

Product of the New Order in Warship Building Is the Mighty New York

The Meyer System, Favored by Mr. Taft and Which Puts Real Naval Warriors in Charge of Battleship Construction, Has Been Applied to the Huge Craft Now Being Built at the Brooklyn Navy Yard.

LISTENING to a battleship in course of construction is not only a diverting and instructive pastime, but an experience that you will never forget. No man has heard the hull of the battleship New York while it was in the process of being hammered into form at the Brooklyn Navy Yard, a few days ago.

Trifling, trite, decisive, are weak words which to describe the resultant of the hammering of a battleship are occasioned by a battery of pneumatic hammers so employed. To speak of the sound of thunder doesn't convey the impression, either.

There are intermissions to thunder. But the building of the hull of a battleship is a continuous process. The sound of the hammering is the constant accompaniment of the work. You try to remember the sound of the hammering, but the sound of the hammering is the sound of the hammering.

A DISAPPEARING PHRASE. "Shiver my timbers" is a nautical expression you recall. Shiver is right. But shiver is out of date. No matter how you shiver, shiver is out of date. The expression is out of date. The expression is out of date.

It would require at least six months in Bayreuth before one could transcend the sound of pneumatic hammers at the Brooklyn Navy Yard. The sound of the hammering is the sound of the hammering. The sound of the hammering is the sound of the hammering.

A DISTURBING CONTRAST. A look at the boilers that, if occasion should arise, can be driven to produce 40,000 horsepower. The boiler is a marvel of engineering. The boiler is a marvel of engineering.

Weighting the Pieces. The pieces are weighed. The pieces are weighed. The pieces are weighed. The pieces are weighed. The pieces are weighed.

be launched on October 15, 1912. The tentative launching date fixed by the naval constructor is October 20, 1912, showing that the rate of building the hull of the New York is not more than keeping pace with the rate of the private shipbuilder.

On the other hand, the machinery of the New York is as nearly completed to-day as is that of the Texas, showing that in fifteen months the machinery division has completed five months on the private builders.

This again justifies the Meyer system, if it needed justification among thoughtful men. The New York was designed, laid down and is building under the Meyer scheme. Experts assert that she will be a monument to his sagacity in establishing an organization that restricts technicians to the practice of their technical professions.

She is the first of our ships to carry 14-inch guns. When launched she will be the largest battleship afloat propelled by reciprocating engines.

Her machinery equipment includes Babcock & Wilcox boilers and Blake pumps throughout. Her main engines and some of her auxiliary engines are fitted with

Her contract date of completion is May 15, 1911, but at the present rate of progress being made by the machinery division—under line officers—all her machinery and electrical equipment can be built and installed and, so far as the machinery division is concerned, the ship completed by October 1, 1912.

Counting the New York, now on the ways, the three battleships that have been built at the Brooklyn navy yard represent three stages of development, not only in ship design and building, but also in navy yard organization and administration.

The Connecticut, the largest and most powerful vessel laid down before the lessons of the Russo-Japanese war were forced on naval maritime powers, was a vessel of 16,000 tons displacement. She was equipped with reciprocating engines of 16,000 horsepower. Her designed speed was 18 knots, though she actually made about 19 knots, as did all the vessels of that class, while their engines actually developed upward of 20,000 horsepower and their service displacement is nearer 19,000 tons than 16,000.

The Connecticut is a pre-Dreadnought, her main battery consisting of four 12-inch rifles in turrets on the midline, one forward, the other aft; of eight 8-inch guns in turrets at the corners of a citadel, so arranged that four may be fired abeam, ahead or astern.

She also carries a heavy intermediate battery, twelve 7-inch guns mounted in broadside, six in each broadside. In addition, she carries, or did carry, a great many guns of small calibre.

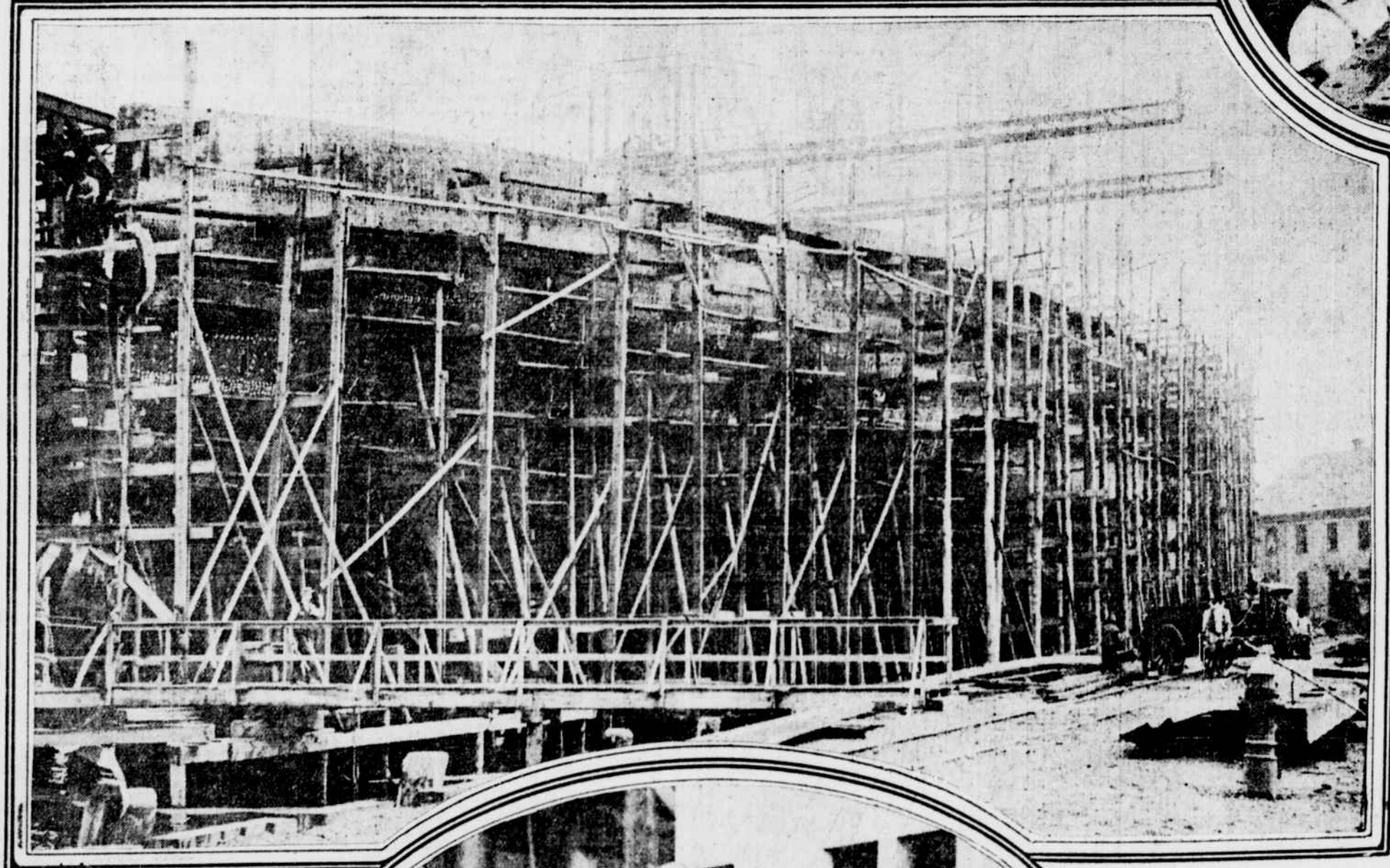
This was the general type of battery carried by ships of the first class until



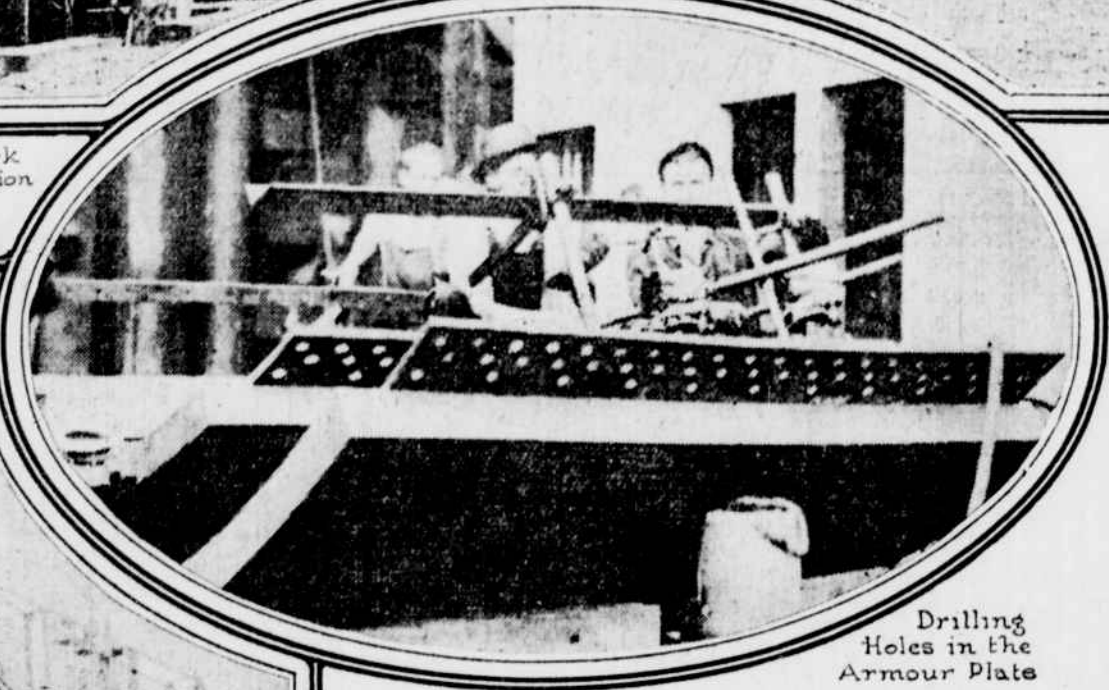
Hoisting the Steel Plates



William Sampson, Grandson of Rear Admiral Sampson, fastening first bolt on keel plate of battleship New York



U.S.S. New York under construction at Brooklyn Navy Yard



Drilling Holes in the Armour Plate

around the conning tower it will be... Above the water line it will be... to be dazed with the glory of it... trumpets blowing soft-toned... wrapping flags, brilliant un... out glass, ivory decks and bright... And scattering spray. Always... freshening and scattering spray... the gauges rise. The men are... in blinding, the heat terrific, and... a scenery circumscribed... say to yourself that you will be... you go to sea... the officers directly responsible for the... of the New York, under the... commandant, are... division—Naval Constructor Rob... head of division; Naval Com... J. E. Bailey, superintendent of... construction... division—Captain George E... head of division; Lieutenant Com... W. B. Tardy, superintendent of... The New York was laid down at the... in Brooklyn five months after... the Texas, at Newport News. The... was launched on May 15, 1912... of the rate of building the New York... of the Texas she would

forced lubricating systems, which increase their efficiency about 2 per cent. In her equipment the method of handling one feature is entirely new. Here the Naval Bureau of Construction and Repair, Steam Engineering and Ordnance were independently interested in the general and magazine refrigeration of the ship. Work was done by both the hull and machinery divisions, one sub-contractor supplying the ice machines, another the magazine coolers, a third the ventilating motors and fans and a fourth the insulations. With these nine separate interests and responsibilities it is no wonder that magazine refrigerations have been unsatisfactory and that no marked improvement was being made. On the New York, however, all yard divisions and all bureaus interested have worked together and prepared joint specifications and schedules, so that one responsible firm employing refrigerating engineers of the first rank will do all the engineering work, supply all material, install all machines, piping and equipment, do all insulation work and guarantee results. The New York is thus a pioneer in mounting 14-inch guns and in securing efficient results by employing recognized modern business methods.

the battles of the Russo-Japanese war convinced naval experts that success in future engagements required all big gun ships. The Connecticut represented the orderly, gradual development of the art of shipbuilding from the first vessels of the White Squadron to the inception of the Dreadnought. She shows forth a remarkable progress, but every step of this advance was orderly and natural, an evolution and practical—nothing in the nature of a revolution. She is a type, just as the navy yard organization and administration of the period from the Raleigh and the Cincinnati to the Connecticut was a type; with this difference, that during that epoch there were great advancements in ship design, shipbuilding and ship handling, while there was no progress to speak of, but retrogression rather, in navy yard organization and administration. Those were the good old days when the Navy Department bureaus, established about 1847, each had its own progeny in every navy yard, each bureau perpetuating itself in the form of an independent uncorrelated department in every navy yard. Each of these navy yard departments was presided over by an officer of considerable rank and experience. He was

called the head of department. He was the personal representative of his own bureau chief in Washington. Frequently his official duties seemed mainly to consist in guarding jealously the interests of his bureau chief and seeking that individual's aggrandizement, even though the service and government interests went to the bow-woes. His paramount personal concern more frequently appeared to be to prevent any unpleasant diminution of his own dignity and official importance. An apt story is told of a commandant of one of the yards during the Civil War. It seems that in those days the insignia of rank was one half-inch gilt stripe for each grade, from ensign to rear admiral. This particular commandant was a commodore, and therefore had a goodly number of these stripes on the sleeve of his coat. In fact, his sleeve was covered with gold lace from his cuff to his elbow. On one occasion a volunteer acting engineer officer—one of those enthusiastic, purposeful men who out of patriotism had rallied to the flag—was sent by the captain of the ninety-day gunboat on which the volunteer was serving to execute some urgent errand just before the hour of sailing. The acting volunteer engineer went into the yard on a dead run, as if it were a question of life and death. As he turned sharply around the corner of a building he collided with an elderly officer wrapped in a boat cloak. When the two men had partly recovered from the rebound the one in the boat cloak exclaimed: "What, sir, do you mean by running in to me? How dare you?" The always earnest and none frightened engineer stammered his apologies, declared his innocence of any intent to injure and excused his leze majesty by asseverating: "I do not know who you are." "Don't know who I am?" repeated the officer, who was now more injured than before. He threw back his boat cloak and, extending his arm, commanded: "Look at my arm! Now, young man,

do you know who I am, and do you realize what you've done?" These two functions of heads of departments did not make for speed records in the handling of Uncle Sam's business. On the contrary, the spirit of the times encouraged indolence. The simplest questions became involved in a labyrinth of red tape, as illustrated in "Jimmie" Conolly's superb story, "Laying the Hoop Pipe Ghost." Better days had dawned by the time of the building of the Connecticut. But even then there were in the navy yards, each a little sovereignty in itself, the following several departments: Construction and repair. Steam engineering. Equipment. Ordnance and gunnery. Each had its own shops, power plants and employees. To these must be added, of course, the stores department, under the general storekeeper; the yard paymaster, the medical department and the marine detachment. Frequently able and good men presided over these departments, but it is not human nature for a sovereign to give up a particle of his sovereignty simply in order that work may be done expeditiously and economically. After the completion of the Connecticut and before another ship was laid down at the local yard, a revolutionary change occurred, both in shipbuilding and in yard organization. The clamor for Dreadnoughts, all big-gun ships of prodigious displacements and considerably greater speed, had been heeded. So the Florida was laid down on March 9, 1909. Her full load displacement is 23,000 tons, while she is 521 feet 6 inches long, has a beam of 88 feet 2 1/2 inches, a draft of 28 feet 6 inches, a designed speed of 20.75 knots, is engine with Parsons turbines designed to develop 28,000 horsepower and carries a main battery of ten 12-inch guns, mounted in five turrets disposed on the centre line of the ship. Before the laying down of the Florida there had been, in keeping with the spirit of the times in the industrial world, much

discussion looking toward the betterment of navy yard conditions. This was to be obtained through a reorganization that should meet modern conditions and secure the necessary consolidation and co-ordination. While by far the larger part of the active line officers of the navy were at sea on the world cruise of the battleship fleet Mr. Newberry became Secretary of the Navy. This occurred during the last days of the Roosevelt administration. It may be remarked parenthetically that throughout the Roosevelt administration the Navy portfolio had been used, according to critics in the department, as a stepping stone, or to pay off some political or personal obligation by rewarding a man of mediocre ability. In either case, these critics assert, the result was the same. The Secretary, according to these observers, permitted the President to run his department for him. For the last twenty years the constructors, able technical men every one of them, had dreamed of complete ascendancy and control. Nor had they taken it out in dreaming. They had not been idle. They had well developed schemes for making their dreams come true. According to their critics, they provided that all the young constructors who took the course at the Massachusetts Institute of Technology should take a fuller course in engineering subjects than in shipbuilding and naval architecture. They set up nights to seize work that had formerly been done by some other department in order to establish a precedent and thereafter hold this work. They asked for large appropriations, got them and expended them, paying no attention to economy. They rested their reputations for importance on the amount of their annual expenditures. They fattened on arrogance and power and hid their time when all the old engineer officers should be retired. At the opportune moment they purloined the claim that no officers in the navy were qualified theoretical engineers except the engineer educated naval constructors. But they had become drunk on success, and on the accession of Mr. Newberry to the secretaryship, there being a majority of the forceful line officers out of the country, and an astute chief constructor who was a personal friend of the Secretary and an eligible suitor for the hand of his daughter, the time seemed opportune for the coup d'état. The result was Mr. Newberry's overnight order, consolidating with a vengeance. The erstwhile heads of departments and the commandants were reduced to figure heads. The naval constructor, with the title of "manager of the manufacturing department," was in supreme command. About this time the chief of the Bureau of Steam Engineering vacated his office. This was immediately filled by the appointment of the chief of the Bureau of Construction and Repair to be acting chief of the Bureau of Steam Engineering. There resulted then for some months a saturnalia of power and extravagance.

ure, install and repair every mechanism and part of a modern battleship, they called a halt when they realized that they were to be tested practically in engine building and installation. Therefore, instead of beginning the assembling of engineering materials or engine construction work concurrently with the work on the hull, they invited bids from various ship and engine building concerns. These bids were to cover construction and installation of the machinery plant and equipment. In this way several months were permitted to slip by without any work being undertaken on the machinery. The hull work was, however, being prosecuted in an orderly manner. Even after it was decided that the machinery must be built and installed by the yard a persistent effort was made to farm out the large turbine casing castings. The plea offered was that the navy yard foundry was not equipped for this class of work and that the men were not skilled in it. This, although the master moulder has been at the local yard since 1888, during which time he has cast some seventy main cylinders, or other equally large castings without losing a single one—a record certainly not excelled, if equaled, in the United States. During these months the new Secretary was investigating the so-called Newberry system, and then Hutch I. Cone, the present capable chief of the Bureau of Steam Engineering, was appointed and confirmed, despite organized opposition. Mr. Meyer issued orders amending the Newberry scheme, dividing the manufacturing departments into two divisions, hull and machinery, the first presided over by the naval constructor, the second by a line officer. Both divisions being directly under the commandant, who is clothed with sufficient authority to be the manager of the manufacturing department in reality. He is the department's and bureau's only representative. The heads of the hull and machinery divisions are his assistant managers and superintendents, each in his own special sphere. **PLACING THE BLAME.** The machinery was some months behind the hull at the date of this reorganization, and with the attitude natural to men who for one brief moment had usurped the pinnacle of power and realized the ambition of their training, only to be reduced to their proper vocation, it can be imagined that all delays were charged up to the so-called newcomer, the engineer officer. However successful the facts may have since proved him to be, his path was not strewn with roses. The castings for the turbine casing were cast and machined in the local yard under the Meyer organization. They cost less than the bid that the manager under the Newberry system urged the government to accept. The Florida, built at the local yard, is an exact sister of the Utah, built at the works of the New York Shipbuilding Company, at Camden, N. J. The Utah cost, exclusive of armor and armament, \$3,946,000. The Florida cost, exclusive of armor and armament, \$4,000,000. The machinery of the Florida built and installed under the supervision of line officers under the Meyer plan cost about \$50,000 less than the lowest bid submitted by a private concern. These costs are not absolute because, under the navy system of accounting, many items are not included in the overhead which are necessarily so included in the commercial plant—such as taxes, insurance, rent, interest on bonded indebtedness, etc. But both divisions of the yard are under the same system, so that their relationship is not distorted, but remains true when they are both compared to the same commercial plant. This one case, therefore, seems to justify the wisdom of the Meyer plan which has received the forceful support of the Taft administration. Just as the New York is an enlarged, improved and perfected Florida, so she conceived and so is she building under a Navy Department organization and a navy yard organization and administration that is a greatly improved Newberry system. Under the Meyer plan all the advantages of consolidation and co-ordination of the Newberry system are obtained, with the further and greater benefits derived from the following facts: Each separate profession and division of technical work is in charge of officers

Continued on sixth page.