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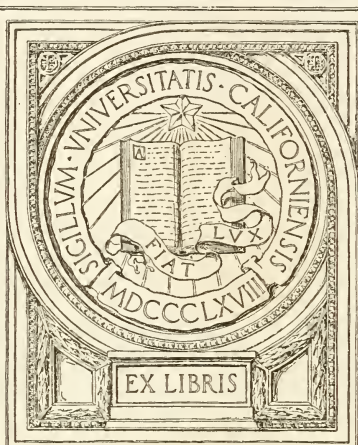
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BULLETIN

OF

AMERICAN INTERNATIONAL CORPORATION



History and Development
of
New York Shipbuilding
Corporation

120 BROADWAY • NEW YORK





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BULLETIN OF *American International Corporation*

History and Development
of
New York Shipbuilding
Corporation



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AERICAN INTERNATIONAL CORPORATION, organized by bankers, business men and engineers of the United States, aims

First—To establish friendly commercial relations with all countries of the world;

Second—To participate in the development of such enterprises—domestic or foreign—as will broaden the scope of American activities and lead to a better understanding of international relations;

Third—To promote the organization of corporations or associations to bring together foreign and American bankers, business men and engineers, for the transaction of business and the development of undertakings which will be mutually advantageous.



Underwood & Underwood

GEORGE J. BALDWIN

FOREWORD

AMERICAN INTERNATIONAL CORPORATION can best serve the three purposes which inspired its organization by assisting the merchants, bankers and engineers of the United States to meet their competitors of other nations in the markets of the world on an independent and competitive basis and thus to develop our country as an active partner in the world's affairs through the operation and ownership of our own ocean transportation facilities. The successful world trader is usually the one who is best equipped to deliver his products cheaply and quickly at his customer's door.

Intensified war production of cargo vessels has placed the United States in a favorable position in the freight-carrying trade of the world, yet along with this development our present ocean transportation lines must be strengthened and more fully equipped by the construction of those classes of passenger liners best suited to each of our various trade requirements. New passenger routes must be inaugurated, supplied with suitable vessels and operated in a world service in which both the freighters we have built and the passenger liners we are now building and shall build in the future will play their proportionate parts.

Such a passenger service will provide direct interchange of passengers, fast freight and mails with those foreign countries with which we trade and thus tend to overcome the obstacles placed in the way of free trading when negotiations are conducted through the ports and firms of a third country. If we are to hold and increase our foreign commerce, it is essential that our customers be enabled to travel in American steamships operated by us for our mutual benefit and sailing directly to our shores, instead of being compelled to reach our markets through competitive countries.

The position which our shipping now holds in the maritime world by reason of the shipbuilding and ship operating facilities created by the war's demands for tonnage marks a new era for the United States on the seas—marks an upturn from the ruinous depression into which our merchant marine declined after the Civil War and during which the foreign commerce of the United States was almost entirely dependent upon the foreign shipbuilder and operator whose first object is always to benefit the trade of his own country. This position is now being subjected to the test of competitive condi-

tions of peace-time world trade. We can maintain it by constructing and operating in world competition those classes of ships which will contribute most to the proper founding out of our merchant fleet.

The first-class passenger steamship is the nerve force of a merchant marine. Foreign trade of any magnitude depends primarily upon, and is built up by, the establishment and maintenance of regular sailings on fixed dates of first-class steamships with the best passenger accommodations, each boat designed for its particular service. Supplementing them, we must have cargo liners of from 10,000 to 15,000 tons deadweight and fitted with limited passenger accommodations. With such regular service radiating from the various ports of the United States to the other ports of the world, the two problems of finding markets for our normal excess of production and of cargoes for the great fleet of freighters built during the war, can be solved.

Alive to the merchant marine problem as it existed during the first three years of the world war, American International Corporation has followed the situation carefully through its many and rapid changes in the last three years. Soon after its formation in 1915, the Corporation cooperated in the purchase of the Pacific Mail Steamship Company which has since greatly strengthened its service to and in the Orient as far west as India, has re-entered the Atlantic with regular sailings from Baltimore through the Panama Canal, and has established the first around-the-world service with regular sailings ever undertaken under the flag of the United States.

In 1916 the Corporation made important investments in the United Fruit Company whose fleet is the basis of a growing trade with Central America and the West Indies, and in International Mercantile Marine Company whose great strength in the transatlantic trade is now being developed by new services to the German ports and into the Mediterranean.

As the carrying trade outlined rests primarily upon the ability to construct economically the required types of ships for these trades and secondarily upon their successful competitive operation, American International Corporation supplemented its ship operating interests in the fall of 1916 by taking an important part in the purchase and expansion of New York Shipbuilding Corporation which now owns the largest and best equipped yard in this country for the construction of the specialized types of ships essential to the growth of the American merchant marine—a yard whose reputation for such construction was already well established.

Soon after the entry of the United States into the war, American International Corporation, through the formation of a subsidiary

company, undertook the construction and operation of the great ship assembling plant at Hog Island for quantity production of freighters, and is now carrying this work through to a successful conclusion.

The most vital problem now before this country in connection with its foreign trade is the construction and operation of American ships on a competitive basis with those of other countries. This is fully understood by our Congress and legislation of a most constructive character is now pending in that body, which promises a sound basis upon which can be built an efficient and adequate American merchant marine.

At the end of the war, New York Shipbuilding Corporation found itself with a complete, well-balanced plant approximately three times as large as in 1916 and with a competent organization under the leadership of President M. A. Neeland and his experienced and capable staff of executives, which, having effected this expansion under war conditions, has now established this development as an efficient working unit for peace-time competition, possessing facilities for the construction of the largest modern passenger liners and warships. It is now engaged in the construction of forty-three vessels of various classes for the Government and for private interests, among which are three of the largest battleships for the United States Navy and, for the Emergency Fleet Corporation, the most important addition now being made to the passenger fleet of the United States.

Its complete facilities and its experience of twenty years in the construction of naval vessels, passenger-and-cargo liners and such specialized types as oil tankers and colliers, have placed the Corporation in a foremost position among shipbuilders and assure to the American merchant marine a strong support in its competition for an adequate share in the carrying trade of the world.

GEORGE J. BALDWIN

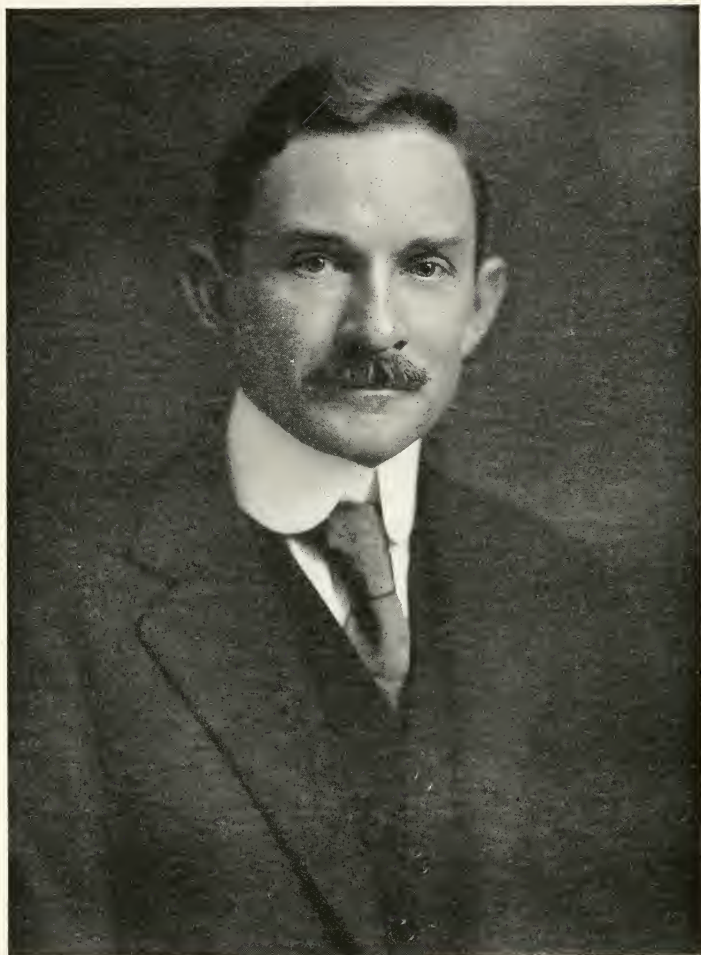
Senior Vice-President

American International Corporation

Chairman of the Board

New York Shipbuilding Corporation

May 15, 1920.



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MARVIN A. NEELAND

NEW YORK SHIPBUILDING CORPORATION

OPERATING today the largest self-contained plant of its kind in the world, New York Shipbuilding Corporation is equipped to build entirely within its own yard from raw materials any type of ship from collier to passenger liner and from destroyer to superdreadnought. Designed primarily for the construction of large passenger-carrying vessels, the expanded facilities of the yard are contributing to the American merchant marine the most important group of these ocean liners now being built for our merchant fleet; and at the same time the yard is adding more naval vessels to that splendid list whose service records have made renowned the name of New York Shipbuilding Corporation. The plant consists of five double and eight large single shipways and ten smaller ways, served by the most comprehensive shop facilities, wherein are built modern vessels in all their complexity of structure and equipment.

The attainment of this plant capacity could hardly have been possible without the tremendous impetus given to American shipbuilding by the war; but the fact that "New York Ship" and not some other yard has established America's primacy in ship construction, is due solely to the inherent strength of the plant's original layout and to the steady development of its organization during the past two decades.

The plant of the present New York Shipbuilding Corporation was started in 1899 as the New York Shipbuilding Company by the late Mr. Henry G. Morse, an experienced builder of bridges and ships, who decided to break away from the old, accepted traditions of shipbuilding practice and establish his own yard in which he could apply to this industry the most up-to-date labor-saving machinery and tested methods of structural steel construction. Just at that time the perennial question of Governmental assistance to the development of American shipping by means of subsidies for passenger liners was more than usually to the fore, and the industry looked forward to a period of extensive business. The original plan was to build the new plant on Staten Island and the company which was formed was therefore called New York Shipbuilding Company. It was found impossible, however, to acquire the contemplated site and investigation was made of locations down the coast from New York as far as Virginia, special attention being paid to the Delaware River District. The result of investigations by several inspection parties was the purchase of a tract of about 160 acres on the east side



LAYOUT OF SHIPWAYS

Stretching along the Delaware are the various groups of shipways comprising the present yard of New York Shipbuilding Corporation. To the original covered ways shown on the left, up-stream, have been added Ways T and U, showing white superstructure; four open and six covered destroyer ways, and, across Newton Creek, the four ways of the new South Yard.

of the Delaware river in the southern part of the city of Camden New Jersey, across the river from Philadelphia. The ground conditions were especially suited to the building of shipway foundations and railway facilities were adequate.

It must be remembered that in starting this shipyard Mr. Morse had an entirely clean slate on which to write. He was able to free himself from many of the traditional shipbuilding practices that were out of tune with the advancing mechanical technique of the twentieth century; whereas many of the old yards, then and still in existence, were the result of gradual growth over many years, some of them even from the days of the wooden ship, and were therefore handicapped in the proper installation and application of the improved labor-saving machinery. The yard of New York Shipbuilding Company was designed for the use of just this machinery.

FOUR fundamental principles were laid down in the design and construction of this yard; then considered more or less radical departures, they made possible the new war-time yards and have been generally adopted by the older plants. These were: First, the

general application to shipbuilding of the bridge-builder's practice of fabricating steel from templets; second, the routing of material through the yard in an uninterrupted course without back-hauling from the time of its receipt in a raw state to its erection or assembly in finished shape on the ship; third, the installation of an overhead crane system of the traveling type, that would effectively serve every part of the yard and ways where material was to be stored or handled; fourth, the housing of the principal shops and the ways under a continuous roof structure so that all parts of the work could be carried on regardless of weather conditions. This last point does not apply merely to rain and cold, for a mid-summer sun can make a steel ship on an uncovered way so hot that it is practically impossible to continue work on either the outside or the inside of the hull.

In particular the first two principles outlined above brought with them the necessity for other innovations in the details of ship planning and construction. In the first place the templet system introduced the principle of specialization which was becoming an increasingly important factor in American industrial development. Permitting complete fabrication of steel even before the keel of a ship was laid, the templet system necessitated a drafting-room organization which



PLANT LAYOUT

Between the rear of the ways and Broadway stretch the shops and storage facilities of the yard. In the foreground, just beyond the railroad tracks, are some of the storage sheds and the original plate and angle shop. Immediately behind the original covered ways is the machine shop and back of this the power house. Beyond this original yard layout are the shops and storage spaces serving the newer groups of ways. To the left of Broadway are the administration buildings and supplementary storage yards.



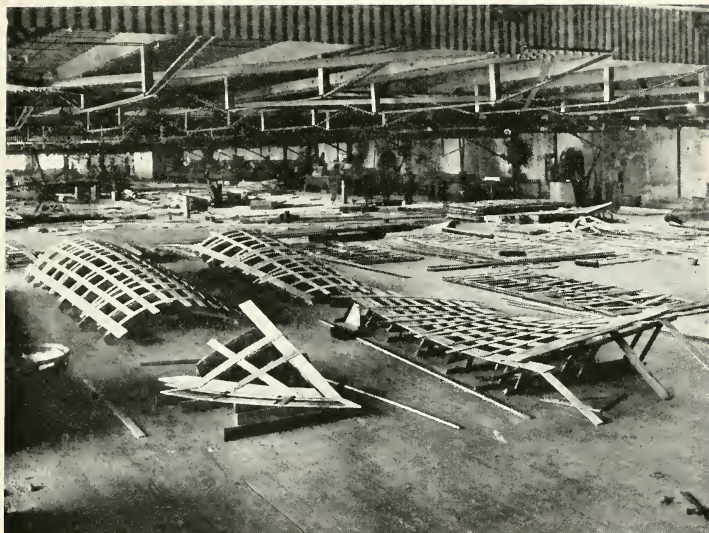
THE ORIGINAL COVERED WAYS AND SHOPS

could provide the complete information from which a more extensive mold loft could make its templets. This in turn did away with the old-fashioned method of "lifting" templets from work in place before the shop could function, and enabled material to proceed directly to its destination.

With the plant so laid out that material would move steadily forward from the storage yards to the shipways and outfitting basins, a system had to be devised whereby each piece of material would indicate the course it was to follow through the plant and the work to be done on it in the shops through which it was to pass. This problem was solved by the development of a system of letters and numbers painted on each piece of material, which both indicated the routing and identified the detailed blue prints which had been distributed to the shops as working instructions. Closely allied with this was a cost system involving a classification of material and an allocation of expense items which has proven most satisfactory.

The introduction of revolutionary methods in any industry is inevitably accompanied by cries from the "old school" that it cannot be done. Such was the experience of New York Shipbuilding Company. It had to meet opposition not only from the established yards but even from some of the men gathered together to put these plans into operation; many were doubtful as to the possibility of success, some were even more skeptical and a few were obstinate to the point of insubordination in refusing to carry out the new ideas. These few had to be eliminated and the others won over to cooperation in applying these novel methods to so old and conservative a trade as shipbuilding.

The particular point of contention, since it was the idea most at variance with established custom, was the extensive application of the templet system. A templet is a wooden or paper pattern in accordance with which the steel plates or beams or other fabricated parts are worked up. Under the old practice it was customary to develop only the frame-work and a very small part of the ship's



THE MOLD LOFT WHERE THE TEMPLETS ARE MADE

In the upper picture are some of the wooden templets or patterns, and in the lower view templets of paper are being made. The steel for the ships is shaped and punched in accordance with these patterns which are laid out with the greatest accuracy and completeness of detail.

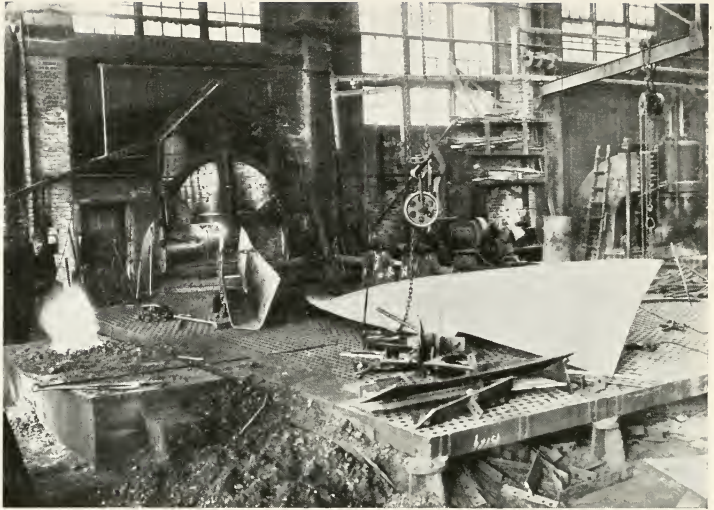


PLATE BENDING FLOOR

A section of one of the shops where steel plates are heated and shaped.

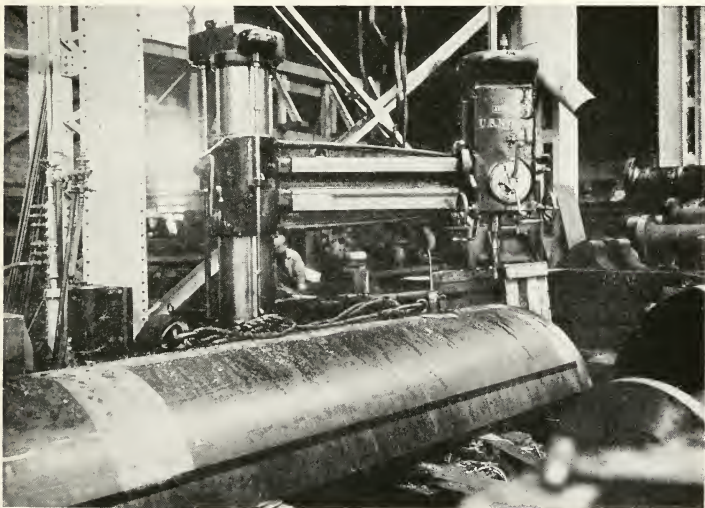
structure. After the frames had been erected and elaborately trued into place, the balance of the work was done by shipfitters who constructed wooden templets at the ship's side and took them to the shops as patterns for fabricating the parts. The new methods afforded much greater accuracy of construction than was obtained in the old way.

Introduction of the templet system carried this same degree of exactitude in the erection of the frames to the construction of the entire ship. The men in the mold loft became specialists in working up these templets from drawings with mathematical precision. It was soon found that the templets could be made of paper in most cases, thus materially reducing their cost. These light paper patterns were easily carried to the shops where the steel was fabricated to conform with them exactly. Then the steel parts were transported to the ships where they fitted into place, thus eliminating a large amount of the work formerly done by the shipfitters. So exact has the work become from the introduction of templets that the rivet holes in two or even three thicknesses of plates and angles match perfectly when these parts are assembled.

The advantages of this system are obvious. There is no need for waiting until a certain portion of a ship has been built before the

rest of the parts can be constructed, for the shops can go ahead with their work from templets for any part of a ship at any time, knowing that when that particular part is wanted by the ship erectors it will fit its appointed place because it is just the right size and because every other part of the ship that has been erected has fitted with equal nicety and has left that place the size anticipated from the beginning. This being the case, templets for an entire ship can be made before any of the raw material for the construction of that ship has been delivered at the yard, and one such set of templets can be used for the building of as many ships of the same design as may be wanted. It was the templet system that made possible the large output of standardized ships from Hog Island and from the other ship assembling yards built as a war measure; but the system had spread from New York Ship to other yards long before the entrance of the United States into the war.

That these four principles embodied in this new yard were sound both in conception and in execution, is proven on two counts: first, that they have endured successfully over a period of twenty years, during which the plant has trebled in size; and second, that they have been adopted and copied by other shipbuilders throughout the country. That their introduction abroad has not been more extensive is due more to the opposition of labor to the introduction of labor-saving methods and to the Old World's disinclination to scrap



RADIAL DRILL CUTTING RIVET HOLES IN CURVED PLATE

existing equipment and organization, than to any deficiency in their practical working. This difference between European and American methods of ship construction is an important factor in our ability to build ships successfully in competition with the Old World yards.

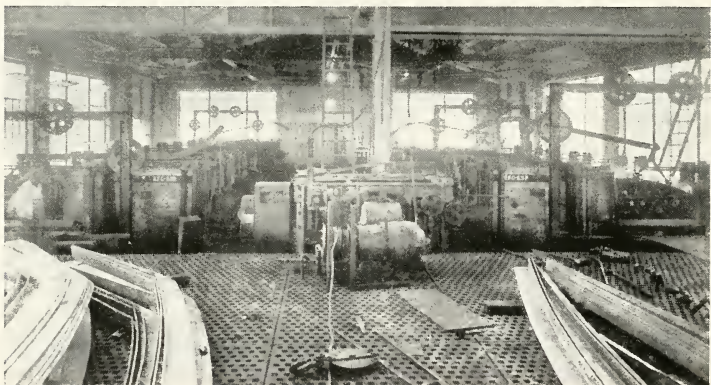
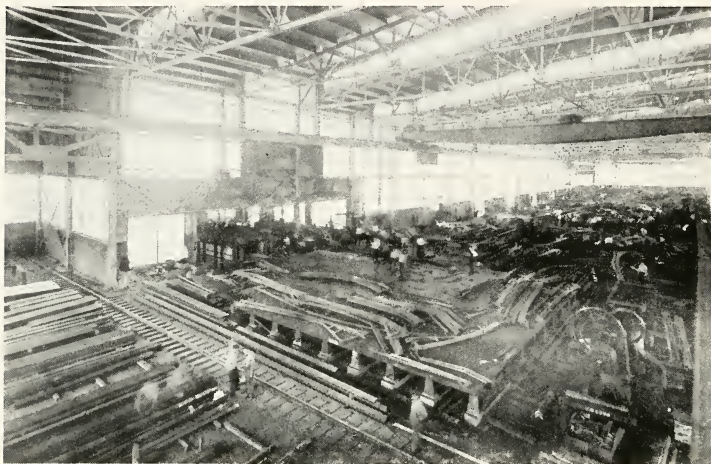


PLATE AND ANGLE SLAB

The angles are heated in the furnaces behind the "slab" and are then bent to the desired shape.

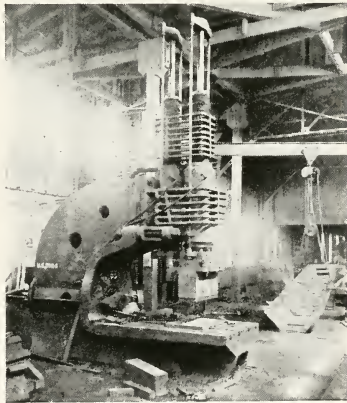
(Below) A closer view of the furnaces.

EARLY ORGANIZATION

THE organization which was built up in the early days of the company for the construction and operation of the yard, was such as might be gathered together at any time where speed of execution was a necessity and where a new and unusual undertaking was to be put through. There were some skilled ship-builders, of course; there were men experienced in the structural steel industry; there were some who were familiar with the increasing tendency toward the use of labor-saving machinery—a somewhat diversified group assembled by a man who had a vision which he wanted to make live. For the manning of the plant, gangs were recruited with their leaders from structural steel shops and men from other trades were taught to handle the pneumatic rivet “gun.”

As was inevitable, there was some working at cross purposes in the early days of the plant, some shifting of blame; but as the men came to know each other and as the plan on which they were working began to take visible form, the spirit of team-play and of cooperation asserted itself and welded the organization into an efficient group which was later to prove capable of the same effectiveness under the stress of rapid expansion. Old timers at the yard still reminisce about Contract No. 1, launched as the freighter *M. S. Dollar*, but later changed to an oil tanker and renamed the *J. M. Guffey*. This was the first ship that many of the men in the yard had ever seen in the process of building, and every noon hour she was the center of an interested group. She was launched with her funnel in place, and some wags took advantage of that fact: at the right moment they touched a match to a pile of oil-soaked waste under the stack, and as the good ship slid down the ways she belched forth clouds of black smoke. In short, this new yard was started in a spirit of high adventure and that spirit, expressed in such typically American exaggeration as attended the launching of the *M. S. Dollar*, overcame the skepticism and opposition of the old-line ship-builders and brought the yard successfully into life.

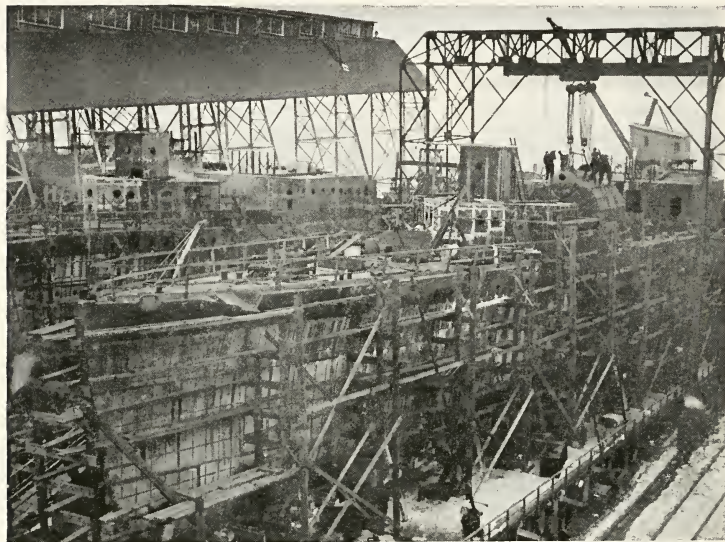
Parenthetically, it may be noted that what was exaggeration less than twenty years ago is a fact now. New York Ship's



100-TON FLANGE PRESS

overhead crane system is so strong and complete that any ship of ordinary size can be equipped with boilers and engines while on the ways and can be launched with steam up.

The emphasis that was laid from the very start upon the necessity for adapting and developing every efficient labor-saving mechanism, must not be forgotten; because in this very factor of modern equip-



DESTROYERS BEING COMPLETED ON THE WAYS

The crane, which is arranged to serve the four open ways of the new destroyer yard, is swinging one of the main boilers into place.

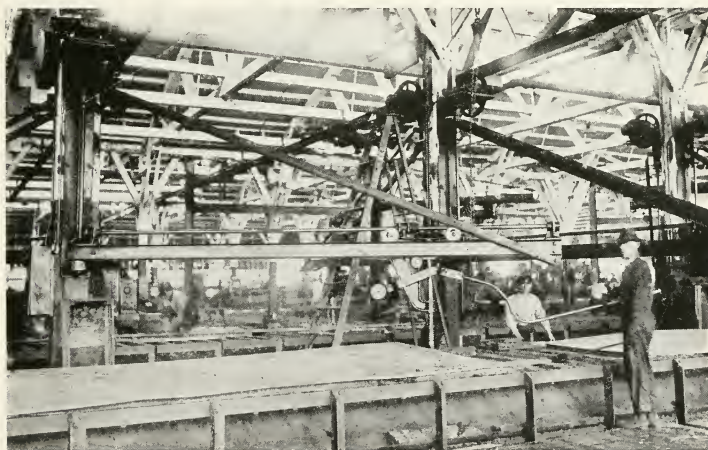
ment properly assembled for the entire process of building a ship, lies the greatest strength of the yard as it stands today. The organization was not content merely with what was already available in labor-saving machinery; it experimented unceasingly to save time and labor in ship construction, in the fabrication of the steel for the ships and in the handling of the material. As a result, not a few machines have been invented and new methods of work developed right in the plant. Of the machines, probably the most widely known is the Lysholm plate punching table, of which the first one was designed and built at the yard, to permit the easy and rapid shifting of a heavy plate under a rivet punch.

The yard was designed primarily for the building of large passenger liners in view of what then seemed the probability of Govern-



LYSHOLM PLATE PUNCHING TABLE

The plates rest on the wheels which are part of a movable platform. By the manipulation of control levers, the operator can bring the marks for the rivet holes exactly under the punch.



RADIAL DRILL USED FOR REAMING RIVET HOLES

mental assistance in the operation of these ships, and such splendid examples of this class of vessel as S. S. *Mongolia* and *Manchuria*, contracts 5 and 6, were among the very first ships built at the yard. The expected subsidies did not materialize, however, and the anti-

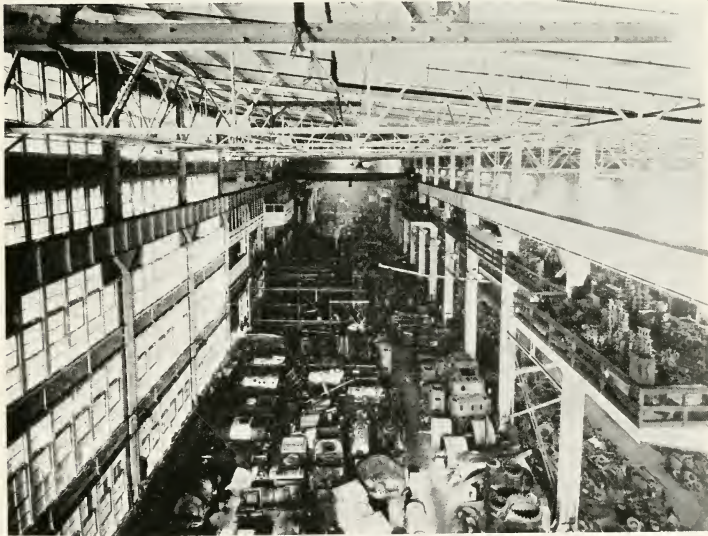
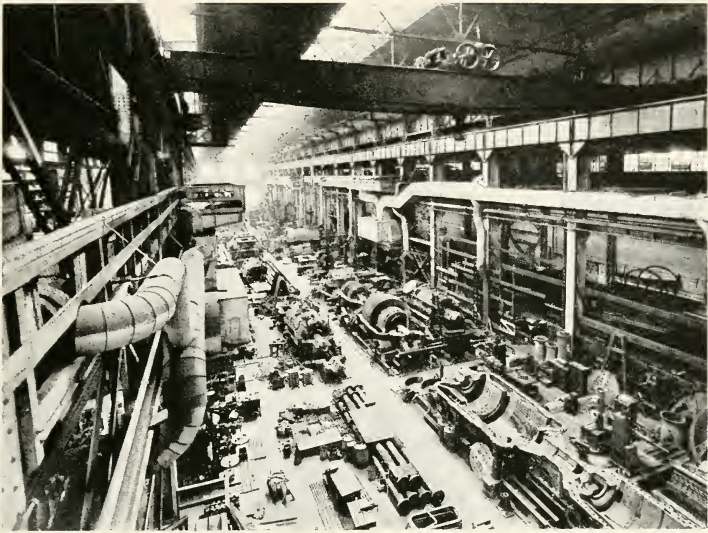
pated expansion of shipbuilding in the United States was suddenly checked within a few years after the completion of the yard. There then ensued a period, which lasted until 1915, during which the yards of this country were forced to seek and accept the construction of any type of vessel that would keep their ways in use and their organization intact. Even though a newly established yard, New York Ship was able to obtain its proper proportion of business in competition with the other yards of the country, and in 1912 it was fourth among the shipyards of the world in point of tonnage produced in that year. Although its output consisted of many types



ONE SECTION OF THE BOILER SHOP

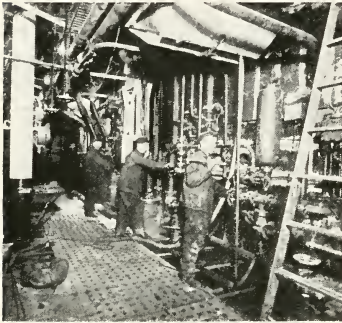
of craft, the quality and efficiency and speed of the work did not lag. In fact, the diversified experience may be considered to have been of the greatest value in rounding out the ability and capacity of the organization and in establishing its reputation for the construction of ships well designed and skillfully built.

An interesting contract during this "lean" period in shipbuilding was that in connection with the building of the Pennsylvania Railroad Tubes under the East River, New York City. A British engineering firm had the contract for the tunnel construction and invited bids from New York Ship for the building of the huge steel shield, hydraulic jacks and air locks which were necessary for cutting the tunnel through the river bottom. During the ensuing negotia-



TWO VIEWS OF THE MACHINE SHOP

tions a representative of the firm visited the shipyard at Camden and inspected the boiler and machine shops. New York Ship was given the full order for the shields, jacks and air locks, and the British engineer expressed his surprise that any American plant was so well equipped for the prompt handling of such an order.



“IDAHO” BOILER ROOM

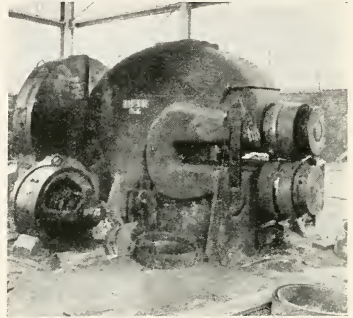
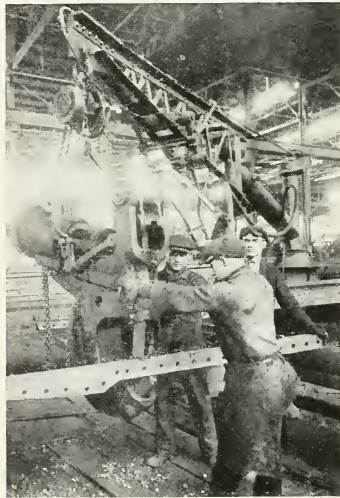


PLATE JOGGLING MACHINE



HANNA YOKE RIVETER

FIRST NAVAL CONSTRUCTION

IN 1903 there came the first opportunity to bid upon and undertake naval construction—the fore-runner of a great line of fighting ships for our own and foreign governments, for which the yard has become famous. Two armored cruisers were to be built, the *Washington* and *Tennessee*. When the bids were opened it was found that New York Shipbuilding Company had submitted the lowest estimates, but its competitors, bringing pressure to bear and arguing that New York Ship was a new and untried company, were awarded



THE FORGE SHOP

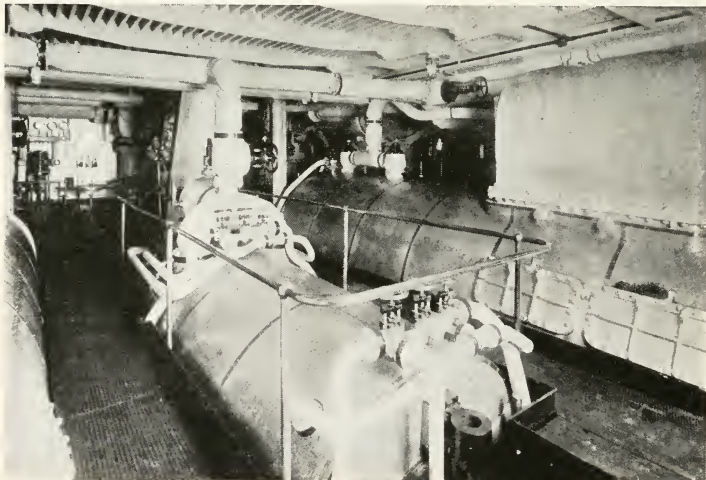
Showing the section where the lighter, or blacksmithing, work is done. Compare these small steam hammers with the 1200-ton hydraulic press, pictured on page 37.

both contracts. Under protest a compromise was eventually reached whereby New York Ship was awarded the *Washington* and a yard then better known the *Tennessee*. Despite many expressions of doubt in the ability of New York Ship to do this work properly and promptly, her cruiser was delivered to the League Island Navy Yard on July 30, 1906, ten days in advance of contract time. The *Tennessee* was delivered on July 11, but it is interesting to note that these were the first two ships which had ever been delivered to the Navy Department within contract time, a result which was generally credited to the competition of New York Ship.

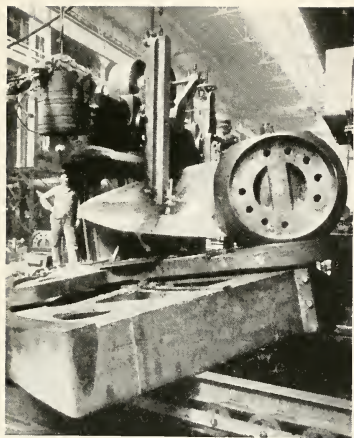
In submitting its bid, this plant had written a letter pointing out to the Navy Department that the horse-power provided for in its specifications could not produce the specified speed of twenty-two knots. This proved true in the case of both cruisers; but because of this reservation the competing yard, as well as New York Ship, was permitted to increase the boiler pressure from 250 to 265 pounds. On their speed trials the *Tennessee* made 22.16 knots and the *Washington* 22.27 knots, giving the latter the title of the fastest ship then in the United States Navy, a fact which her trial crew duly celebrated by lashing a broom to her masthead as she returned up the Delaware to the yard of New York Ship.

Construction of this armored cruiser reopened the question of the worth of the templet system. Even some of those within the organization itself doubted the practicability of applying this system to such large and complicated work as was called for in building this cruiser. However, templets were used and proved even more efficient on such work than on the usual work of merchant ship construction. Undoubtedly the system was largely responsible for the speed with which the cruiser was turned out despite the yard's lack of experience in building naval vessels.

A few months after obtaining the contract for the *Washington*, Mr. Morse died suddenly. The next day bids were opened for three warships of the *Kansas* type and New York Ship was awarded the



ENGINE ROOM OF THE CRUISER "FEI HUNG,"
SHOWING HER MAIN TURBINES



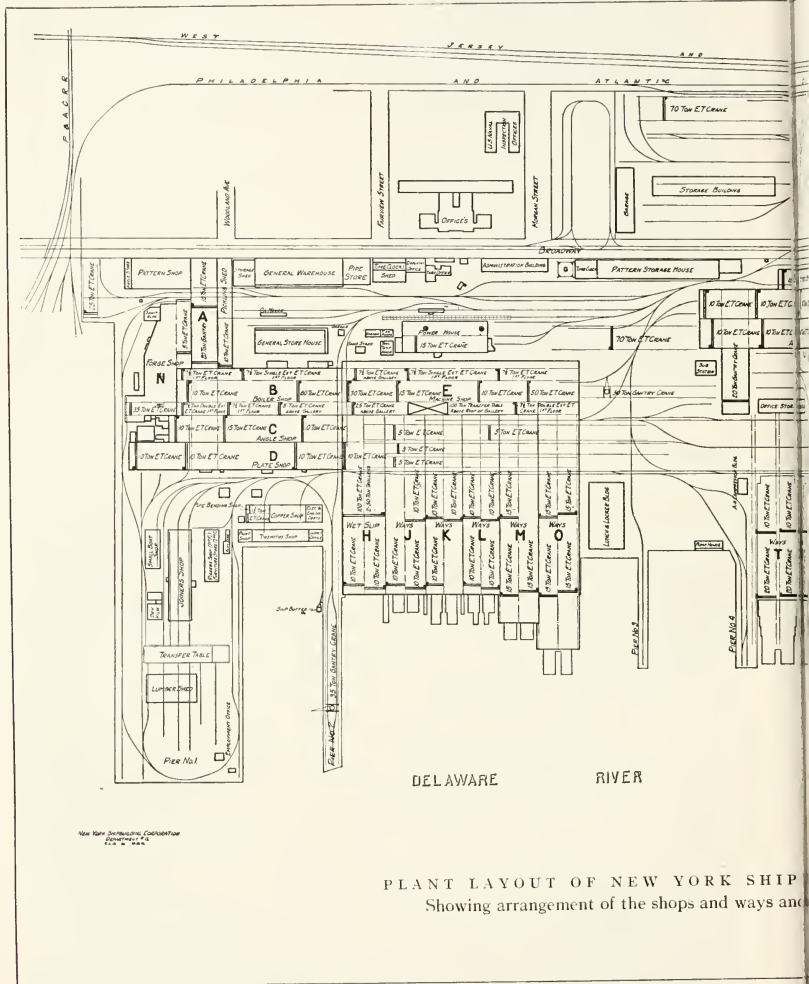
MACHINING A PROPELLER BLADE

Kansas which was rated at the time as a first class battleship. Soon after her delivery to the Navy she gave a particularly good account of herself on the historic 'round-the-world voyage of the American fleet.

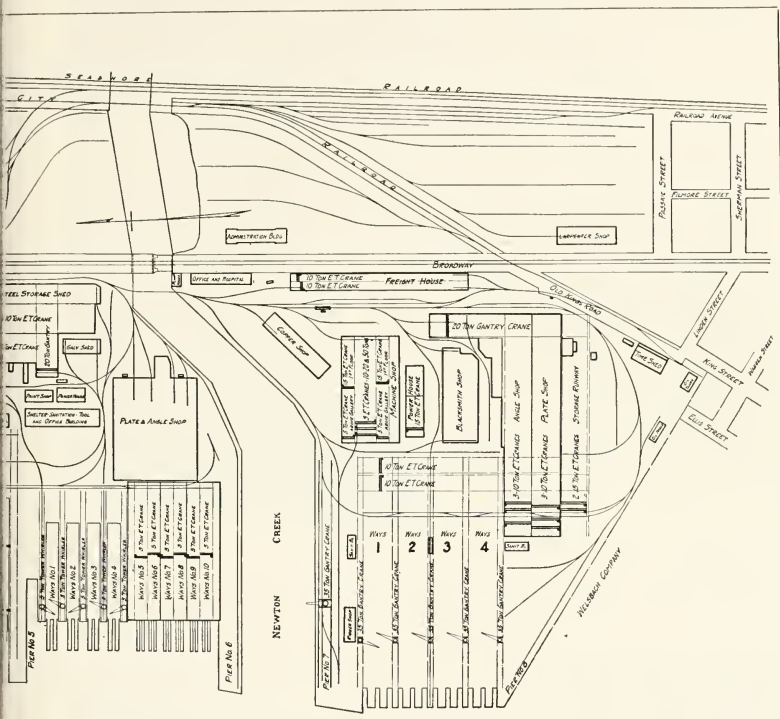
Since then, not a single year has passed when there has not been some ship for the United States Navy in the process of construction at the plant, and naval officers assigned to New York Ship for supervision of naval construction there, now occupy an office building considerably larger than the first administration building for the entire plant.

WHEN it is said that New York Shipbuilding Corporation comprises a completely self-contained yard, it is meant that the facilities are provided for developing through every step of the process to the finished ship the many different kinds of raw, crude or semi-conditioned material which are used in modern ship construction. The only exception to this statement is in the case of the castings which are purchased from foundries but which are machined at the plant. Among the more important kinds of material that are brought into the yard, worked up and assembled in the ship, steel plates and sheets form the bulk of the crude material. From these are made the bottom, sides, decks and bulkheads of the ship, as well as the boilers. Next in importance are the bars, angles and shapes which give the ship structural strength. Iron and copper piping and lumber are required by the millions of feet to equip a ship and provide the interior furnishings. Tons of castings and of forgings of steel ingots are used in building the ship's engines and shafting. In addition to this heavy material there are thousands of items of minor equipment including wire, hemp and manila rope, electrical installations and auxiliary machinery. Metals used range from iron to platinum. In the construction of naval vessels the extremely varied requirements of armament necessitate an additional complexity of material; a modern battleship alone calls for approximately one hundred miles of electrical wiring.

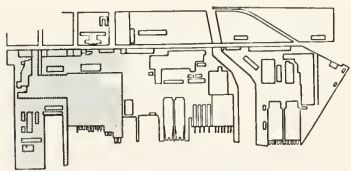
Under the layout for the original yard, which is still in effect, this raw material is brought in and stored at the north end of the



PLANT LAYOUT OF NEW YORK SHIP
 Showing arrangement of the shops and ways and

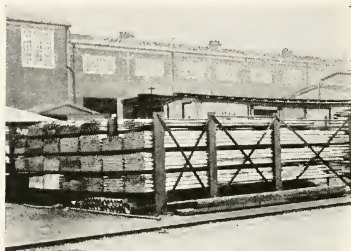


LDING CORPORATION
crane and track facilities.



SHADED PORTION SHOWS SIZE OF PLANT PRIOR TO DECEMBER, 1916.

yard whence it moves steadily forward toward the ships on the ways and in the outfitting basins. Plates pass through the plate shop where they are straightened, marked off according to templet, punched, sheared, planed and forwarded to the storage section at the head of the ways. A series of traveling cranes handles them throughout the entire process. Similarly, the angles come in from the steel storage shed, work down through the angle shop in the course of their fabrication, are bent, cut, punched and riveted to plates or other angles, and are finally assembled with the plates in the storage base at the head of the ways in proper sequence for their use on the growing ships. From this base another series of traveling cranes picks up the material as needed and takes it to its proper position on the ships under construction. While this work is in process, the raw material of tubes and boiler plates is being transformed into boilers in the boiler shop, and in the machine shop immediately back of the ways are being built the engines, turbine or reciprocating, which will furnish the propelling and auxiliary machinery for these vessels. A 100-ton crane on a special system of overhead tracks can pick up this heavy equipment in the machine shops and carry it either to a ship in the wet slip or to a hull on any one of the ways in the original yard.



PIPE STORAGE RACKS



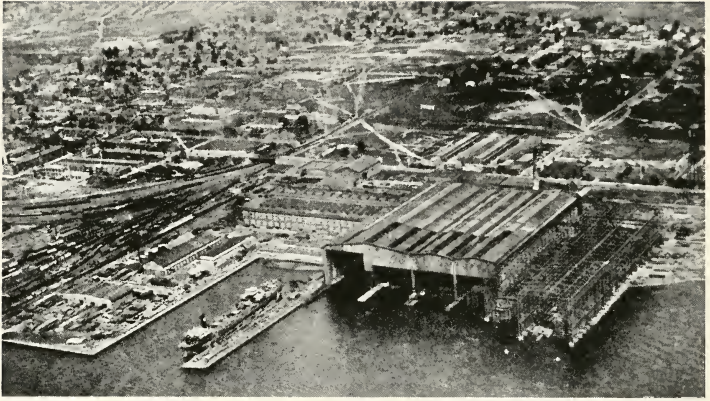
LUMBER YARD AT NORTH END OF PLANT



THE LUXURIOUSLY APPOINTED ADMIRAL'S RECEPTION ROOM ABOARD THE "MORENO"

Also at the north end of the yard, toward the waterfront, there is space for the receipt and storage of the vast amount of lumber that is needed on the ships, a dry kiln for curing it, and the joiner and paint shops. In the joiner shop, lumber is worked up for the crew and passenger accommodations, and other fittings. This shop makes even the desks, chairs and other furnishings as well as the most detailed grille and panel work. The paint shop gives many of these wood products their finish before they are installed, and it also has charge of the vast amount of painting and varnishing from keel to wireless mast before a ship is ready for delivery. In a well equipped pattern shop are made the patterns from which are cast many parts of the ship's machinery and such special pieces of hull construction as hawse pipes, stern posts and stems.

The original plan of the yard provided that these shops should serve three double, covered shipways called ways J, K and L. Each of these ways is 120 feet wide and 604 feet long; and under the same roof with them is the wet slip, "H", for the outfitting of vessels after launching. Sufficient property was bought to the south of these ways to provide for the doubling of the shipbuilding capacity of the yard by making the south side of the third way, Way L, the center line of such an expanded plant. The first step toward such a growth



THE PLANT IN 1916

This airplane photograph was taken shortly before the company came under its present ownership. Ways M and O had not then been covered over.

was the building of two additional double shipways, called Ways M and O, which were completed in 1912 and 1915. The first of these ways is 122 by 694 feet and the second 124 by 784 feet, making them the largest ways in any American shipyard at the time of their completion. With the further expansion of the yard during the war, additional series of shops and storage bases were required to serve the new shipways, but in each case the layout of the original yard was used as a model.



ONE OF THE STORAGE YARDS

Since this photograph was taken the R & S Plate and Angle Shop has been built at the further end of the 70-ton crane runway. (See page 32.)

THE NEW CORPORATION

IN THE first half of the last century when American clipper ships dominated the seas, sailors turned their hand to shipbuilding during the time between voyages, and the captain-trader designed and directed the building of the ship in which he sailed to the ports of the world. There was, therefore, a direct interest of the builder in his boat. Nowadays shipbuilding and ship operating are distinct and highly specialized industries, with the result that there is danger of one or the other overlooking the community of interest existing between them. This interest between shipyard and ship operator is secure in the case of New York Ship; but in place of the old-time captain-trader putting his own experience on the seas and in the ports of the world into the building and equipping of his ships, the present Corporation has as part owners a group of ship operators who between them have ships sailing the seven seas in many kinds of work from scheduled passenger and freight liners to tramp ships and tankers. The wide experience which they gain under these diverse conditions and the knowledge which American International Corporation has acquired through its world-wide trading interests, are available to the shipyard. Such close contact with operating problems coupled with the extensive facilities and the wide experience of the yard itself, gives assurance that vessels built by New York Ship will meet the requirements of both operators and shippers.

In the purchase of the yard in November, 1916, American International Corporation was fortunate in having associated with it three such ship operating companies—Messrs. W. R. Grace & Co., Pacific Mail Steamship Company and International Mercantile Marine Company. The purchase was made upon the recommendation of a commission of engineers and naval architects who were engaged to make a careful survey of the shipyards along the Atlantic seaboard. The commission reported that New York Ship was the plant best organized and equipped and most efficiently operated, and that it was capable of considerable expansion. And an important consideration was that the quality of its products had earned for New York Ship a sterling reputation as the builder of many of our finest naval and merchant vessels.

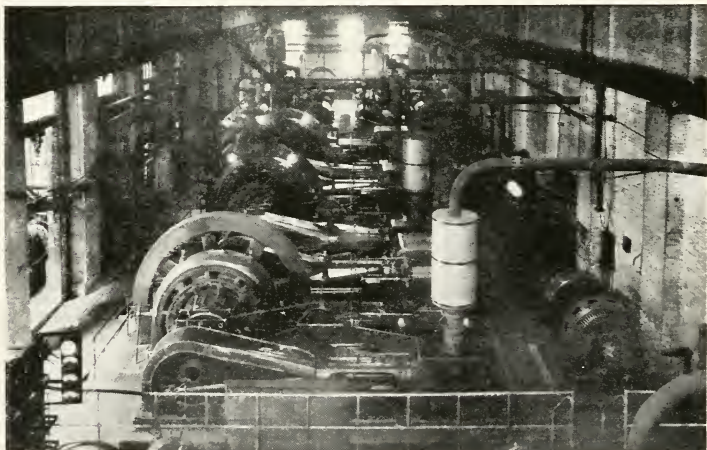
At the time of its acquisition by the present owners, the yard of New York Shipbuilding Company comprised five large double ways and one wet slip, all under one roof, and behind these ways all the required shops. With the reorganization of the company in 1916 under the title of New York Shipbuilding Corporation and the attendant provision of additional funds, a policy of expansion was inaugurated, of which the first step was the construction of four large single ways arranged in pairs "T" and "U," now 600 feet long. The ground work



NEW PLATE AND ANGLE SHOP

This shop was built to serve Ways T and U, the rear of which can be seen at the right of the picture. In the foreground is a section of a storage yard, showing the track layout and a 70-ton traveling and a 30-ton gantry crane. In the distance are the destroyer and South Yard shops.

for these ways is designed for their ready extension to two double ways of 1,000 feet. Their potential capacity is evident when it is remembered that S. S. *Leviathan*, the largest passenger liner in commission, is only 907 feet long. Back of these ways were built a large plate and angle shop, steel storage shed and mold loft of the most mod-



INTERIOR OF NORTH YARD POWER HOUSE

ern design and equipment. The capacity of the power plant was doubled and the machine shop, which had extended along the rear of the three original shipways, was lengthened 124 feet.

Before this expansion was completed the United States entered the World War and there came the demands of the Navy for a large number of torpedo boat destroyers and of the United States Shipping Board Emergency Fleet Corporation for cargo and troop ships. These departments of the Government urgently desired to make the greatest possible use of New York Ship's organization and experience by an extension of its shipbuilding capacity. Sufficient land was already owned or was available to the south of the existing plant to provide for two separate additions to the yard, either one of which would before the war have been considered a large yard in itself.

The first of these additions, which was constructed for the account of the Navy Department, was a unit of ten destroyer ways of which six are covered. This unit was built in the southern part of the original tract of land bought by the company. Behind these ways was built a large plate and angle shop for the fabrication of the steel for the thirty destroyers which the Navy ordered, and the machine shop was again extended 124 feet. For the outfitting of these destroyers the wet basin between the original unit of covered ways and Ways T and U was available.

The second addition to the yard, built through cooperation with the Emergency Fleet Corporation, comprises what is known as the South Yard. This yard, which has been operated on behalf of the Fleet Corporation, is entirely separate from the North Yard except for executive control and the use of certain facilities of the older plant. There are four large shipways, each 103 by 750 feet, designed for the construction of large passenger vessels. The shops, which are modern in every respect, include a machine shop, blacksmith's



SOUTH YARD SHOP AND WAYS



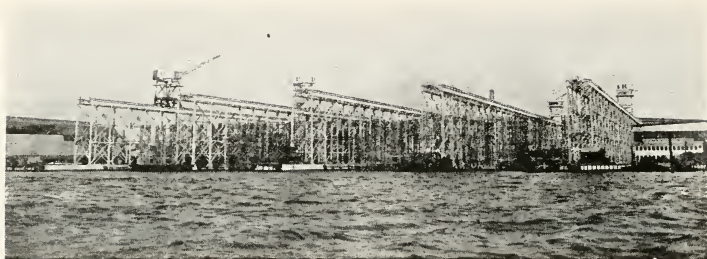
(UPPER) A RECENT VIEW OF THE NORTH END OF THE YARD

The two succeeding additions to the machine shop which, with the boiler shop, extends along the head of the ways, and the new power house unit, are evident. At the left is the traveling crane shown in the picture on page 30, and beyond it is the cafeteria.



(LOWER) REAR VIEW OF THE DESTROYER YARD

Destroyers are under construction in all of the six covered and four open ways. The shops in the foreground, replacing those which were destroyed by fire on September 11, 1918, had been rebuilt by October 30, 1918. On the right is a part of the superstructure of Ways T and U.



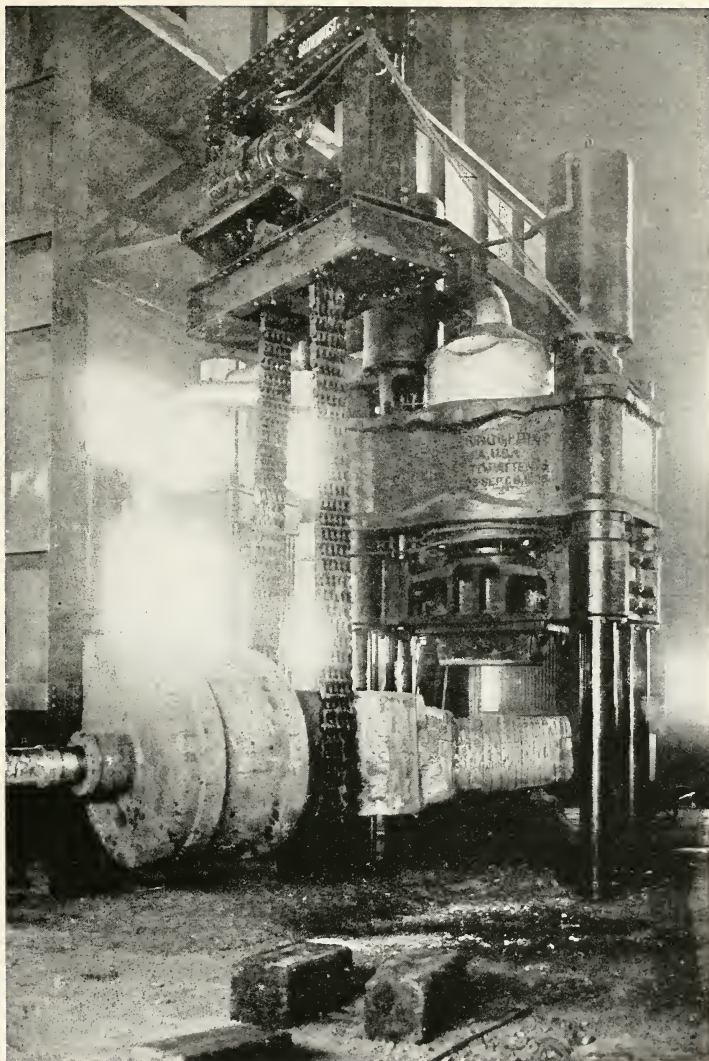
THE FOUR SOUTH YARD WAYS AS SEEN FROM THE RIVER

shop and the necessary power station. The tract of land comprising the South Yard proper is of thirty-eight acres situated in the city of Gloucester, across what is known as Newton Creek. Essential storage facilities were provided on an additional thirty acres of adjacent property.

All of this increase in plant equipment and shipbuilding capacity has meant, of course, corresponding increases in the administration buildings and in the main office building. Yard administration is kept entirely separate from the general executive offices which are located on the opposite side of the street which forms the inland boundary of the yard itself.

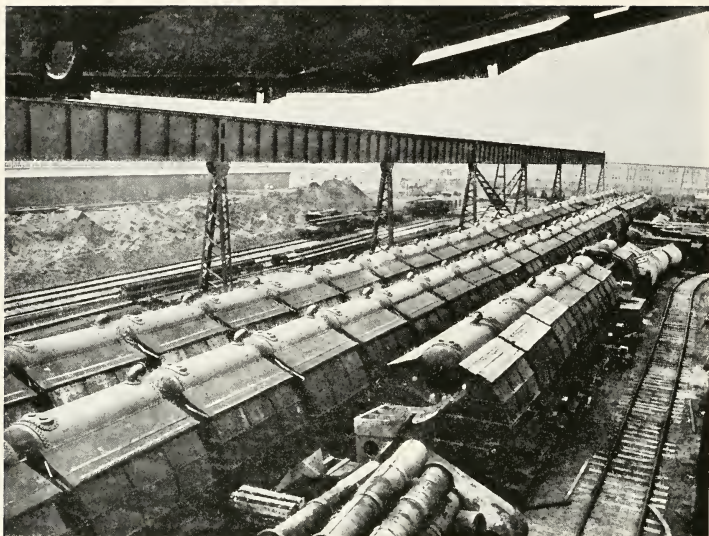
The shipway capacity of the entire plant of New York Shipbuilding Corporation now comprises five large double ways, eight large single ways and ten smaller shipways for the construction of destroyers and other small craft, giving a total shipway capacity for twenty-eight vessels of ordinary size, in addition to the ships that can at the same time be in process of completion and outfitting in the wet basins. With the exception of the Government's ship assembling plant at Hog Island, the shipway capacity of New York Ship is the largest of any single yard either in this country or abroad. When we consider, however, that behind these shipways there is a shop organization for the complete fabrication of practically all of a ship's parts, and for the manufacture of boilers, engines, lifeboats and a large amount of miscellaneous equipment, the assertion is fully justified that New York Ship is the largest completely equipped shipyard in the world.

The facilities of the forge shop, particularly for the shaping of such heavy pieces as rudder stocks, shafting and so forth, are exceptional. They include a 1,200-ton hydraulic press, the most powerful in any American shipyard, which is used in forging the propeller shaftings and in other heavy work. The plate and angle shops have a combined capacity on a single shift basis of handling 7,500 tons of

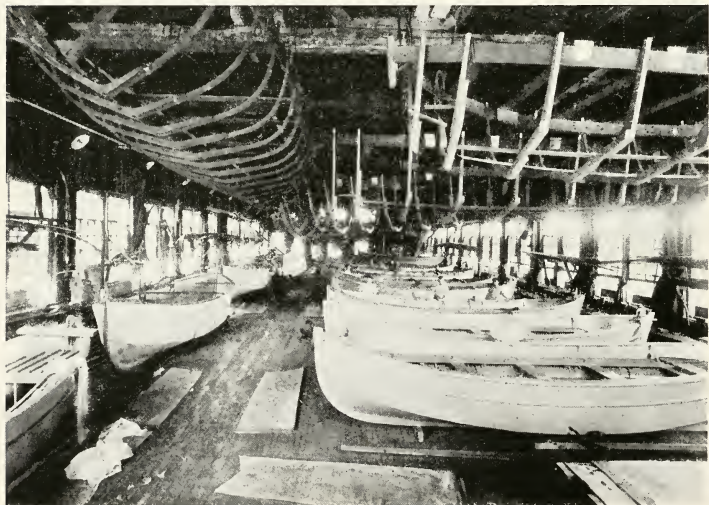


A 1200-TON HYDRAULIC PRESS

The forging of a rudder stock for a transport is shown in this picture



PART OF THE OUTPUT OF THE BOILER SHOP



SMALL-BOAT SHOP

steel each month. The machine shop has an engine building capacity equivalent to about 75,000 H. P. a year. The work of the boiler shop is equivalent to the production of four Scotch marine boilers of average size each month; and the capacity of each of the other shops is nicely proportioned to this scale of output. When there has been surplus capacity, orders from other plants have been filled. On such an order the boiler shop recently delivered thirty-three boilers, and the products of the small-boat shop are often in demand by other yards.

Yet apart from this capacity for ship construction, apart from the great bulk of equipment with which to fashion the parts that go into a ship, there stands out preeminently the quality of the ships themselves. Their superior performance under the conditions of peace was emphasized under the stress of war-time service in which so many of them were engaged.

THE SHIPS

DURING the twenty years through 1919 since the yard was built, there were delivered 215 vessels, comprising 29 warships of 236,146 displacement tons; 67 merchantmen of 503,418 deadweight tons; and 119 miscellaneous craft of 170,334 displacement tons. At the end of this same period, thirteen additional vessels had been launched but not completed and twenty-three ships were in the course of construction on the ways.

The number of ships built and the variety of types represented are notable evidence of the wide range of shipbuilding experience which the yard has developed. The naval vessels include eight battleships, the latest of them the United States Superdreadnought *Idaho*, the most powerful type in operation by the United States Navy and the fastest battleship of the fleet, which was delivered in March, 1919; one armored cruiser, one protected cruiser and nineteen torpedo boat destroyers. Of these naval vessels, two were built for foreign governments, the battleship *Moreno*, of 27,566 tons displacement, for the Argentine Navy, and the protected cruiser *Elli* of the Greek Navy, originally the *Fei Hung* for the Chinese Navy.

What the warships are capable of is shown by the performance of the *Idaho* in the recent maneuvers of the Pacific Fleet. In a letter to the Chief of the Engine Installation Department at New York Shipbuilding Corporation, a junior engineer officer of the *Idaho*, writing on March 1, 1920, says:

"Upon our departure this A.M. from Santa Barbara for San Pedro, the orders of the Commander-in-Chief of the Fleet, Admiral Hugh Rodman, while not actually ordering a race between the *Texas*, *New Mexico*, *Mississippi* and *Idaho*, were phrased in such a manner that the race was inevitable.



© E. Muller, Jr.

U. S. SUPERDREADNOUGHT "IDAHO"

This vessel, of the most powerful type in commission in the United States Navy, was built by New York Shipbuilding Corporation, and put into commission at the plant on April 20, 1919.

“These four vessels were maneuvering at eighteen knots, speed when the order was flashed from the flagship *New Mexico* for each vessel to proceed to the base at the discretion of her commanding officer. This order was received with great enthusiasm, as it meant that the long-looked-for day in the Pacific Fleet had arrived when the much discussed question could be settled as to what ship could show her heels to the rest of the fleet.

“The concluding maneuvers of the day brought three of the ships in line abreast of one another—the *Texas*, *New Mexico* and *Idaho*—all awaiting the signal that would let them go, but still obliged to run together and not exceed eighteen knots, speed until the signal concluding the maneuver was hauled down.

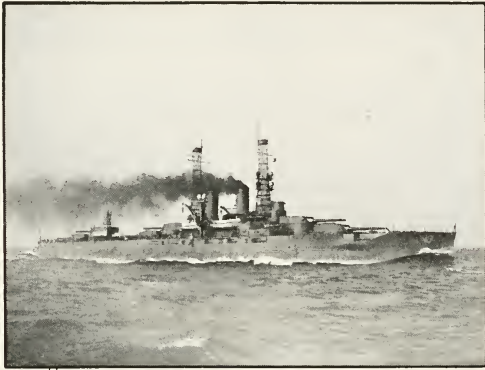
“The wily *Mississippi* had dropped back out of position and came up into line again at full speed, and the signal was hauled down just as she got abreast. But as she was at full speed, she gained a decided advantage over the rest of us who still had to work up to full headway. She gained a full ship’s length on us, but did not get a chance to put clear water between her stern and our bow.

“Captain Vogelgesang, of the *Idaho*, called for more speed from his engine room. Never will I forget that scene, when an excited messenger reported to Commander Bonvillian that the ‘*Missy*’ was a full ship’s length ahead. Cool and passive, never impulsive, nor betraying the slightest emotion, his order came in a quiet, clear tone of voice: ‘Open her up gradually; don’t pull the steam down in doing so, but bring her up to top speed!’ I watched his face, looking for sign of anxiety or emotion, but could find none. With just the faintest smile, barely noticeable, he turned and said: ‘That will get them.’ And it did. In five minutes we were abreast of her; the *New Mexico* and the *Texas* had dropped astern. In another five minutes we were showing her open water, and in two hours and a half, with Point Firmin Light abeam, we were, by stadimeter, about 6,000 yards ahead of the *Mississippi*. The *New Mexico* was barely in sight, and the *Texas* was not to be seen. The average speed made by the *Idaho* was 21.6 knots per hour.

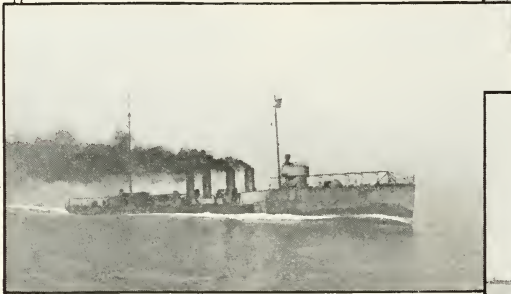
“The race was concluded, the mastery of the *Idaho* was firmly established, and with ‘Gunnery and Engineering Supremacy’ we hoisted the brooms to the masthead, indicating a clean sweep, and dropped our anchor amid the cheers of the auxiliary fleet, as all the world loves a winner.”

In a letter written to Mr. Marvin A. Neeland, President of the Corporation, during the first voyage of the *Idaho* in commission, Captain C. T. Vogelgesang, U. S. N., said:

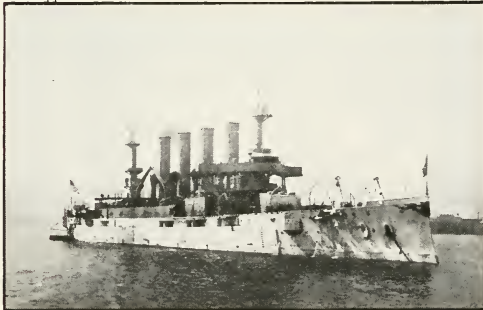
“I am very happy to state that the run down the river was very successfully accomplished without any difficulties and everything has responded perfectly to whatever test was put upon it. I feel



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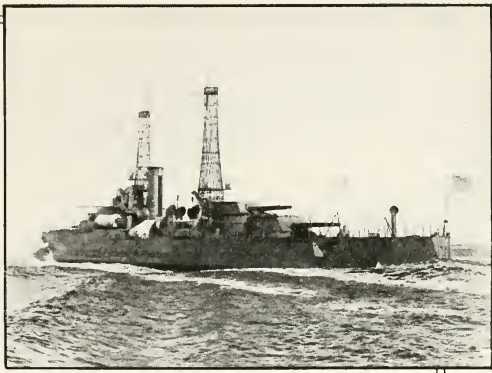


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- 1 U.S.S. *Arkansas*, first-class
- 2 U.S.S. *Michigan*,
- 3 U.S.S. *Oklahoma*, first-class
- 4 U.S.T.B.D. *Downer*
- 5 The *Moreno*, Argentine destroyer
- 6 U.S.T.B.D. *Babbalanza*
- 7 U.S.S. *Washington*, armored cruiser
- 8 U.S.S. *Kansas*, first-class



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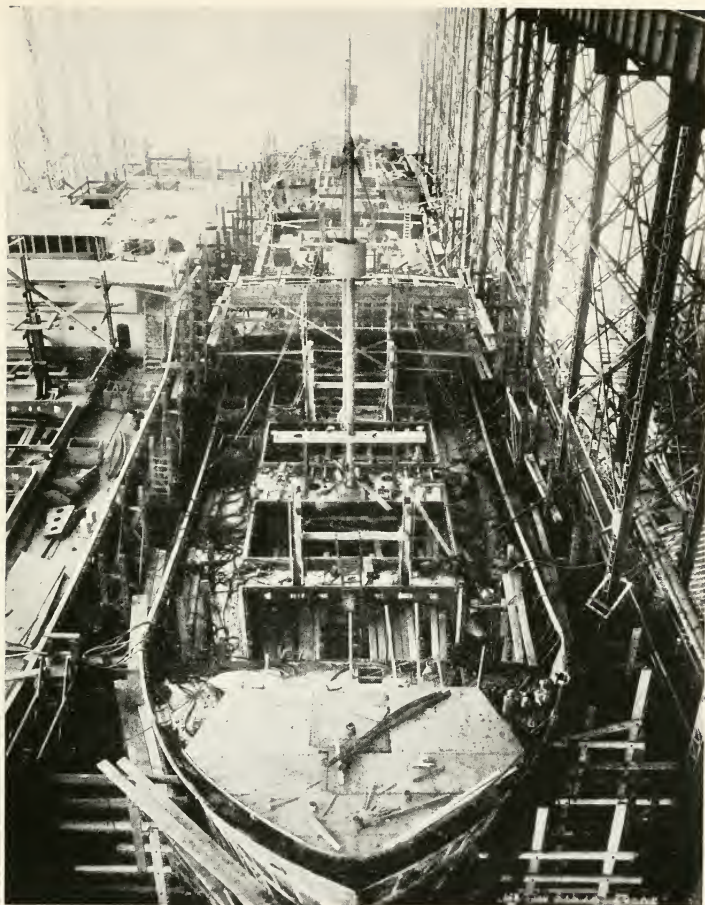
1. battleship
 2. mass battleship
 3. battleship
 4. type destroyer
 5. light
 6. type destroyer
 7. cruiser
 8. battleship when built

that we have a magnificent ship and I think great credit is due to the corporation of which you are President for the splendid execution of this work.

"I beg leave further to express my appreciation of the uniformly generous and considerate treatment that the officers and the men of the *Idaho* always received during the time that they were associated with the *Idaho* at the Works of New York Shipbuilding Corporation."

OF THE merchant ships there had been built before the war nine combination passenger-and-cargo vessels aggregating 47,000 deadweight tons. Heading this list are such splendid additions to the American merchant marine as S. S. *Mongolia* and *Manchuria*, sister ships formerly in the Far Eastern service of Pacific Mail Steamship Company and now on the transatlantic schedule of the American Line. To this class of passenger-and-cargo vessels have been added the two transports *Santa Elisa* and *Santa Luisa*, delivered during 1919, which have been converted to commercial use and have been put in the South American West Coast Service. Twelve freighters totaling 99,996 deadweight tons have been turned out by New York Ship, of which the *Texan*, *Nevadan* and *Nebraskan*, built for the American Hawaiian Line, were the second, third and fourth vessels, respectively, to be built at the yard. The most recent type of large freighter to be built there is that of S. S. *Champion*, *Defender* and *Scottsburg*, delivered during 1919. Each of these ships is of 12,179 deadweight tons, and eleven knot speed. They are oil burners with a steaming radius of 9,700 miles.

Quantity production of specialized types of merchant ships is indicated by the two groups, oil tankers and colliers. In each group twenty-two ships have been placed in service from this yard, the oil tankers aggregating 183,561 deadweight tons and the colliers 60,928 tons. Many of these tankers traversed the dangerous areas of the North Atlantic during the war, and it will be remembered that one of them, S. S. *Gulflight*, was one of the first American ships to be torpedoed before the entrance of the United States into the war. Attacked without warning in heavy weather off Bishop Rock on May 1, 1915, she was able to proceed under her own steam to a safe harbor in the Scilly Islands, despite a huge hole cut through her bow just abaft of the fore-peak. She was fully repaired and again in service by the following August. Of the colliers the best known, by virtue of the remarkable speed of thirty-seven days in which she was completed from the date her keel was laid, is the 5500-ton *Tuckahoe* which on the fortieth day following the laying of her keel was carrying coal between Atlantic coast ports. Her service record during the last two years shows that she was as staunchly constructed and as carefully fitted out as if she had been built at a more leisurely pace.

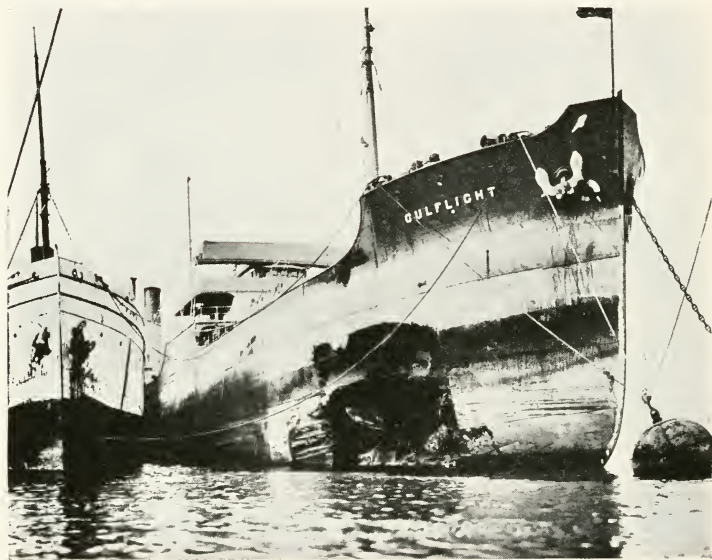


THE 5500-TON COLLIER "TUCKAHOE"

This ship was launched in twenty-seven days and completed in thirty-seven days from the laying of its keel. Note that it was built on half of a double shipway with another ship in process of construction alongside of it.

The other craft produced by New York Ship, though large in number, are comparatively small in aggregate tonnage. To a considerable extent they represent the "lean" years through which the American shipbuilding industry passed, particularly the ten years preceding the destructive U-boat warfare. This miscellaneous fleet

includes naval tugs and tenders, fireboats, revenue cutters, vessels for the lighthouse service, and Army Mine Planters, as well as dredges, oil and coal barges, carfloats and ferryboats. Five "knocked down" boats were built, two of them ferryboats which were loaded on flat cars and transported to San Francisco where they were assembled and are now operating in the harbor there. It is worthy of note that the two large, side-wheel vessels of the Hudson River Day Line, the *Robert Fulton* and *Washington Irving*, which are famous for the beauty of their decorations and appointments, were built at this plant.



THE TANKER "GULFLIGHT"

Though seriously damaged, as this picture shows, by submarine attack off the Scilly Islands, she proceeded to port under her own power.

WARTIME EXPANSION AND ACTIVITY

THE further expansion of the yard by the construction of the destroyer ways and of the South Yard, was essentially a war measure, the former to supply additional destroyer strength to the Navy in its operations in the War Zone and the latter to gain vitally needed troop transport capacity for army purposes. Six months after our declaration of war, or in October, 1917, the Corporation was ordered to build ten destroyers, a type of vessel in the construction of which it had already gained valuable experience. This order was increased three months later to a total of thirty destroyers, necessitating the construction of the new unit of ten destroyer ways.

The South Yard, with its four large shipways, was planned and its construction supervised by New York Ship as agents for the Emergency Fleet Corporation. The work of building this plant was started in May, 1918, and the first keels laid in May, 1919. Though the immediate war-time demand for transports had ceased before any of this type of ship had been launched, the necessary modifications were made in their design to convert them into passenger-and-cargo vessels. Thus, this addition to the shipbuilding facilities of the Corporation is serving the greatest usefulness in producing the type of tonnage which is so essential to the proper development of the American merchant marine. The present order for sixteen passenger-and-cargo boats, together with a few more being built at other yards, comprises the only important addition which is now being made to the fleet of American passenger ships.

It is important to note that the destroyer and South Yard units were constructed for the Government by New York Ship at actual



THE FIRST KEELS BEING LAID ON THE SOUTH
YARD WAYS

cost, no profit being made on this essential development work. Recently the company took over the way and shop equipment comprising the South Yard on a profit-sharing basis, payment to be made to the Emergency Fleet Corporation out of earnings.

That two such important additions, together with the necessary developments of many of the auxiliary units of the yard, were built and put into operation at the same time that work on many ships in the original yard was being pushed forward with such speed under the stress and difficulties of war-time conditions, proved the engineering and executive capacity of this organization of shipbuilders. During the highest pitch of war activity the new plate and angle shop, which had been built to serve the destroyer unit, caught fire the night of September 11, 1918, and burned to the ground. The



PLATE AND ANGLE SHOP BEHIND DESTROYER WAYS,
BURNED SEPTEMBER 11, 1918

next morning, while the ashes were still hot, a large gang of men were at work clearing away the debris. Three days later one of the original machines was again in operation; two weeks after the fire the roof of a new plate and angle shop was up, and a week later 90 per cent. of the machinery had resumed operation. But it was the steady strain of the heavily expanded load on New York Ship's productive capacity rather than such a temporary crisis, that gave the true test of the organization's merit.

To direct this huge plant working at high pressure day and night, was no mean test of administrative skill and leadership. There was not an executive from the President and his staff in the main office building through the Works Manager in the yard administration

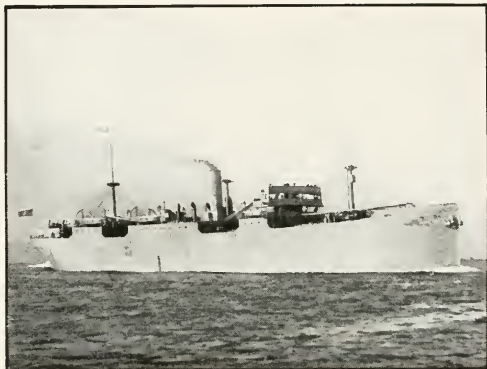


A GROUP OF DESTROYERS BEING OUTFITTED
IN ONE OF THE WET BASINS

building to the shop superintendents and foremen, who was not shouldering a load which it seemed impossible for him to carry. Yet the load was carried not merely for days or weeks but for months that slowly ticked off into the years 1917, 1918 and 1919. At the same time it is no discredit to the men to point out that they never could have accomplished such remarkable results in the face of manifold handicaps had not the yard been laid out scientifically and an efficient organization developed. Many of the men who bore the greatest strain had had an important share in shaping that development over the previous two decades.

To keep the shops supplied with their never-ending demand for raw materials at a time when the nation's ability to produce and transport these materials was strained to the breaking point, was an achievement of which the Purchasing Department may well be proud. Some idea of the scale on which it worked may be gained from the following figures for 1919: During that year 55,000 invoices representing an aggregate bill of \$35,000,000 for materials, were checked and paid, and 12,000 carloads of freight, representing transportation charges of \$1,350,000, were received in the storage yards.

During 1917 and 1918, the years of our active participation in the war, New York Shipbuilding Corporation delivered twenty merchant vessels, totalling 175,965 tons deadweight, and the United



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- 1 S.S. *Defender*, freighter
- 2 S.S. *Manchuria*, passenger
- 3 S.S. *Santa Elisa*, passenger
- 4 S.S. *Washington*, freighter
- 5 S.S. *Somerset* (now *City of*)
- 6 S.S. *Royal Arrow*, passenger
- 7 S.S. *Plymouth*, collier
- 8 S.S. *Tuckahoe*, collier

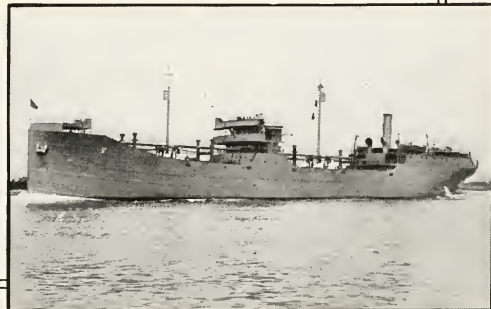


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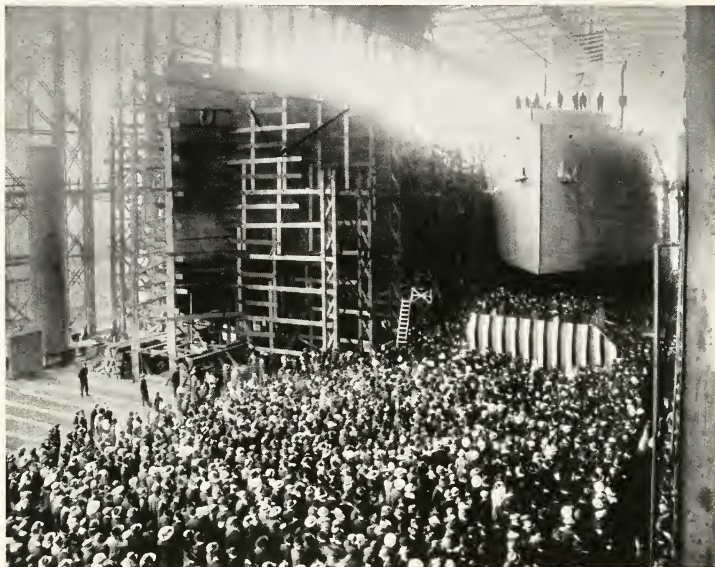
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r-and-cargo liner
argo liner
xcursion steamer
, coastwise passenger liner
er



8

States Army Mine Planter *General William M. Graham*. The list included seven tankers of 78,231 tons deadweight, ten colliers, of 81,227 tons, including the *Tuckahoe*; and three freighters of 16,507 tons.



LAUNCHING OF S. S. "TUCKAHOE"

But an account of New York Ship's activity during the war is not complete without some mention of its contribution to the work of three other yards. Mr. Morse took the initial step toward the fabrication of ships in quantity by the extended use of the templet system in shipbuilding. Under the stress of a war-time demand for tonnage, Mr. George J. Baldwin, Chairman of the Board, took the second and last step when he suggested that the structural shops of the country could fabricate ships' parts from templates just as exactly and efficiently as could the shops within a shipyard, and that these parts could then be transported to the seaboard for assembling into ships.

It is a matter of common knowledge now how the Government finally decided to put this plan into operation in three great ship assembling plants specially built for the purpose. It is not as well known, however, that American International Corporation undertook the construction and operation of Hog Island, the most stupendous undertaking in the history of shipbuilding, largely because the

Corporation had available the experience and skill of so competent a corps of shipbuilders as constitute the staff of New York Ship. These men gave invaluable counsel when the Hog Island plant was being laid out, produced the original set of templets from which was fabricated the steel for the cargo ships built at Hog Island, and assisted in the development of the templets for other vessels assembled elsewhere.

And it is to be remembered that this great contribution to the success of the fabricated ship idea was made by a group of executives, engineers, shop superintendents and foremen who at the same time were trebling New York Ship's productive capacity.

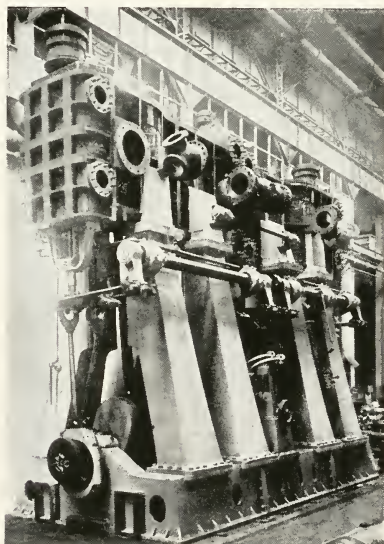
As fast as ways are released from the war-time construction for Government account, keels are laid for contracts which are being placed by private interests. The present construction program of New York Shipbuilding Corporation comprises forty-three ships of which all but eight were actually under construction on May 15, 1920. This list includes the battleships *Colorado* and *Washington*, for the United States Navy, of 32,600 tons displacement, which are to be propelled by electricity; the battle cruiser *Saratoga* of 43,500 tons displacement, which will be the largest type of vessel in the United States Navy; seventeen destroyers, of which nine have been launched and part are practically ready for delivery, eight still being on the ways; four passenger-and-cargo ships originally designed as transports, *S. S. Wenatchee*, *Sea Girt*, *American Legion* and *Keystone State*, 535 feet long and of 13,340 gross tons, which have been launched; five additional passenger-and-cargo ships of the same



MODEL OF THE SHIPS OF THE "WENATCHEE" TYPE

Nine of these large passenger-and-cargo liners are being built by New York Shipbuilding Corporation for the U. S. Shipping Board. They are 535 feet long, have a gross tonnage of approximately 13,340 tons and a displacement tonnage of 21,000, and will have accommodations for 550 passengers. Their speed will be $17\frac{1}{2}$ knots.

type as these, four of which are under construction on the ways; seven passenger-and-cargo ships, 522 feet long, but of the same displacement, of which three are launched and four are under construction on the ways; and six oil tankers of which four are of 12,500 deadweight tons and two of 10,000 tons. The nine passenger-and-cargo ships of the type of S. S. *Wenatchee* are among the largest passenger liners at present being built in the United States. With their length of 535 feet they have a displacement of 21,000 tons and accommodations for 550 passengers, and have been designed for a speed of seventeen and a half knots. The seven other passenger-carrying ships will have a loaded speed of fourteen knots and will carry seventy-eight passengers. These sixteen vessels are for the United States Shipping Board. An additional passenger liner, for private interests, is included among the present contracts.



TYPE OF RECIPROCATING
ENGINE BEING BUILT FOR
PASSENGER LINERS

THE MEN

LAND, buildings, machines and all manner of necessary equipment do not alone make a shipyard. It is the skill and loyalty of the great body of men who work together in using this equipment, that make renowned the plant and its products.

Shortly after Mr. Morse's sudden death in June, 1903, Mr. De Courcy May, who had been General Manager, was elected President. Mr. May faced the difficult task of having to continue the development of the organization at a time when the situation in the shipbuilding industry was such as to make it hard for even a well established yard to keep its organization intact. Mr. May met the problem successfully, leaving to Mr. Samuel M. Knox, who succeeded him as President in 1911, a well organized personnel and a shipyard with a reputation for building good ships. Mr. Knox held this position until the middle of 1917 when he resigned, continuing his connection with the reorganized company, however, as a Director. He was succeeded in the presidency by Mr. Marvin A. Neeland who had been Assistant Vice-President and Chief Engineer of the United States Steel Corporation for several years before 1916, when he became associated with American International Corporation as Consulting Engineer.

Mr. Neeland assumed his new duties just at the time when the ship tonnage requirements of the Allies and of the neutral European countries was filling American shipyards to capacity. He found a group of executives and men loyal to New York Ship, jealous of the established reputation of the yard and proud of their connection with the plant in many instances since its earliest days. Heading this organization, as Senior Vice-President, was Mr. H. A. Magoun who came to New York Ship in 1907, after having had many years of practical experience not only as a shipbuilder, but also as a constructor of auxiliary machinery for ships and as a ship operator.

The strain which was put upon Mr. Neeland and his associates soon after he assumed direction of the plant, may be appreciated from a study of the following figures: At the beginning of 1917 there were 4,500 men employed in the yard; by the end of that year the number had grown to 7,500; by the end of 1918 it had increased to 12,000, and last year, 1919, closed with more than 17,500 on the payroll. This period of unprecedented expansion paralleled the period in which the whole country suffered from a shortage of labor and a decrease in the productive efficiency of the labor available. The net result was that the price of this huge increase in personnel was a large labor turnover; in other words, many more thousands of men passed through the plant in those three years than were permanently added to the working force.

If the new workmen had been recruited from the ranks of skilled shipbuilders, one-half of the battle would never have had to be fought; but the fact is that practically none of them had ever seen a shipyard before, and a large proportion of them had had no experience in the fabrication and erection of structural steel. Every category of unskilled and skilled man, except the experienced shipbuilder, was attracted to America's shipyards by the high wages, remained varying lengths of time and then drifted on. In the war-



REPRESENTATIVES OF FORTY-ONE NATIONALITIES
AMONG THE WORKMEN AT THE PLANT

time race to produce ships, labor, before it could be assimilated by the ninety-six skilled trades represented at the plant, had to go through as many processes of "fabrication" as did a steel ingot or the roughest piece of lumber before it was ready to take its appointed place in the structure of a ship. The only illustration paralleling this strain upon the veteran staff is that of a skeleton regiment that must absorb a lot of raw recruits in the middle of a battle and still carry on.

New York Ship went into the war with a tradition of accomplishment behind it. Thanks to the loyal veterans in every part of the organization the new men caught the spirit of this tradition. The ships that have been launched during the past three years are as well designed, as staunchly built and as perfectly equipped as those of a decade before. And the whole organization is continuing with a spirit of team-play which has gained rather than lost from the heavy strain of the war period.

TO DEVELOP the efficiency of the men on the job and to build up this splendid spirit of team-play, the Corporation has gone to the very bottom in formulating its plans for meeting and handling the human equation. There is little that is novel in the general

basis of this program. Most of it is, in one form or another, common to the organization of many large industrial units in this country. It is, however, carried out with a whole-hearted sincerity that makes it a strong factor in building up a permanent personnel which will take an active and intelligent interest in the construction of good ships. The first essential is to attract men from whom to select the most efficient working force. The second essential is to continue this attraction in a way that will hold this force together.

The fundamental attraction, of course, is pay which, in a highly competitive industry, cannot be appreciably higher per unit of production than obtains in other plants. In order to afford the men an opportunity for advancement, a series of classes in some of the principal trades is given under the supervision of the Works Manager's office. These classes include ship-fitting and riveting schools, evening blue-print reading classes, a rate-setting course, an apprentice school and special courses, in addition to a cooperative plan carried out with the Drexel Institute in Philadelphia. During the rapid expansion of the plant, the ship-fitting school had a capacity for 250 men, and at one time the blue-print classes took care of 200 men. At the present time there are 225 men in the apprentice school.

But wages are only a part of the appeal that will attract and hold the class of men necessary to build ships in the way they must

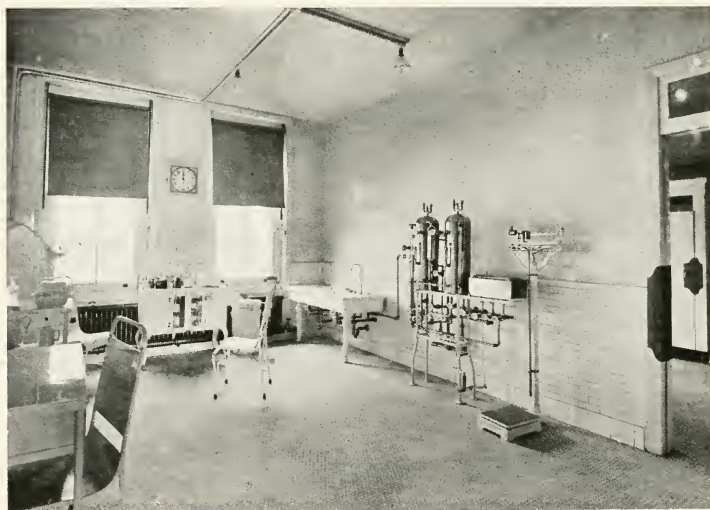


ONE OF THE PATRIOTIC MASS MEETINGS HELD
DURING THE WAR

be built at New York Ship. The conditions under which the men work must be right; the men must feel that they are a part of a great shipbuilding team rather than isolated units in the scheme of production. This fact was fully realized in all branches of industry during the war and the Government led in the campaign to develop each man's interest in his job by relating that job to the whole task of winning the war. It is even more difficult, but equally necessary, to arouse and hold the interest of the men in the daily grind of peacetime industry.

The cooperation of New York Ship with the men in its employ may be divided roughly into two classifications: matters affecting the men during working hours and thus directly related to the operation of the plant, and cooperation with the men in developing any organization which will bring them together during their leisure hours in a community of interest and thus aid in establishing a better spirit of team-play.

All of the more important shops representing the great bulk of the working force, have shop committees, the organization of which is left entirely with the men. Their chairmen meet with the Works Manager twice a month to discuss questions relating to the working interests of the men; and at other times, when problems local to some one shop are to be talked over, the Manager meets with the whole committee of that shop. At all times, however, the Manager's



ONE OF THE ROOMS IN THE YARD HOSPITAL

office is open to individuals who wish to take up their requests or complaints directly rather than through their shop committee.

Supplementing the preventive work of a "Safety First" organization among the men themselves, is the complete machinery of modern surgical and medical care provided by the Corporation. A fully equipped dressing station is located near the center of the yard, with a branch in the South Yard, and doctors and nurses with necessary ambulance service are in attendance at all times that the men are at work. Men with minor injuries not requiring care in the public hospitals report daily at the company hospital for redressings or are visited in their own homes. The hospital also cooperates with the employment department in physically examining all accepted applicants for jobs with the view to seeing that they are fitted for their proposed work. Employees of the commissary are examined periodically to prevent the spread of communicable diseases.



SELF-SERVICE IN THE
MAIN CAFETERIA

As in the case of most industries located on the outskirts of a city, there are few suitable eating facilities within easy access of the plant during the lunch hour. To meet this need a noonday luncheon service operated through a concessionaire has been built up to include a comprehensive system of cafeterias and lunch counters. The main yard restaurant occupies the entire second floor of a large locker and shower building in the center of the yard, has eight lines of self-service and can accommodate 1,400 men at one time. Food for the whole system, which also includes a dining-room for the executive officers, is cooked in central kitchens and distributed to the various restaurants and cafeterias, thus giving uniformity to the quality of food served to all who want to buy, from president to day laborer. A store has been started within the yard to sell groceries and other supplies to the men at cost prices.

In addition to the workmen's accident compensation required by State law there was inaugurated at New York Ship, effective September 28, 1917, a plan of insurance under which a man on completing his first year of service becomes entitled to a life insurance policy for \$500. The amount of this policy is increased \$100 each year during his continued service with the plant until a maximum of \$2,500 is reached. The insurance plan was made retroactive for all

employees, including, therefore, those whose services dated back to the old New York Shipbuilding Company before its reorganization. The insurance scheme went into effect with a total of 2,153 men insured for \$2,118,200. By April 1, 1920, this had increased to 9,043 employees insured for \$6,230,100 and a total of \$93,500 had been paid to 119 beneficiaries. That the plan is popular with the men and that it has been a factor in holding those who might otherwise have accepted offers from other plants, have been attested by many statements made to the company.

The rapid increase during the war period in the number of men employed, brought about the serious problem of providing additional housing facilities and the requisite transportation of this great body of men to and from the plant. To relieve the transportation situation a large number of additional street cars were purchased for the Public Service Corporation by the Emergency Fleet Corporation for the operation of a special service to handle the peak load morning and evening. Additional trains were put into service on the branch of the Pennsylvania Railroad running back of the plant, which carries large numbers of men into Camden and to the Philadelphia ferries; and on the branch of the Philadelphia & Reading, which serves some of the Camden suburbs. There is also river boat service from the plant to Camden and Philadelphia.

The greatest factor in the relief of the housing situation was the construction by New York Ship on behalf of the Emergency Fleet Corporation of an extensive housing project embracing what are known as Morgan Village and Yorkship Village, having a total of sixteen hundred homes within easy walking distance of the yard. Morgan Village, the smaller part of this development, consists of two hundred brick houses built in rows wherever vacant lots could be obtained along the streets back of the plant. They are unpretentious in design but are new and comfortable and have been filled from the time they were first ready for occupancy.

Yorkship Village is designed to provide something more than mere living accommodations—modern homes in permanently attractive surroundings. A 250-acre farm within the city limits of Camden was bought and developed into a self contained “garden city” with a pleasing variety of brick, frame and stucco houses of Colonial design. They form a village of 1,386 houses, fifty-six apartments and a dozen stores. The ground plan of the village comprises a central square from which a long rectangular common and broad avenues radiate with smaller squares and ovals between them. Paved streets and sidewalks and extensive plantations of shade trees, formal evergreens, box and shrubs already give a sense of completeness to the development. The houses themselves are equipped with hot-air furnaces, electric lights and gas ranges. The water system is connected with



FAIRVIEW, FORMERLY CALLED YORKSHIP VILLAGE
A part of the war-time housing development undertaken in cooperation with the
Emergency Fleet Corporation.

the artesian wells of Camden, and the sewerage system, built separately with its own disposal plant, has now been joined with the city's. The municipal authorities have cooperated by building a \$50,000 fire-house and a school which will cost \$300,000 when complete. Sites have been reserved for churches of the major denominations. Adjoining one side of the Village is an eighteen-acre athletic field with gymnasium, clubhouse, running track and grandstands.

New York Shipbuilding Corporation has lately released its direct interest in these two housing projects, content that, having done its part in carrying these developments to completion, the operation should be in the hands of those whose business it is to conduct such real estate activity. Since this change, Yorkship Village has been renamed Fairview.

THE various activities mentioned above, such as hospital care, commissary, housing and group insurance, which tend directly to increase the efficiency of the men on the job, are handled and supervised by the Industrial Service Manager. His department

performs equally important work in another field, that of cooperating with the men in their off-hour interests to the end that a greater spirit of team-play and of interest in the plant is built up among them. Activity in this field is restricted to assisting the men in conducting the organizations which they have started on their own initiative, by handling the inevitable details which arise in the conduct of any group interest and which so often stifle the enthusiasm of such an interest. With this help in attending to details the men of New York Ship have organized an athletic association which has already established itself as an important influence in the development of an even better morale. Not content with a successful year in promoting company and departmental teams in a variety of sports, New York Ship Athletic Association has purchased one of the finest clubhouses in Camden and is continually extending its interests and activities among the men of the plant. With similar assistance from the Industrial Service Department, the men have further perfected their band and organized other musical societies, and have maintained the New York Ship War Savings Society in the front rank of such societies in the industrial plants of the country.



CLUBHOUSE OF NEW YORK SHIP ATHLETIC ASSOCIATION

NEW YORK SHIP WAR SAVINGS SOCIETY											
Total this Week						Total this Year					
1919						1920					
DEPARTMENT	Amount	Rank	Amount	Rank	Year	DEPARTMENT	Amount	Rank	Amount	Rank	Year
AMOUNT THIS WEEK	33	210	42	24	423	AMOUNT THIS WEEK	33	210	42	24	423
AMOUNT PER YEAR	33	45	4	33	48	AMOUNT PER YEAR	33	45	4	33	48
RANK	11	11	23	11	15	RANK	11	11	23	11	15
DEPARTMENT	100	100	100	100	100	DEPARTMENT	100	100	100	100	100
AMOUNT THIS WEEK	45	11	23	11	15	AMOUNT THIS WEEK	45	11	23	11	15
AMOUNT PER YEAR	45	11	23	11	15	AMOUNT PER YEAR	45	11	23	11	15
RANK	23	11	15	11	15	RANK	23	11	15	11	15

WAR SAVINGS SOCIETY BULLETIN BOARD

Placed near the main entrance to the plant, this board reflected the keen inter-departmental rivalry in the war-time savings campaign.

Organized by the men in March, 1918, this society invested more than \$600,000 in War Savings stamps before the end of that year, and added another \$210,000 during 1919. At the present time more than 2,000 men are subscribing for \$5,000 a week in War Savings Stamps, by deductions which they have requested to be made from their pay envelopes. The subscriptions vary from \$1 to as high as \$40 in one case, with an important number at \$15 and \$25. In addition to this regular subscription, an average of \$1,500 is being invested each week by men who prefer to make cash payments.

The War Savings Society was the medium through which the men subscribed to the Fourth Liberty Loan and to the Victory Loan, these investments amounting to \$238,000 and \$799,950, respectively. These figures compare with \$76,000, \$50,000 and \$280,000, respectively, which the men subscribed in the first three loans prior to the organization of the Society. It was also the agency through which the men expressed their interest in the Red Cross, Salvation Army and Roosevelt Memorial Drives.

The Industrial Service Department has recently been asked by the men to cooperate with them in the conduct of the Shipbuilders' Home Building and Loan Association which was started in February, 1904, with an original issue of 632 shares. The last issue, February 20, 1920, amounted to approximately 2,350 shares of which 1,445 were subscribed at the office of the Industrial Service Department.

Facilities have also been provided by the Department for classes in English for foreign-born workers, and for helping those who desire to take out their citizenship papers.

Unifying all these activities is YORKSHIP NEWS, an illustrated monthly publication devoted to the interests of the personnel, the

shipyard and shipbuilding in general. Started as a sixteen-page paper in the spring of 1919, it already has grown to twenty-eight pages in size and expects soon to add another four pages in order more adequately to cover the news in and about the shipyard. An interesting feature is the publishing of the photographs of all employees who during the month of issue celebrate their tenth anniversary with New York Ship.

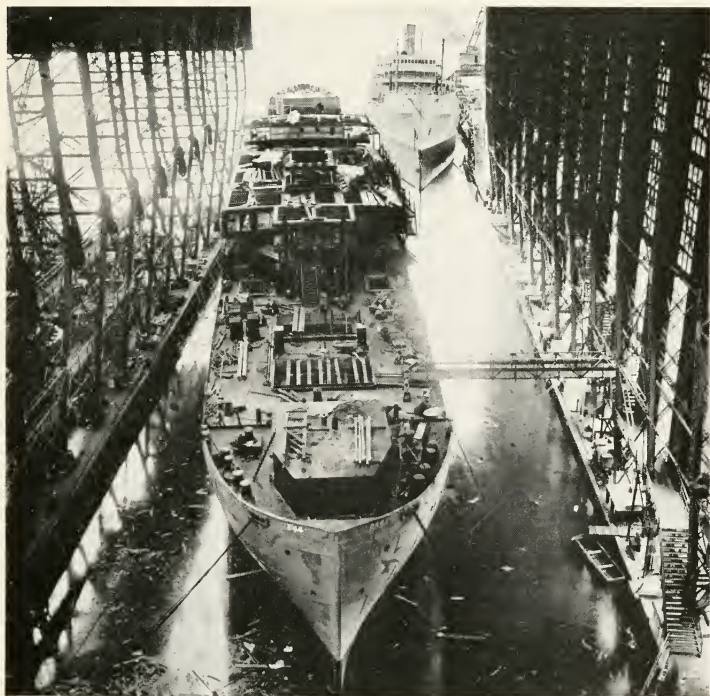


A CONCERT BY THE PLANT BAND

This picture was taken from the steps of the office administration building, across Broadway from the main entrance to the yard.

SUCH are the ships produced and the equipment and capacity of the plant itself, such the interests of the men who build these ships, who are coming ever closer together in a spirit of team-play and of common interest not only in the tradition of the yard's accomplishments, but also in its potentialities.

In the upbuilding of our merchant marine for foreign trade, this country must supplement its ordinary cargo ships with the fast passenger-express steamers and passenger-and-cargo liners which, by providing direct communication with the ports of the world for merchants and mail, form the backbone of a nation's commercial expansion. European yards will be engaged for many years in the rehabilitation of their own merchant fleets; of the American yards New York Ship stands in the first rank in ability to produce these specialized types capable of successful competition with the fleets of other countries. Among the shipyards of the world, New York Ship



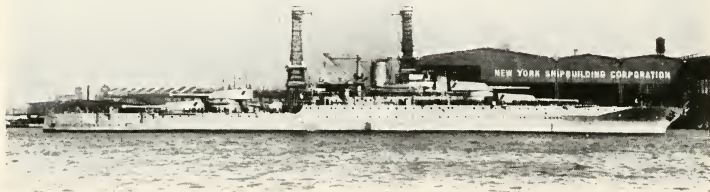
PASSENGER LINERS OUTFITTING IN THE WET SLIP

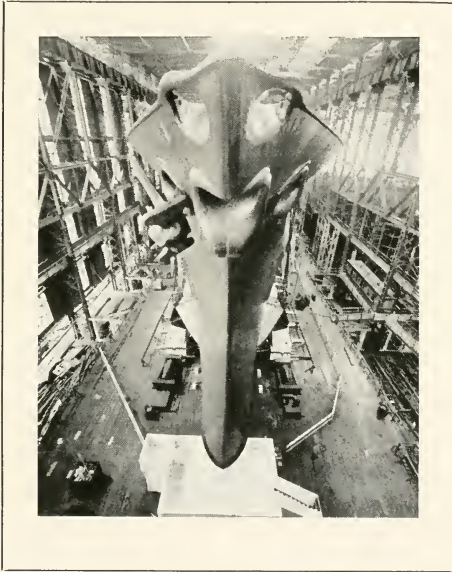
is preeminent, not only in the number of shipways and their size, but in the fundamental strength of its shop system as well.

Attesting this ability to build large ships well is the record of the fleet turned out by New York Ship and now being rapidly augmented as the facilities, trebled and improved to meet war demands, are applied to peace-time requirements. Many of these ships have made conspicuous contributions to America's achievements in the war. Among them may be named S. S. *Mongolia* and *Manchuria* which, converted into transports in their fourteenth year, rendered important service in the carrying of troops and supplies; the tanker *Gulfight* which proved her staunch construction by her performance after being torpedoed, and the collier *Tuckahoe*, delivered during the war in record-breaking time.

And the performance of New York Ship's naval fleet has matched that of her merchant ships, the latest brilliant example being that of U. S. S. *Idaho*, a vessel of the largest type now in commission in the United States Navy, which so recently established a triple record for speed, gunnery and engineering efficiency. The officers and men of the *Idaho* generously share with her builders the credit of her fine performance, and the men at New York Ship realize in turn that it would be almost impossible for them steadily to produce war vessels and merchantmen which establish high performance records if they did not have shop and way facilities designed for the efficient application of good workmanship.

But after all is said and done, it is the gun-pointer and not the gun, the workman and not his tools, who makes the records; it is this skill of a great body of shipbuilders who have been trained to the most exacting tasks of intricate ship construction, this loyalty to the organization with which so many of the men have served for the best part of its twenty years' existence and of which so many more became a part during the stress of war-time work, that are the intangible yet powerful forces that make of New York Shipbuilding Corporation the world's premier shipyard.





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