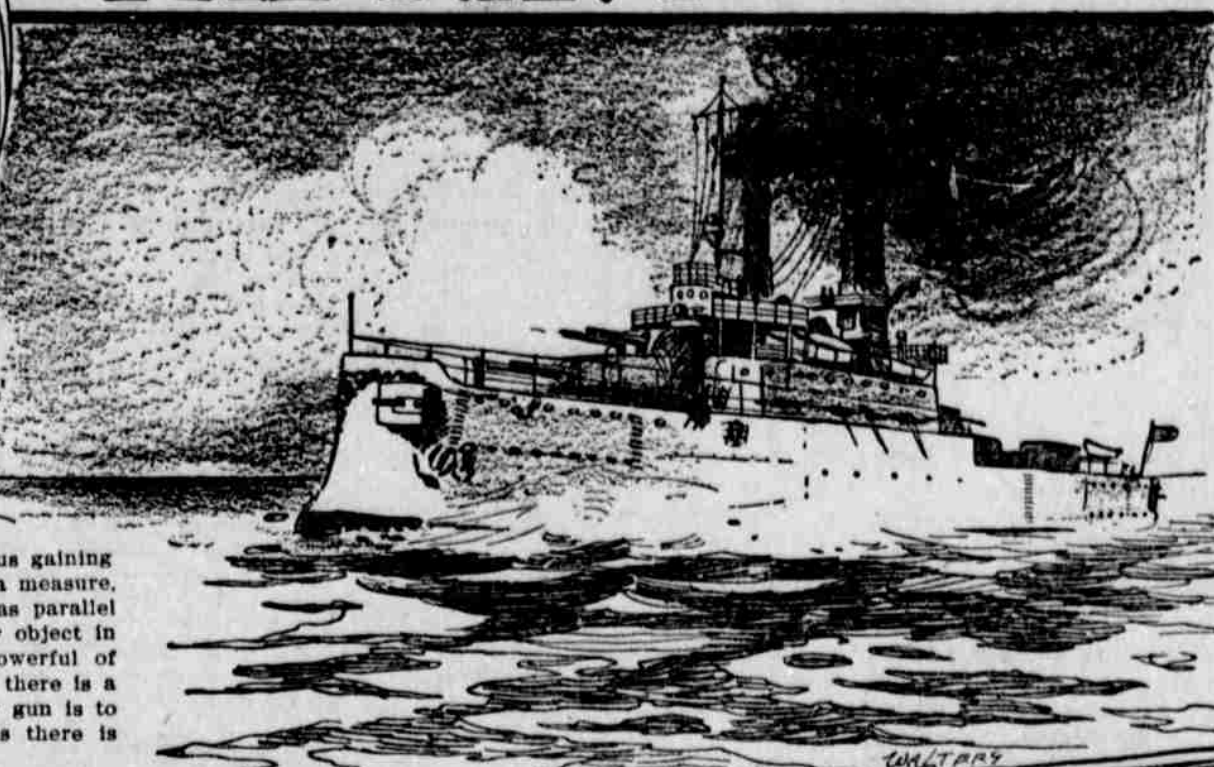




REAR ADMIRAL N.E. MASON, CHIEF OF ORDNANCE

A 14-INCH GUN FOR THE NAVY

By WALDON FAWCETT



SURROUNDED by all possible precautions for secrecy, the United States navy is now engaged in the construction of its first 14-inch gun, thus gaining a lead over foreign powers and, in a measure, forestalling the United States army, which has parallel ambitions for heavier ordnance. The primary object in the construction of this largest and most powerful of naval rifles is, of course, experimental, but if there is a favorable outcome of the tests which the new gun is to undergo at the Indian Head proving grounds there is

trema range of more than 25 miles, but what might be termed its effective range, that is, the range at which it would engage the enemy in battle conditions, is five miles.

The most spectacular operation in the construction of this new \$100,000 "peace-maker," as in the manufacture of all heavy ordnance, is the jacketing of the gun. The method of procedure is to first bore the tube of the gun and finish its outer surface; then finish the jacket inside, and, finally, shrink the jacket on the tube. As a preliminary to the delicate operation the jacket is heated to a temperature of 600 degrees in a cylindrical furnace, occupying a pit 40 feet deep. Air, blown through a furnace where white heat is maintained, is forced through and around the jacket for 29 hours. The burning blasts of oil make a roaring that completely drowns voices and therefore the entire operation is directed by signals and without a word being spoken.

After the ponderous jacket has received its baptism of fire the mass of glowing metal is lifted from the heating furnace by means of a crane which, despite its tremendous power, is capable of such delicacy of operation that it centers the jacket within one-thirtieth of an inch over the tube and lowers it over the tube at the rate of a foot per minute. After the jacket has cooled and shrunk on the tube its outer surface is finished

ALL MATTER OF COMPARISON

Philosophic Observations Given to the World by the Man of Moderate Means.

"All things," said the man of moderate means, "impress us by comparison. If a man had lived all his life in a palace it would have been a grand sort of a place indeed that would seem anything particularly fine to him, whereas if he had lived always in a shack a very modest house would seem to him luxurious.

"If since they first came in we had been driving steadily a \$10,000 automobile then obviously it would take quite considerable of a kerosene cart to give us any added joy in that line, while if we had been accustomed constantly to ride in street cars even the simplest gasoline gigs might give us great glee. All things go by comparison.

"Take, for instance, smoking. My regular smoke is a stogie that costs \$1.45 a hundred, but I buy also for special occasions a special brand of cigars for which I pay two dollars a hundred; I buy a 50 box at a time for a dollar. Commonly I smoke the stogies, and I think they're pretty good, at a little less than a cent and a half a smoke, but if I happen to strike a little streak of luck I blow myself to a couple of those choice smokes out of the other box, in which really I find great pleasure.

"It's all by comparison. Some men would have to pay \$10 for a cigar to get any fun out of it. I can get a lot of fun out of a two-center.

"And speaking of great pleasure, I'm glad I have not exhausted all my great pleasures; I've still got them all, or mostly all, to enjoy. My capacity for novelty and enjoyment has never been much taxed; it is still practically boundless. I have got life ahead of me, not behind, and when I do get money, as I certainly hope to do some day, everything will be new and charming to me and I shall enjoy everything immensely.

"I've got something to look forward to, anyway, and I think there's something in that."

Proved It Was Cheese Pie.

Will Telling has a new story on tap concerning a good woman who was interrupted in her pastry-making by the advent of a chatty neighbor who had run in—this was in the summer time—for five minutes of gossip.

"And what are you doing this morning, my dear?" asked the curious one of the housewife, who had hastily laid aside her kitchen apron.

"I'm making a cheese pie," was the answer. "Would you like to see it?"

The reply being in the affirmative, both went into the kitchen.

"Why," said the caller, "I thought you said you were making a cheese pie? This is a currant pie you're preparing."

"Indeed, it's nothing of the kind," retorted she of the kitchen. "Swish!" And a battalion of flies rose lazily and buzzed about the place. "'Tis a cheese pie, I would have you understand, even if there's a fly or two about the house!"

Mr. Telling says it's nothing rare to witness the making of such currant pies in the summer time even in well-conducted households. — Cleveland Leader.

Big Logs for China.

When she left Linnton, Ore., for China the steamer M. S. Dollar had on board one of the most singular cargoes of lumber that has ever left the port. Her deck load is composed of huge unsawn logs which are destined to go into a Chinese temple.

There are about twenty-five of these logs and they range in length from 105 to 106 feet. They average about forty-three inches at the butt and each weighs in the neighborhood of 15 tons. They will be discharged somewhere along the river between Shanghai and Hankow, after which they will have to be taken a long distance into the interior of the country, where they will be used in making repairs to a Buddhist temple which is many centuries old.

The work of transferring them from the coast to their destination will be an enormous task, as for most of the way they will have to be transported by the most primitive methods and it will be the work of months to get them to their destination.

A "Bone" Doctor.

Badger—I say, Broker, you were a medical student before you took to the market. Now, what would you do if a man came to you with a bad case of swollen fortune?

Broker—I should immediately try to reduce the swelling by manipulation.

A Street Dialogue.

"There she goes, the belle of the town. She has beautiful eyes. Don't you think so?"

"I can cheerfully testify that she has one beautiful eye. I couldn't see the other on account of her flapper-brimmed hat."—Louisville Courier-Journal.

Coming and Going.

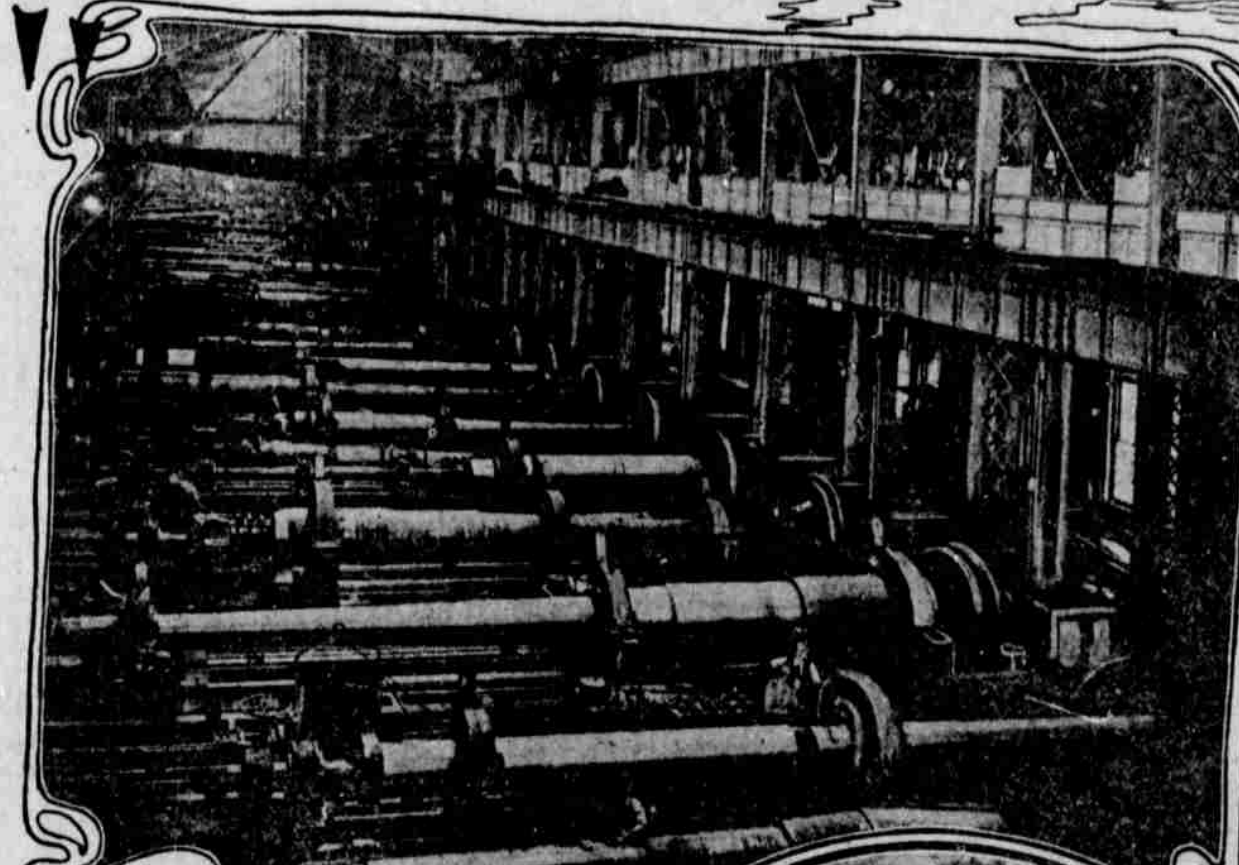
"What, six dollars for dyeing that cape! Outrageous!"

"Well, ma'am, the increased cost of living has caused us to increase the cost of dyeing."—Kansas City Times.

Question in Grammar.

Tommy—Pop, which is correct: "I shall" or "I will?"

Tommy's Pop—It depends on the sex, my son. A man says "I shall" and a woman says "I will."



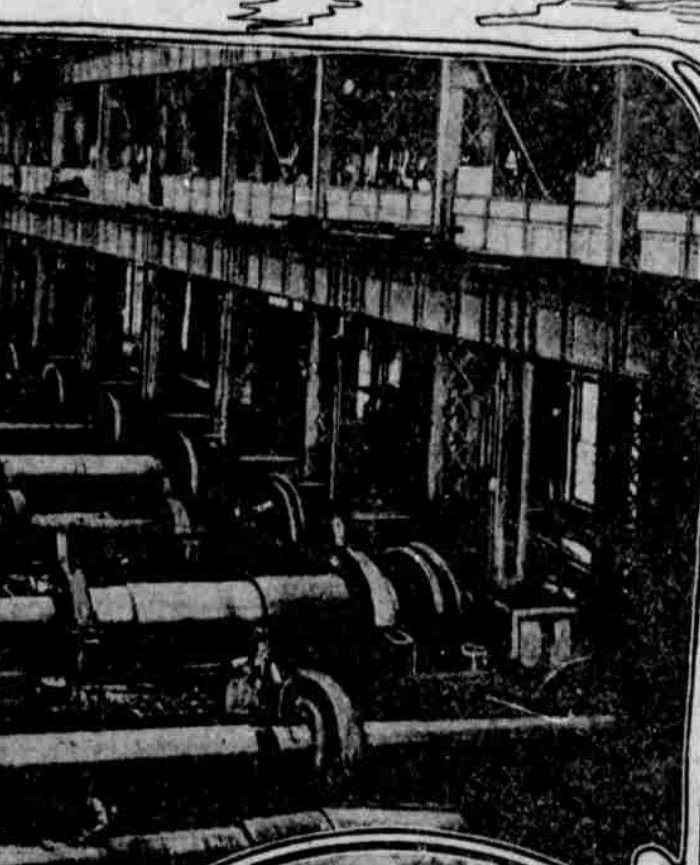
UNCLE SAM'S GUN FACTORY

every likelihood that the 14-inch gun will make its appearance in the equipment of the heaviest of our new battleships. Indeed it is stated that the board of naval construction has already prepared plans for two different types of battleships, each design calling for a main battery of eight 14-inch guns.

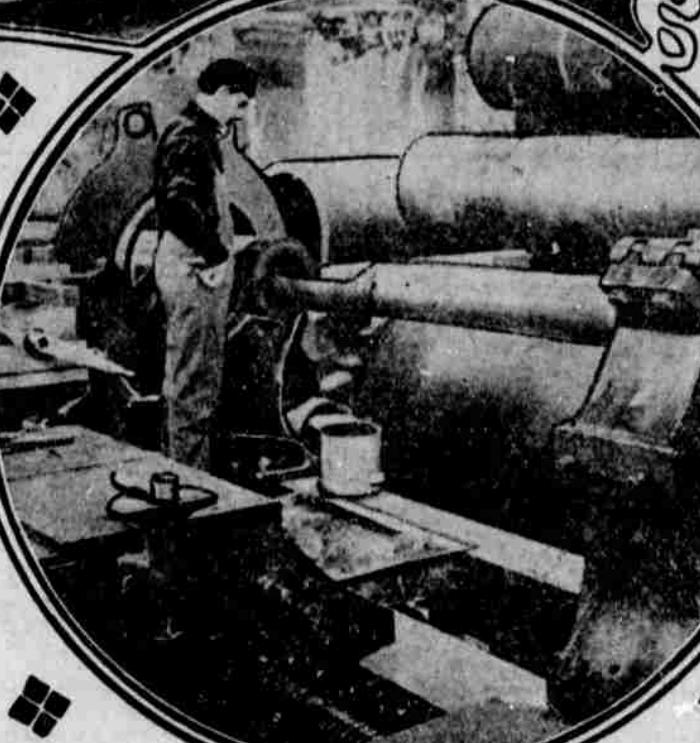
In the construction of this initial 14-inch gun for the navy there has been, as is customary with all our naval ordnance, co-operation between a private manufacturer and the government ordnance plant. The naval gun factory at Washington does not include a foundry, although congress has been urged several times in recent years to provide this adjunct so that heavy ordnance could be constructed complete under government auspices. The present limitations make it necessary to procure gun castings from private firms and finish them at the navy department shops. This procedure is being followed in the case of the 14-inch gun. The contract for the assembled forgings was awarded to the Midvale Steel Company early in the present year, the firm being allowed 42 weeks to complete the work and make delivery at Washington, where will be conducted the delicate operations of rifling and chambering the gun, etc.

In preparation for handling the 14-inch gun some important changes have been made in the arrangement and equipment of the great naval gun factory on the banks of the Potomac—one of the most important institutions of the kind in the world. These emergency preparations, as they may possibly be termed, are but the forerunners of yet more important permanent revision at the big factory. It is the desire of the bureau of ordnance of the navy to enlarge the gun factory buildings and increase the size and power of the machinery equipment to a point where it will be possible to handle all classes of breech-loading rifles up to 17-inch. Of course there are no 17-inch guns in existence now or in immediate contemplation, but the navy desires to be prepared for all eventualities. As in a measure indicating the trend of development it may be recalled that the United States war department a few years ago constructed and has mounted on Romer shoal in New York harbor a 16-inch gun. To be sure there were rumors at the time the 16-inch gun was tested at Sandy Hook that the showing made was scarcely as gratifying as the officials had anticipated, but evidently the naval experts are confident that the deficiencies, if any exist, will be remedied. No other interpretation can be put on their ambition to be in a position to manufacture 16-inch or even heavier guns.

Just here it may be explained that the energy which has been displayed in pushing toward completion the new naval gun is in some measure attributable to that perpetual, inevitable rivalry between the two arms of the service for superiority in the range and power of guns. The war department has five 14-inch guns under construction and two of them have had the construction work expedited in every possible manner, but it would not be strange if the navy was enabled to begin its 14-inch



LATHE WORK ON THE LARGEST SIZE ORDNANCE



BORING A BIG GUN FOR THE NAVY

gun tests at Indian Head ere the army is ready to try out the first of its new heavy-hitters at Sandy Hook, N. J.

For the purpose of comparative tests the war department is constructing one of the five 14-inch guns above mentioned as a wire-wound piece, but the other four are built up in accordance with the usual plan of concentric cylinders assembled by shrinkage. This is the practice likewise in the case of the new naval gun. The army is already firmly committed to the 14-inch gun and congress has authorized the construction of four such weapons in addition to the five already mentioned, but work on them has not been commenced.

It is the claim of Brig-Gen. William Crozier, the very progressive chief of ordnance of the United States army, that the 14-inch gun is vastly superior to the 12-inch gun which it is displacing for the defense of wide channels and harbors where the highest power is required. He claims that the army's new 14-inch guns will be capable of firing a greater number of rounds than the 12-inch guns, inasmuch as the same striking force can be imparted to the projectile with less velocity. Rear Admiral N. E. Mason, chief of ordnance of the navy, who has personal supervision over the construction of the first 14-inch gun for the navy, has not yet come out so unqualifiedly in favor of the heavier ordnance as has his confrere of the army, but Admiral Mason's verdict after the tests will be awaited with great interest, for there is no officer in the service more thoroughly conversant with the ordnance requirements of the navy.

During the greater portion of his naval career Admiral Mason has specialized in ordnance work. A native of Pennsylvania and a member of the graduating class of 1869 at the United States naval academy, the young officer, following a varied experience in sea service in all parts of the world, was in 1884 detailed for ordnance work at the navy yard at Washington. After two years of this service he was given a post in the bureau of ordnance,

where he remained for five years. After an interval of sea service he came back to the bureau and from 1893 to 1896 was inspector of ordnance in charge of the naval proving grounds. During the Spanish-American war the present head of the ordnance bureau had an opportunity to study the other side of ordnance work as an officer of the cruiser Brooklyn. After the war he was successively inspector of ordnance at the League Island navy yard and at the naval torpedo station and latterly was promoted to the highest post in the naval ordnance organization.

Another officer of exceptional ability who is playing an influential part in the creation of the navy's new weapon is Rear Admiral E. N. C. Leutze, superintendent of the naval gun factory. Admiral Leutze is a native of Prussia and graduated from the naval academy in 1867. Early in his career he was in charge of surveying parties that went over the Panama and Nicaragua routes. During the Spanish-American war, in command of the Monterey, he was ordered to the relief of Admiral Dewey in Manila bay; was present at the taking of the city of Manila, and took part in several engagements with insurrectionists. It fell to his lot to re-establish the Cavite navy yard, an experience which aided to qualify him for his present responsible position, which he has held for upward of nine years.

In the eyes of the average layman the navy's tentative adoption of the 14-inch gun appears somewhat revolutionary in view of the fact that it was but a few years ago that the naval authorities seemingly proceeded in the opposite direction by declaring in favor of the 12-inch gun in preference to a 13-inch gun, with which our earliest battleships were equipped. Any inconsistency of policy is, however, apparent rather than real, and the new 14-inch gun will be much more effective in hitting power than either the 12 or 13 inch type. The new gun, with a length of 33 1/2 feet, will weigh in excess of 63 tons—that is, 10 tons more than the 12-inch guns built for the new battleships North Dakota and Delaware and six tons more than the yet more powerful 12-inch guns designed for the new battleships Arkansas and Wyoming. The 14-inch gun, which will hurl a 1,400-pound projectile at a speed of 2,600 feet per second, will have an ex-



SCENE IN GUN SHOP AT THE NAVAL ORDNANCE FACTORY

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Extreme accuracy in fashioning the tube of the 14-inch gun is essential, since the general efficiency of the gun is dependent upon the uniform diameter of this foundation tube, upon which in due course the layers of hoops and bands are shrunk. The tube contains first the entire bore in which the big projectile will travel a distance of 542 inches ere it leaves the muzzle of the gun. This bore should not be more than two one-thousandths of an inch out of a straight line if it is to meet requirements and it is fitted with 52 rifling grooves, which decrease in width as they approach the muzzle and the purpose of which is to impart to the projectile a rotary motion that will prevent the missile from turning lengthwise in flight and thus losing its force. Secondly, the tube contains the powder chamber. In the new 14-inch gun the capacity of the chamber is 15,843 cubic inches, being designed to accommodate the 365 pounds of smokeless powder which will constitute the full service charge of the new weapon.

Interesting as is the construction of the new gun, it will be equalled by the importance of the tests of the monster "shooting iron" at the Indian Head proving grounds. It has been figured that a projectile fired with a full charge, will have a penetrative power at the muzzle of more than 22 inches of the latest Krupp steel armor. At 3,000 yards' range the projectile could pierce armor 18 inches in thickness, and at 6,000 yards the penetration would embrace everything up to Krupp armor 12 1/2 inches in thickness. At 9,000 yards, an extreme battle range, the penetration will be in excess of 11 inches, which is the thickness of the heaviest armor on modern battleships.