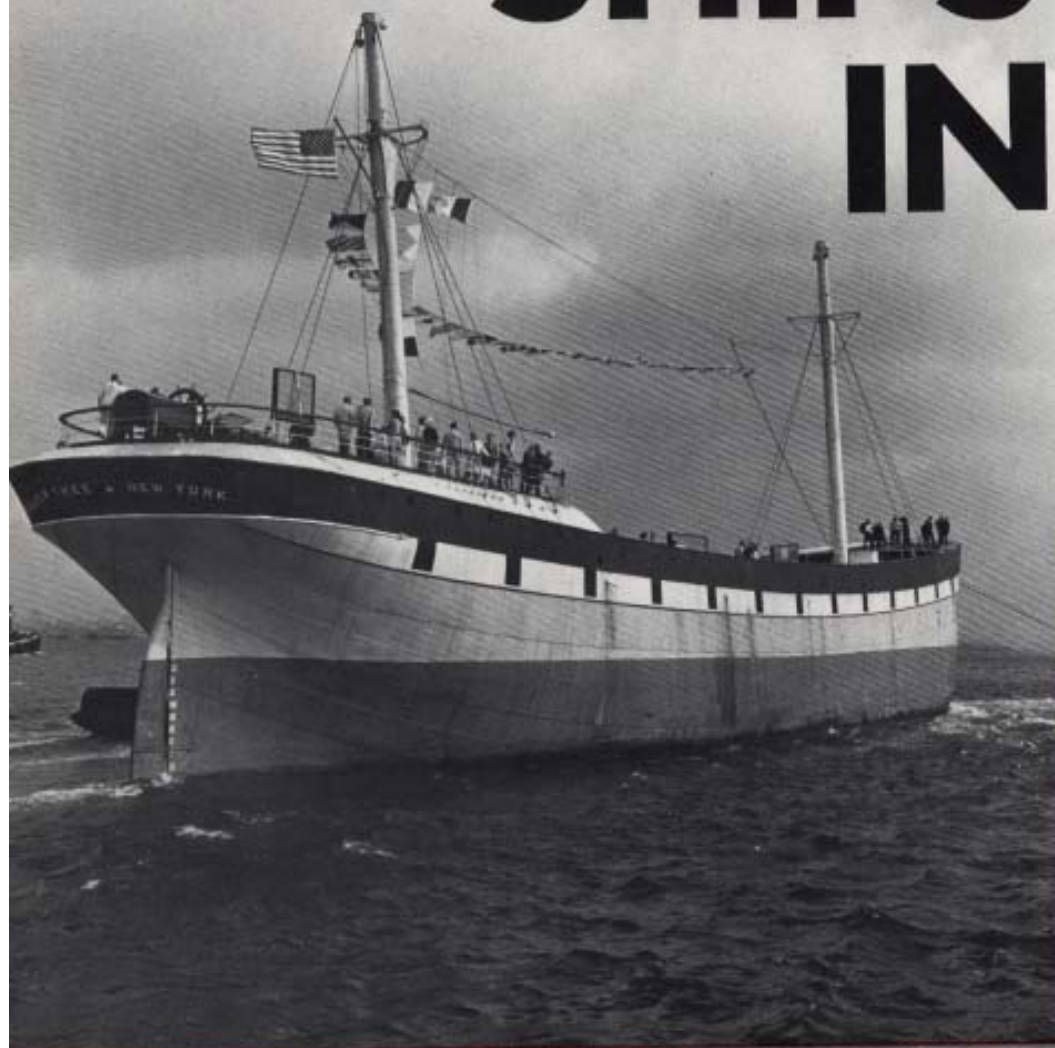
(Continued on page 15)



NATO SHIPS THREAD THE NARROWS—One fine day last summer five North Atlantic Treaty Organization (NATO) ships made New York their port-of-call. In perfect formation passing under the Verrazano Bridge are: Canadian destroyer, *Nipigon*; British frigate, *HMS Bacchante*; German destroyer, *Hessen*; American destroyer, *USS Richard E. Kraus*, and Portuguese frigate, *Almirante Gago Coutinho*. The USCG auxiliary barque *Eagle*, lying in wait in Gravesend Bay, joined the flotilla into Upper New York Bay. (Compare with T.L.'s night shot in Summer '69 Issue.)



SHIPS IN THE



LAND HO—An unusual highlight in the summer activities of the Port was the arrival from Buenos Aires, Argentina of the on-noble, three-masted sailing ship *Wavertree*. Built as a British merchantman in 1885, the 279-foot remnant of the days of sail is slated for restoration as a major attraction at New York's South Street Seaport Museum.

FIRST 'LEADERSHIP'—The *SS American Leader*, as the first of United States Lines' fleet of eight *Mariner*-class reconstructions, received New York's traditional harbor fanfare September 14. The 'new' *Leaderships*, 661 feet long and 17,500 dwt, will join the eight *Lancer*-class 700-foot containerships in the Line's new tri-continent 'Sea Bridge' service between the United States, Europe and the Far East early in 1971.



NEWS

PORT NEWARK BOUND—Of the eight new lumber/bulk cargo vessels in the SCANS-COT group of near-sister ships, the *Gimleland* and the *Kyoto Forest* were caught by TOW LINE's camera. SCANS-COT operates in the lumber trade—British Columbia to the East Coast of the United States, the United Kingdom and the Continent. Its five ship-owners are; A/B August Leffler & Son, Gothenburg (Manager); J. & J. Denholm Ltd., Glasgow; O. M. Thore, Helsingborg; A/S Hans Rederi, Kristiansand S, and Axel Brostrom & Son, Gothenburg. After discharging lumber, the huge vessels carry coal, grain, phosphates, scrap metal or other bulk cargo west to Japan. Their unusual ballasting system allows full 16-knot speed in returning light. August Leffler & Son, 636 Fifth Ave., New York is SCANS-COT's general agent on the U.S. East Coast.

TAKING HER BOW—Brand new shiny, the *Novia* made her debut in New York last summer as the sixth vessel in the Costa Line-Fassio Line joint service to major western Mediterranean ports. The 457-foot, 18-knot vessel can carry 285 twenty-foot containers and lift on her Stulcken mast 60-ton loads. Sailings are every Friday from Pier 2, Brooklyn-Port Authority Marine Terminal.



TRADE CENTER

(Continued from page 5)

adding up to a "Who's Who" in international commerce, communications and transport.

Leading sea, land and air carriers, international banking firms, exporters, importers, forwarders and brokers, foreign commercial attaches and purchasing missions, the Trade Development offices of the Port of New York Authority, marine insurance underwriters and a host of private, public and governmental groups directly involved in world trade have signed for space.

The United States Customs Bureau will be housed in a \$36-million, nine-story building erected on the northwest corner of the site. Scheduled for completion in 1971, the new Customs House will centralize its activities now housed in the 68-year-old Cass Gilbert landmark at Bowling Green and the Appraiser's Stores at Varick Street.

Dynamic Showcase

Apart from firms occupying office space there will be a World Trade Institute to promote a variety of trade-oriented activities to include research, education and promotion. A World Trade Information Center will offer to tenants accurate, timely information on world markets, regulations and opportunities.

Permanent exhibit areas will be located in strategic areas to provide domestic and foreign manufacturers with a showcase for their wares.

For businessmen worldwide, multi-lingual secretarial, interpreting and other services will be provided. An on-site modern hotel, a two-thousand car garage, a variety of shops, restaurants and clubs will further add to the convenience of the visitor and tenant alike.

The communications system will be unparalleled with intense studies underway on the use of picture-phones, data retrieval, microfilming, as well as voice, signal and document transmission.

In short, the World Trade Center will presage the form of the city of the 21st century.

The Site, The Beginning

In colonial days the Hudson River

flowed its east bank along Greenwich Street, which almost bisects the site of the World Trade Center.

The area west of this line, on which rest the foundations of the soaring twin North and South Towers, was composed of debris accumulated through centuries as the city grew. Seventy feet of this fill formed an unstable cover over bedrock. Removal threatened to undermine adjacent streets and buildings through the loss of the ground water level unless adequate means were found to support the whole eight-block area.

Ten possible methods were considered by the Port of New York Engineering Department, the foundation engineers for the project, before the least costly and least time-consuming method was found.

The solution to the excavation problem was found in Milan, Italy. There Italian engineers had developed a new method to prevent the deep lowering of ground water level and at the same time support the surrounding area.

'Slurry Trench Method'

This method, new in the United States, consists in carving out a trench down to bedrock around the perimeter of the proposed basement and filling it with a slurry of water and a special clay called *bentonite*.

The *bentonite* holds back ground water and also supports the sides of the trench without need for shoring.

As the bedrock lay some seventy feet deep at the World Trade Center site, seven-story-high cages of reinforced steel were lowered into the slurry-filled trench to form the skeleton of a concrete wall.

Concrete was then piped into the bottom of the trench, forcing the slurry out and into an adjoining segment. This operation was carried out 152 times until all the 22-foot segments of the \$8-million perimeter wall were complete.

Dig One, Fill One

By late 1967, with demolition of 164 buildings on the site nearly complete, the excavation inside the perimeter wall began.

Where does one put 1.2 million cubic yards of debris? A wag would say, "Dig another hole!" In effect this was exactly where the solution lay.

With the removal of the old Central Railroad of New Jersey ferry slip at Liberty Street and removal of other abandoned piers, a 'hole' was created by enclosing an area of 23.5 acres some 700 feet into the Hudson River by building a cellular steel cofferdam.

Within the confines of this cofferdam all of the sand, rock and rubble of Manhattan's ancient shoreline were dumped to eventually form a new piece of real estate for the City of New York.

In the course of the excavation the tubes of the Port Authority Trans-Hudson railroad, the rapid transit commuter line from New Jersey, lay fully exposed but the trains using these tubes continued uninterruptedly.

North Tower Emerges

The month of September 1968 saw the steel framework of the North Tower emerge.

Embodying a new application of an established engineering concept, the World Trade Center towers rise 1,350 feet in sheer, uninterrupted line with most of their heavy steel used in the exterior load-bearing walls.

A core in the center of each tower contains the elevator shafts, leaving almost an acre of column-free floor space on each of the 110 floors.

The main strength of the towers is provided by the heavy structural steel columns that form the 209-foot wide exterior walls. After a fireproofing substance is sprayed on these columns, a 'curtain wall cover' of aluminum with stainless steel trim is installed for decorative purposes.

The floors are made up of pre-assembled sections, some 60 feet by 13 feet, spanning the area from the elevator core to the outer wall. These are lifted into position as the building rises. After installation, concrete is poured on their supporting corrugated metal framework and, within their 32-inch deep trusses, air conditioning ducts, telephone and electrical lines are placed.

Windows, 43,600 in all, are of bronze-tinted heat reflective glass installed in the 22-inch spaces between the exterior columns after the curtain wall is up.

Raising the Steel

Keeping pace with the rising core columns, the largest are 36 feet long

(Continued on page 16)

50 YEARS

(Continued from page 9)

Called the Hoboken-Port Authority Marine Terminal, it consists of Piers A, B and C, two newly constructed piers and a completely rehabilitated third pier.

Completed in 1956, the facility has been leased by the American Export Isbrandtsen Lines, Inc. as one of its main bases of operations in New York.

Brooklyn Terminals

On March 1, 1956 the Port of New York Authority purchased two miles of the Brooklyn waterfront from the New York Dock Company to create the Brooklyn-Port Authority Marine Terminal which extends from the Brooklyn Bridge to include Atlantic Basin in the historic Red Hook section of Brooklyn.

In this area the Port Authority created uncluttered upland space for combined break-bulk and containerized cargo operations. They built twelve new piers and made the facility capable of handling 27 per cent of the port's foreign trade general cargo.

For more than a century Erie Basin has been an important terminal for overseas commerce. The Port Authority purchased the property known as Beard's Erie Basin at Gowanus Bay, Brooklyn December 15, 1958 then built an 820-foot-long headhouse for three of its five finger piers, a garage, a two-story office building and rehabilitated its Bay breakwater.

The investment for the Erie Basin-Port Authority Marine Terminal is \$12.1 million.

The first Brooklyn pier to be acquired by the Port Authority was the State of New York's Grain Terminal and Columbia Street Pier in 1944.

Originally built in 1922 as a part of the New York State Barge Canal System, its grain elevator was deactivated in 1965. In the absence of grain cargoes, thousands of tons of lumber are annually moved through the Grain Terminal Pier. The Columbia Street Pier has four deep-water general cargo berths with covered shed space of 128,720 square feet.

Truck and Bus Terminals

The Port Authority Building located at 111 Eighth Avenue, Manhattan opened in October 1932 and has the dual role of housing the Authority's main administration offices and functioning as a center for rail and truck freight.

The fifteen-story building is the third largest in the world by cubic measurement, its huge elevators carrying 20-ton trucks to and from manufacturing tenants' receiving platforms on the upper floors.

The New York Union Motor Truck Terminal, occupying a four block area adjacent to the Manhattan entrance to the Holland Tunnel, was opened in 1949 for the consolidation and distribution of common carrier truck freight. It provides 142 truck berths on an 800-foot freight platform.

The New Jersey counterpart is the Port Authority's Newark Union Motor Truck Terminal, located a short distance north of Port Newark and Newark Airport adjacent to U.S. Route 1. This slightly larger terminal has berths for 160 trucks along a 1,000-foot freight platform. It was opened in 1951.

Some 223,000 bus travelers and commuters use the Port Authority Bus Terminal at Eighth Avenue and 41st Street in Midtown Manhattan on a typical week-day.

The original \$24-million terminal was opened in 1950, enlarged in 1963 and is now expanding north of the present site with an eye to increasing its capacity by 50 per cent. The Port Authority's investment of about \$60-million has removed some 8,000 buses daily from the city streets and the terminal's three-level parking superstructure accommodates 1,080 automobiles.

To relieve traffic congestion at the Manhattan end of the George Washington Bridge in Washington Heights, the Port Authority built a three-level bus station in 1963.

The George Washington Bridge Bus Station is noted for its strikingly functional concrete roof consisting of 26 triangular sections, the work of the noted Italian architect-engineer, Dr. Pier Luigi Nervi.

In addition to its being an attractive, integral part of the lower level expansion of the bridge, it serves

some 44,500 bus travelers from New Jersey daily.

Rail Commuter Traffic

On September 1, 1962 the Port Authority Trans-Hudson Corporation (PATH), a subsidiary of The Port of New York Authority, purchased the Hudson and Manhattan Railroad.

The H & M RR had been providing a vital commuter service between major New Jersey areas of Newark, Jersey City, Hoboken and Manhattan. With seven stations in New Jersey and six in New York, the length of the entire system is only 13.9 miles but carries an average of 135,000 passengers daily.

PATH immediately initiated a modernization program covering the complete system to include 252 new, air-conditioned passenger cars and new terminal facilities.

Following the completion of PATH's new World Trade Center Terminal, which replaces the out-moded facilities in Hudson Terminal, a \$45-million PATH Journal Square Transportation Center in Jersey City will include a rapid transit station, an off-street bus terminal, an automobile parking facility and a ten-story building to house the corporation's administration offices.

Port Promotion and Protection

The second basic responsibility set forth by the Port Compact in 1921 was "the promotion and protection of the commerce in the port."

To these ends the Port of New York Authority has instituted a three-part program of port promotion, traffic management and trade development conducted by a Port Commerce staff.

The Port Promotion Division prepares a wide variety of literature, films, maps, directories and exhibits calling attention to the port and to the services offered by the Authority's Trade Development Offices.

The nine Trade Development Offices, five in the United States and four overseas, offer needed and valuable advice to shippers and others engaged in international trade.

The first Trade Development Office was opened in Chicago in 1945, while the most recent opened in Tokyo, Japan in 1966.

(Continued on page 16)

TRADE CENTER

(Continued from page 14)

and weigh 56 tons, the load-bearing outer walls are spliced section upon section climbing skyward. Each unit is prefabricated with three vertical columns welded to horizontal spandrel beams and either two or three stories high.

Starting 80 feet aloft, above the wider-spaced columns forming graceful archways to frame the expansive plaza, heavy cross beams traverse the full 209-foot width of each floor.

The final pieces of steel will be raised over a half mile into the sky—a prodigious task for any crane.

The 'Kangaroos'

In 1967 the search was underway for a crane that could lift heavy loads with efficiency at all levels combined with speed at the uppermost floors.

A design for just such a crane was found on the drawing boards of Favelle Industries Ltd. in New South Wales, Australia. A half-size version was ordered and tested. Eight full-sized cranes were subsequently built.

Both the fact that they were built in the 'home of the kangaroo' and that they can 'jump' hydraulically 36 feet in three heaves to keep pace with the building construction, led to their being dubbed 'Kangaroo Cranes.'

On the North and South Towers the eight Kangaroos sit atop 12-foot square, 120-foot-high steel braced towers—one at each corner of the elevator cores.

Hydraulic power gives each 50-ton capacity crane precise control as they *lift, luff* and *slew* with their 110-foot, orange and white painted booms.

On their seemingly perilous perches each crane sits in perfect balance with four 10-ton counterweights mounted astern sliding back and forth in coordination with its boom load.

When the job is finished high in the sky one crane will lower its mates to the ground before it will itself be dismantled and lowered through an elevator shaft.

'Aloft, Please'

Vertical transportation for the estimated 50-thousand people who will

be working in the Trade Center and the 80-thousand daily visitors will be the chore of 218 high-speed, high-efficiency elevators and 47 escalators.

A conventional system of elevator hoistways for the two Tower buildings would have consumed 50 per cent of the total floor space. But innovation is a byword in these 21st Century buildings. Their 'sky lobby' concept cuts this lost space in half.

Each tower will have two complete lobbies above the concourse level—on the 44th and 78th floors.

The Lower Sky Lobby (44th floor) will be served by eleven, 55-passenger express elevators. The Upper Sky Lobby (78th floor) will have twelve of these fast elevators rising without stop from the concourse. There will be no "Move to the rear, please." The express cars are designed for entry and exit on opposite sides.

The intermediate levels will be served by 72 locals (24 for each level) plying only between the three main levels and their assigned local stops.

Of four freight elevators, one will travel from the 5th basement to the 108th floor capturing the elevator record for number of stops—112.

Such is the speed of the revolutionary Otis 339HT elevators that it has been estimated that any point in the twin Towers may be reached in a maximum of two minutes. There should be no wait of over 30 seconds.

Below the five-acre Plaza level with concourses to the Port Authority Trans-Hudson (PATH) railway and the city rapid transit system, and at the Sky Lobby levels linking the adjacent commercial areas, the 'world traveler' has his choice of 47 escalators.

The 'Heart' of Trade

As the great North Tower nears 'topping off' the labors of thousands of hard hat and white collar workers over the past ten years approach fruition. The intense planning, the almost insurmountable logistics of construction and the barriers set in the path of its progress are nearing an end.

The Port of New York Authority's shining hour will come when the World Trade Center is the live, pulsating heart of our Port's international business community.

50 YEARS

(Continued from page 15)

In February 1949 the first issue of 'VIA PORT OF NEW YORK' (Editor: Paul F. Van Wicklen) was introduced to business offices and interested readers both here and abroad. The commerce-oriented publication is issued monthly and today is mailed to a select list of 28,000 international trade executives around the world.

The Traffic Management Division protects the Port's shippers from discriminatory transportation rates and practices by keeping a constant eye on governmental rules and regulations. At times this Division's specialists participate in proceedings before Federal and state regulatory and judicial agencies to safeguard the interests of shippers using the Port of New York.

NORTH TOWER TOPS — October 20, 1970 the North Tower of the World Trade Center became the world's tallest building. Aerial view by Al Belva, The Port of New York Authority, shows the Empire State Building to the right of the mushrooming North Tower.



RECOMMENDED READING

CARGO CONTAINERS—*Their Stowage, Handling and Movement*, by Herman D. Tabak. Published by The Cornell Maritime Press, Cambridge Md., 21613, 1970. Price: \$10.00.

CONTAINER SHIPS have brought unique changes in transportation. This book offers a detailed study of the many aspects of this new system of transportation by land and by sea. The ship is only one segment of the chain. How does the truck and railroad fit into the scheme? Also involved is packaging, distribution, warehousing and marketing, even plant location. This work deals with all areas in which containers are a fact of life or are becoming one. A fine index, a section on related books, sample documents, the texts of legislation involved and good, up-to-date illustrations add to the book's very real value.

GREAT SAILING SHIPS by Otmar Schaufelien. Published by Frederick A. Praeger, Inc., 111 Fourth Avenue, New York, N. Y. 10003, 1969. Price: \$12.50.

WHO SAYS THAT SAIL is dead? Some 150 sailing ships remain and this book describes them all. They are scattered about the world in 28 different countries. There are barks, barkentines, frigates, schooners and virtually every rig. Many are now museum ships, all are interesting and some are tremendously historic. The famed *Wavertree*, now in Buenos Aires, but due to be brought to New York for the South Street Seaport, is one of those described. Most of them are pictured, some with outstanding photographs. Full dimensions are given for all. This oversized volume is a labor of love that will be a favorite among maritime historians and book collectors for years to come.

WINDJAMMER, PICTURES OF LIFE BEFORE THE MAST IN THE LAST GRAIN RACE by Eric Newby. Published by E. P. Dutton & Co., Inc., New York, 1968. Price: \$6.95.

ERIC NEWBY sailed as an apprentice on board the four-masted Finnish barque *Moshulu* on the last grain race in 1938-9. Fortunately for us today he not only proved a good writer but his camera was to prove almost as worthwhile as his pen. His book about this voyage, published years ago, has become a classic. Now he publishes the fine photographs. They are outstanding, and the work is bound to become a classic in its own right. A fine introduction and excellent captions provide good reading. The book make a superb gift for any one who is maritimeminded.

A DAY IN THE LIFE ON A TUG — It was a brisk October day when two distinguished and inquisitive, not to mention adventurous, ladies stepped aboard tug *Martha Moran* as she was rounding the Battery into the East River with four Department of Sanitation barges in tow.

Miss Helen Hayes and Miss Anita Loos (top photo) had come to observe a unique segment of the New York scene. Aboard *Martha Moran* Frank Weierich, a Marine Supervisor for the Department of Sanitation, explains some of the city's housekeeping problems to Miss Hayes (second photo). As the tug passes the United Nations building, tugs, towing and tugmen were the subject of conversation between Miss Hayes and Lloyd Graham, Vice-President of the Moran Towing and Transportation Co. (third photo).

Corned beef, deviled eggs and rice pudding were on the bill of fare in *Martha Moran's* cozy galley come lunch time. Chef Louis Johnson elicited words of praise from his unexpected guests.

Later in the day under the deft hands of Captain John Morin and Mate George Bardes empty barges were exchanged for heaped-high ones at two of the Sanitation Department's Bronx facilities (bottom photo) and Miss Hayes' secretary, Vera Benlian (second from the left) made final notes of the mission's fulfillment.

THE MERCHANT SAILING SHIP—*A Photographic History* by Basil Greenhill and Ann Giffard. Published by Praeger Publishers, 111 Fourth Avenue, N.Y. 10003, 1970. Price: \$7.95.

BASICALLY BRITISH, this fine picture book also contains many illustrations of American schooners and small craft. Basil Greenhill is director of the famed National Maritime Museum. Ann Giffard is his wife. They begin with the famous packets of the Blackwall era, move up through the midcentury merchant sailing ships and into the American schooner era. Outstanding old photos highlighting the men who manned the ships and who served them in port are a chief contribution of this interesting work from London.

FAMILY UNDER SAIL—*A Handbook for First Mates*, by Jane Kirstein and Mary Leonard. Published by the Macmillan Company, 866 Third Ave., New York 10022, 1970. Price: \$6.95.

WRITTEN BY WOMEN for women, this book is a primer for the small boat-owner's wife. Attractive line drawings add to its value. How to care for children aboard a boat, housekeeping aboard and such subjects fill its 237 pages. A fine glossary is at the end.





COMPLETING A FULL 40 YEARS in the towing and transportation industry of New York harbor, Edward J. Hennessey retires at the close of 1970.

Ed Hennessey is as much a part of the tugboat business as the tugs themselves. As they often say of after-dinner speakers, "He needs no introduction."

TOW LINE readers will know that Ed has been Assistant Vice-President of Sales for the Moran Towing & Transportation Company since 1954.

He has long been active in shore-side marine affairs—Commodore of the Rudder Club of New York in 1947, Governor of the Foreign Commerce Club, The Cathedral Club and the Downtown Athletic Club, Director of the New York Chapter of the National Defense Transportation Association and a member of the Cardinal's Laity Committee of the Archdiocese of New York for the past 15 years—so long, in fact, that his days as a deckhand on a steam tug have almost been forgotten.

It was Ed's brother, Captain William Hennessey (deceased father of two of Moran's tug Captains and Pilots, Bill and Harry Hennessey), who took Ed on as deckhand in 1930—not an easy job on one of Gowanus Towing Company's old coal-burners.

But Edward J. preferred climbing up the ranks ashore over climbing boarding ladders afloat.

Moran's Dispatching Department in the 1940s counted on Dan Anglim, as Chief Dispatcher, and Ed Hennessey and Joe Miller to see that the tugs weren't idle. Frank Knight was night dispatcher. J. Frank Belford, President of Seaboard Shipping Corp., was Operating Manager "in them days."

As a man who liked to have friends, selling came naturally to E.J.H. His golf game never improved much under the 90s but as a member of the Moran Sales Department, he has won more friends than trophies over the years. He did retire the well-known Kelleher Trophy (named after

a President of the United Fruit Company) with the assistance of John S. Bull, his golf partner, some years ago.

"We all hate to see him go," was the consensus at a testimonial dinner tendered by 'Friends of Ed Hennessey' at the Downtown Athletic Club October 30.

That's how we feel.

EDWARD J. HENNESSEY—"It gives me great pleasure," began John S. Bull, President of the Moran Towing and Transportation Company in presenting a 30-year service pin to his long-time associate, Ed Hennessey. Countless memories and a deep respect were mutually felt at this presentation made a few months before Ed's retirement.



OLE ERICKSEN, Moran veteran tug master and docking pilot, after 46 years of sailing (33 years to his credit at Moran), retired at the end of the summer.

A lean man and nimble of foot Ole has climbed the tugs' tall boarding ladders to the bridge of many a ship entering the Port of New York since becoming a docking pilot in 1939.

As have many Scandinavians who took to the sea, Ole began his long career as a cadet under sail. His training ship was the *Statraad Erikssen*; the year was 1924. As a seaman he worked on freighters and passenger ships plying the Baltic and North Seas under the Norwegian flag.

In 1928 the 19-year-old native of Fredrikstad, Norway, sailed from San Francisco as quartermaster on the *SS Limon* (old) of the United Fruit Company. For the Oceanic Oriental Lines he did the Far East run on the *SS Golden Peak* but returned to the *Limon* until 1933.

Captain Ericksen walked down the gangway of the *Limon* in New York and remained to learn every channel, pier and creek in the port.

Not missing a day between berths, Ole began as barge mate with the Gulf Oil Company, switched to tugs during the blizzard of 1934 and was Master of the Olsen Towing & Trans. Co. tug *Sachem* when Moran acquired that company in 1950.

As a tug master and docking pilot, Captain Ericksen witnessed many great events in the Port of New York but is most proud of one occasion when he was instrumental in averting a possible disaster.

The *SS El Estero*, a loaded ammunition ship, lay burning at her berth at the U.S. Army Terminal at Caven Point, close to the Statue of Liberty. With tons of other munitions in the vicinity and the distinct possibility of the ship's blowing up under his feet, Ole brought the vessel away from her berth to a point off Robbins Reef where she was scuttled.

For this heroic act Captain Ericksen was awarded the Merchant Marine Service Medal on April 24, 1943.

MARSHALL RODDEN, most recently Master of the *Mohawk*, a Moran towboat plying the Albany/Plattsburg/Burlington run with Seaboard's oil barges *Panhandle* and *Spindletop*, 'swallowed the anchor' for shoreside retirement.

A genuine and most amiable Hudson River boatman, Captain Rodden has traveled the waters of the Great Lakes to the Atlantic Coast for 46 years—all but the first ten as Master of a Moran tug.

'Marsh,' as the men know him, was born in Kingston, New York. The Cornell Steamboat Company gave him a start in 1924 as a fireman on the *William Beverier*, a tug used mostly to haul stone and brick-loaded barges down the Hudson to New York.

As Mate to Captain Frank Godfrey on the *Claire Moran* in 1934 Captain Rodden began his long career on Moran 'canalers.' Fifteen years he was Master of the *Mary Moran*!

Anticipating retirement, Marsh finished building a neat, four-room house at Gleniere Lake Park near



SURPRISE PRESENTATION—John S. Bull, President of the Moran Towing & Transportation Co., found himself agreeably embarrassed upon being awarded a Moran Service Pin by Thomas E. Moran, President of the Moran Towing Corporation, with Admiral Edmond J. Moran, Chairman of the Board, standing by. Both Morans offered their heartiest congratulations for Mr. Bull's "30 years of fine service to the company."

Kingston last year. His son-in-law and one part-time helper were all the assistance he needed for the job.

"My wife, Cleo, and I will spend our summers in our new house," he said, "but winters will find us down Florida-way aboard our 25-foot Travel-trailer."

"Mail will be forwarded from our Route 3, Box 301AA, Saugerties, New York, address," he added.

CAPTAIN VAUGHN DAISEY, a smile in his blue eyes and looking trim, retired from the tugs October 1st.

All in all, Vaughn's forty-four years on deck and in the pilothouses of tugs were quiet.

"I wanted it that way," he said, "never felt the call for more than a 'muddy waters' license."

Although Captain Daisey has considerable license as Master, Chief Mate for steam and motor vessels and First Class Pilot in the Greater New York area he never steamed beyond Boston and Baltimore.

"I'll continue to stay pretty much close by home," he allowed when asked about retirement plans, "except, maybe, a short Caribbean cruise now and then."

Home is a house he built in 1940 at Perth Amboy, New Jersey, where

his daughter, Carol, is a school teacher.

Vaughn began his career decking for the old Morrison & Cummings Dredging Co. on the *Barwick*, a 150-foot 'shipping board' tug towing mud. That was 1926.

In 1937 he switched to the *Richard Card* of Card Towing Line where he became captain in 1944.

Still staying "close by home" Captain Daisey next became master of the *St. Charles* for Amboy Towing which became a part of the Moran fleet in 1956.

At the time of his retirement Captain Daisey was on the *Michael Moran*, still working for the most part not too far from Perth Amboy.

Flagship cruises' new *Sea Venture*, 20,000 ton cruise liner for service to Bermuda out of New York, was launched last May 9th. As she left the ways in Emden, West Germany, the keel for a sistership was laid. The *Sea Venture* is due to enter service in the Spring of 1971.

PHOTO CREDITS—The Port of New York Authority generously supplied the following illustrations: page 4, Austin J. Tobin photo by Karsh, Ottawa; page 5, model of World Trade Center; page 6, Lili Rethi drawings of World Trade Center construction; page 16, Al Belva photo of Tower Buildings.



PONCE DE LEON
VINCENT 924

M

A. Brenet