

PROGRESS OF THE 20,000-TON "NORTH DAKOTA."

The accompanying photograph, taken at the yards of the Fore River Shipbuilding Company, shows the advanced stage to which the construction of our first battleship of the "Dreadnought" type, the "North Dakota," has been carried. The point of view from off the starboard quarter has been well chosen, for it gives a striking impression of the unusual gun-power of this great battleship. The total armament of ten 12-inch guns is mounted in five 2-gun turrets; two forward on the forecastle deck, the guns of the after turret firing above the roof of the forward turret, and three on the main deck abaft of the after mast. In our photograph the pair of 12-inch guns in the foremost turret are to be seen swung over, to starboard. The other turret is to be seen in course of assembling upon the dock in the middle foreground. This view is instructive as showing the plate framing of the turret before the roof and the side and front armor have been put in place. In the immediate foreground is one of this turret's 45-caliber, 12-inch guns. To the left of the breech of the gun lies one of the port shields, which are mounted upon the guns, within and close up to the port opening of the turret, for the purpose of preventing the entrance of shells. This shield moves with the gun as it is elevated or depressed, and serves to close the opening in whatever position the gun may happen to be.

Of the three turrets which show up so conspicuously on the after deck of the "North Dakota," the first is elevated sufficiently to enable it to fire dead astern

and hence, the American system assures a greater all-round efficiency for a given number of guns.

The series of triangular-headed vertical frames, which are seen hanging along the side of the "North Dakota," are the supports for the platforms from which the carpenters are engaged in bolting on the wooden backing for the side armor, a considerable portion of which, traceable on the photograph by its lighter shade, is already in place.

The "North Dakota" is a huge ship in every respect. Her length over all, 518 feet 9 inches, is equal to that of many ocean liners. Her beam of 85 feet $2\frac{1}{2}$ inches is exceeded only by that of the "Lusitania" and "Mauritania." Her normal displacement is 20,000 tons and her full load displacement over 22,000 tons. She will stow 2,500 tons of coal in her bunkers, and her Curtis turbines of 25,000 horse-power are designed to drive her at a contract speed of 21 knots, although on trial she will probably make over 22 knots. In addition to her main battery of ten 12-inch guns, she will carry fourteen 50-caliber 5-inch guns on the gun deck below. The protection will consist of a wide belt of armor, varying in thickness from 10 to 12 inches in the lower half of it, and from 10 to 8 inches in the upper half. As a protection against torpedo attack, her hull is being built with an unusually complete system of underwater subdivision, which is so elaborate that no single blow from the torpedo could sink her.

In respect to the speed with which she has been built, the "North Dakota" will mark an era in the progress of our navy. Although her keel was laid as late

4. All essays must be in the office of the SCIENTIFIC AMERICAN by April 1, 1909.

5. The Editor of the SCIENTIFIC AMERICAN will retain the small sealed envelope containing the address of the competitor and forward the essays to the Judges, who will select the prize-winning essay.

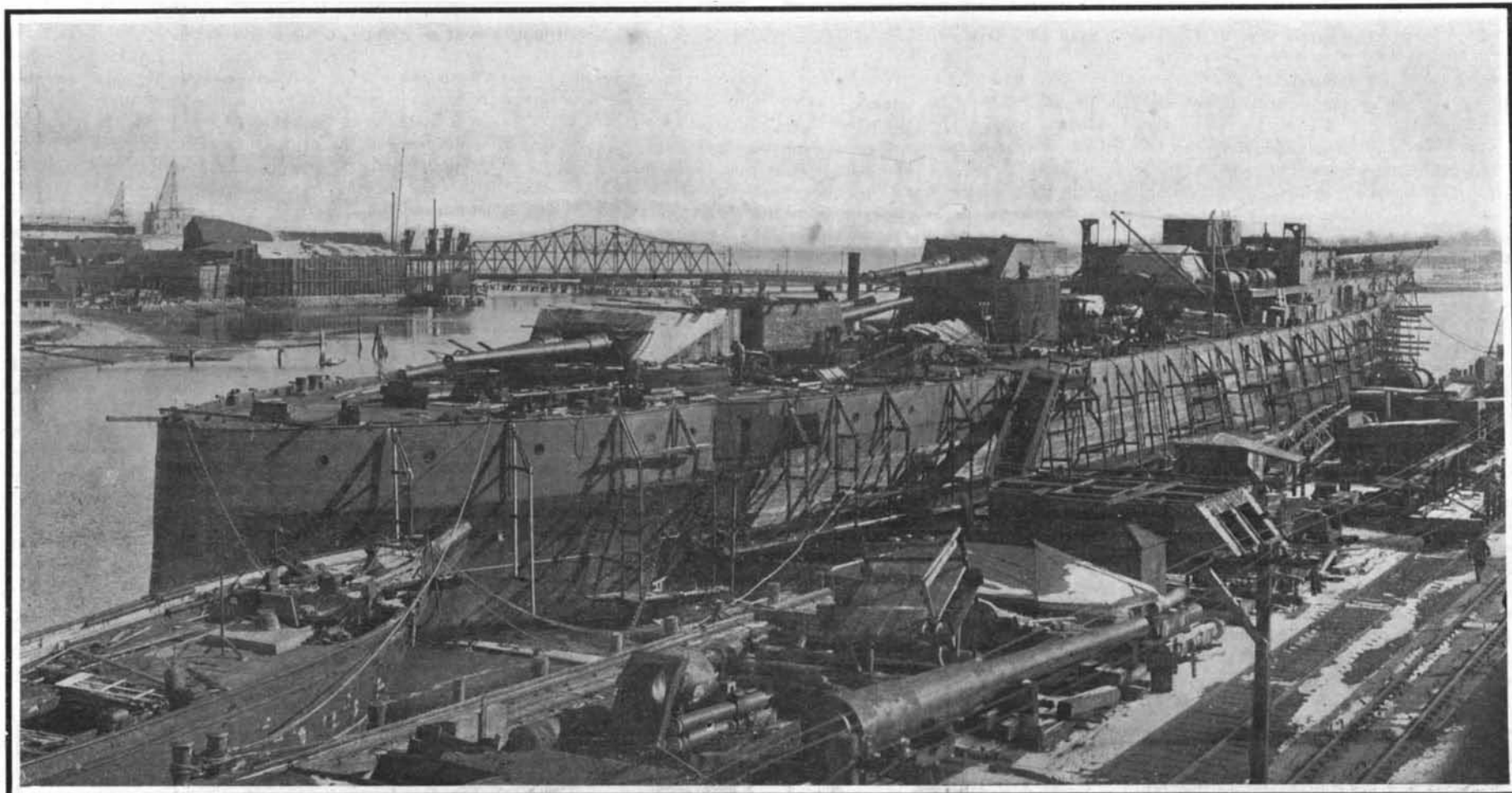
6. As soon as the Judges have agreed upon the winning essay, they will notify the Editor, who will open the envelope bearing the proper pseudonym and containing the competitor's true name. The competitor will be notified by the Editor that he has won the prize, and his essay will be published in the SCIENTIFIC AMERICAN.

7. The Editor reserves the right to publish in the columns of the SCIENTIFIC AMERICAN or the SCIENTIFIC AMERICAN SUPPLEMENT three or four of the more meritorious essays, which in the opinion of the judges are worthy of honorable mention.

Prof. Henry B. Manning, of Brown University, and Prof. S. A. Mitchell, of Columbia University, will be the judges.

Death of William A. Austin.

William A. Austin, who constructed one of the first steam carriages and steam bicycles, died on March 8th at Winthrop, Mass., at the age of 85. Despite his advanced age, Mr. Austin kept up his interest in inventions to the last. At the time of his death he was improving a gasoline lamp which was shortly to have been placed upon the market. Mr. Austin built a steam carriage at about the beginning of the civil war, and



THE "NORTH DAKOTA," OUR FIRST "DREADNOUGHT," 80 PER CENT COMPLETED.

over the roofs of the two after turrets, so that if the "North Dakota" should be engaged in action with a ship or ships astern of her, she could concentrate the two guns in this turret and the two in the aftermost turret upon the enemy.

All five turrets are located on the longitudinal, center line of the ship, and all ten guns can be fired on either broadside. This is one of the excellences of the "Dreadnought" design, and indeed the credit for introducing the center line arrangement is due to our own naval constructors, with whom it originated. The arrangement affords a distinct advantage over the English system as used on the original "Dreadnought" and all subsequent ships of her type; for, although they also carry ten 12-inch guns, it is possible to concentrate on each broadside only eight of these guns. This limitation is due to the fact that two of the turrets are placed, one on each beam, with the superstructure of the ship intervening between them; and, consequently, on whichever side the ship is engaged, it necessarily follows that the broadside or "wing" turret of the opposite side is masked by the superstructure and cannot for the time being be brought into action. The English arrangement has the advantage that both of the wing turrets can be fired directly ahead or astern, which gives the ship a heavy end-on fire of six 12-inch guns, as against an end-fire of four 12-inch for the "North Dakota." It is unlikely, however, that much fighting will be done from the end-on position. Future engagements will be broadside to broadside;

as December 16th, 1907, she was launched November 10th, 1908, and at the present time is nearly 80 per cent completed. She will probably have her trials during the late summer or early autumn and, unless something unforeseen occurs, she will be completed several months before the contract date of June 21st, 1910.

A \$500 Prize for a Simple Explanation of the Fourth Dimension.

A friend of the SCIENTIFIC AMERICAN, who desires to remain unknown, has paid into the hands of the publishers the sum of \$500, which is to be awarded as a prize for the best popular explanation of the Fourth Dimension, the object being to set forth in an essay the meaning of the term so that the ordinary lay reader can understand it.

Competitors for the prize must comply with the following conditions:

1. No essay must be longer than 2,500 words.
2. The essays must be written as simply, lucidly, and non-technically as possible.
3. Each essay must be typewritten and identified with a pseudonym. The essay must be inclosed in a plain sealed envelope, bearing only the pseudonym. With the essay should be sent a second plain sealed envelope, also labeled with the pseudonym, and containing the name and address of the competitor. Both these envelopes should be sent to "Fourth Dimension Editor, SCIENTIFIC AMERICAN, 361 Broadway, New York, N. Y."

exhibited it throughout the country, with considerable profit to himself. Later he built a steam bicycle of phenomenal speed.

Collier "Prometheus" Launched.

On December 5th the collier "Prometheus," the first great steel vessel of the United States navy built at a navy yard on the Pacific coast, was launched at the Mare Island navy yard, Cal. The structural material for the "Prometheus" was received about the middle of September, 1907, and work began on October 1st, the keel being laid on October 18th. The construction thus occupied less than fourteen months and the "Prometheus" is further advanced at the launching than has been the case with any large vessel built previously at a United States navy yard. Notwithstanding the higher cost of material and labor on the Pacific coast, she will be completed at a smaller cost than the sister vessel that is being built at the New York navy yard.

An interesting series of experiments in wireless telegraphy were made not long since between portable stations which were installed one in the suburbs of Paris and the second at Melun. The messages were transmitted and also received with an antenna which has a very moderate height, this being not more than 60 or 70 feet. The antenna is designed so that it can be mounted within fifteen minutes by one or two men.