THE UNITED STATES BATTLE SHIP INDIANA.

We illustrate the battle ship Indiana at sea, showing one of the three most powerful additions yet made to our navy, the war ships of the Oregon type. The Indiana, Oregon and Massachusetts are sister ships, the type taking name from the Western State. The three ships were authorized by act of Congress dated June 30, 1891.

The keel of the Indiana was laid at William Cramp & Sons' yard in Philadelphia in 1891, and the vessel was launched February 25, 1893. The general dimensions are as follows: Length on load water line, 348 feet; width, 69 feet 3 inches; draught, 24 feet; displacement, 10,200 tons. The engines of 9,000 indicated horse power, of vertical triple expansion type, drive twin screws. The coal room capacity is 400 tons, to which must be added a bunker capacity of 1,800 tons. The contract speed is fifteen knots, which was exceeded on the preliminary trial trip last March.

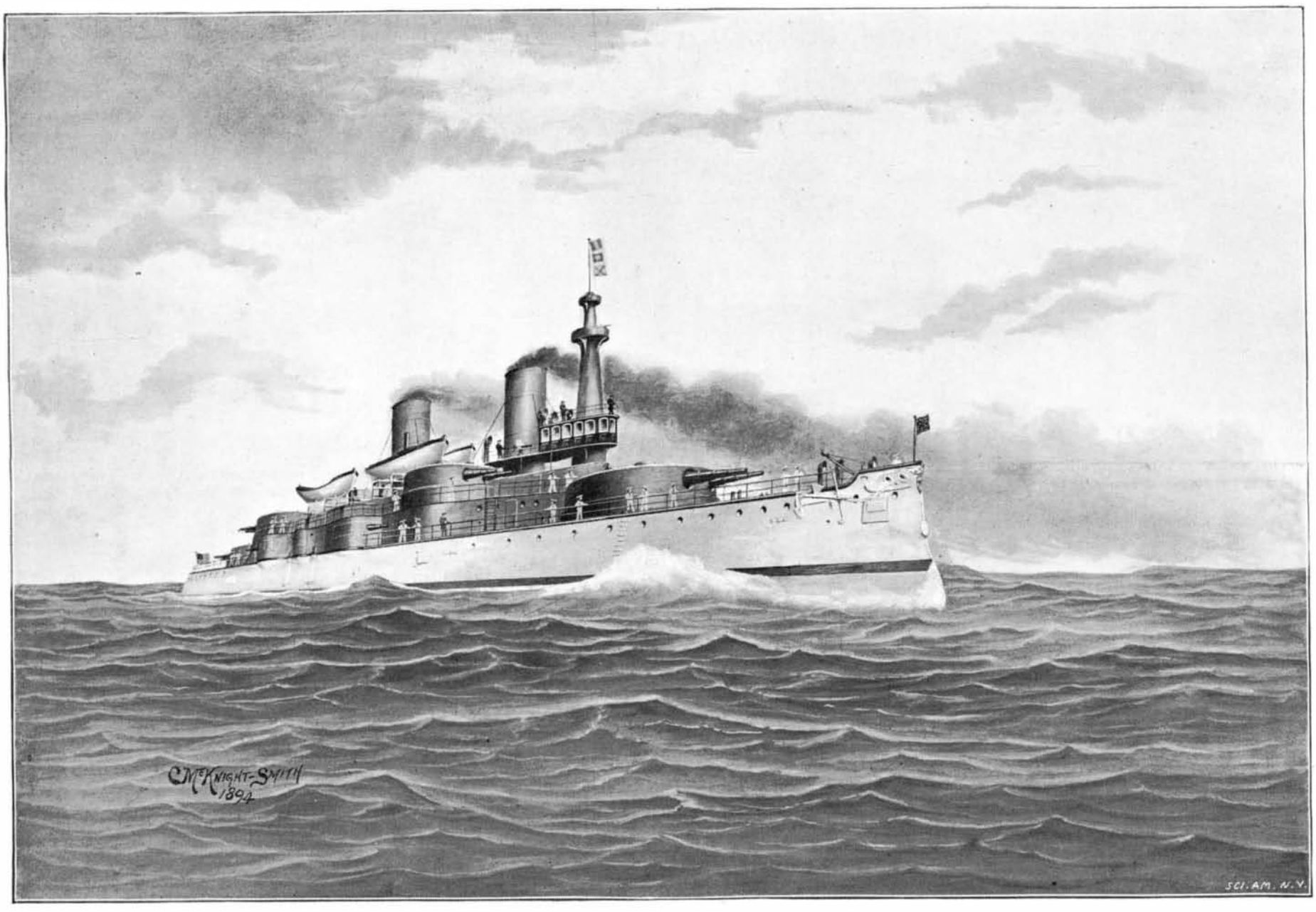
The armament consists of four 13-inch, eight 8-inch and four 6-inch breech-loading rifles, with a secondary battery of twenty 6-pounder and six 1-pounder rapid-firing guns and four Gatling guns.

The ship is very heavily armored. Her side plates are 18 inches thick. The main battery is fought from large and small turrets, surmounting low barbettes. The large turrets are 15 inches thick, and their barbettes are 17 inches thick. The smaller turrets are 6 inches thick, with 8 inch and 6 inch barbettes. The deck, of 2¾ inch steel, is flat. The ship is to carry a crew of 400 men. The contract price was $3,020,000.

The bow protruding below the water line constitutes a ram which adds to the ship's powers. On the preliminary trial trip alluded to, a speed of 14·02 and 14·12 knots was attained on natural draught at 122 revolutions, and 15·6 on forced draught at 128 revolutions. These trials were made before the ship was down to her load water line. When in perfect trim, higher results are anticipated. The pitch of the screws used on the trial was 15 feet 3 inches; it is thought that screws of higher pitch may eventually be selected. The vessel turned through 180 degrees in five minutes.

The turrets are mounted by the new system within circular barbettes, the latter about three feet high. They are always ready for action, there being no joint to be loosened before they can turn, as in the older type deck turrets. The two main turrets are situated on the main deck, one forward and one aft of the superstructure, each containing two 13-inch guns. The 8-inch guns occupy four smaller turrets on top of the central superstructure, one near each corner. Six torpedo tubes and a fighting mast are provided. The ship is considered about as powerful as any vessel afloat.

The ship is furnished with a complete outfit of Blake pumps, including independent air pumps for the main condensers, main and auxiliary feed pumps, main and auxiliary fire pumps, bilge pumps and others.



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New Sugar Process.

The Barbados Herald says: Rolling mills have hitherto been the means universally employed for the separation of the saccharine from the cane, but under the most favorable conditions, and after double and even treble millings, from 10 to 13 per cent of the saccharine is still retained in the fiber, or, as it is called, megass.

The new machine is designed and patented by Mr. D. Drummond. The results of the most recent test cannot be got for some days, but in several preliminary trials the issue was of the most satisfactory description. With cane that had been cut for over two months the machine succeeded in extracting within less than 8 per cent of the total juice, and the megass, when analyzed by Dr. Clark, city of Glasgow analyst, was found to contain only 7 per cent of sugar.

Briefly, the process is as follows: The cane is cut into lengths of four or five inches, and passes, without being touched by hand, into a cylinder where it is crushed. When all the juice possible has been expressed by a powerful pressure, the megass is dollied and subjected to a steam bath in order to extract any juice left in the cells of the cane. The pure juice and the diluted juice are carried into separate tanks by suction pumps and the megass by a mechanical arrangement is discharged by the crushing cylinder, to be used as fuel. The whole of the operations of feeding, crushing, discharging and pumping are performed by one man. It is intended to make five different sizes of machines, capable of dealing with 5, 10, 15, 20 and 25 tons of cane per hour, and the largest does not occupy more than 8 feet of floor space. The advantages claimed for the machine, which is equally suitable for treating beet root, are: Complete extraction of the sugar at one operation; minimum risk of breakdown, as there is no gearing or revolving shafts, and that a number of machines can be worked at considerable distance from each other, from one hydraulic and steam installation.

American Armor Plates.

When, in June, 1887, after a careful inquiry by an official commission, our government found it necessary to place an order with European manufacturers for several thousand tons of armor plates for our new navy, the announcement was received by the public with expressions of ill-concealed disappointment and mortification. It was some compensation for this feeling when it was stated, almost simultaneously, that the government had also placed a large home order for armor plates with the Bethlehem works, under such conditions as would enable the company to secure the appliances and set up an adequate armor producing plant. It required over three years to bring this plant to effective working condition in turning out armor plates for battle ships, but the Bethlehem works have since, owing to improved processes, and by the use of a nickel steel alloy and the Harveyizing of the outer surface of each plate, turned out armor plates which already have the reputation of being the best made in the world. A practical testimonial of their excellence was afforded by a cable telegram received by the Bethlehem Company on the 15th ult., ordering, on behalf of the Russian government, the whole amount of armor needed for two new Russian battle ships, the Sebastopol and Petropavlovsk. The contract called for 2,080 tons of armor plate, which is said to be the largest single order ever put out in Europe, and means a full year's employment for all hands in the armor department of the Bethlehem works. The value of the order is estimated at between three and four millions of dollars, and the gratification of the successful bidders and of the public is heightened by the fact that the order was obtained over the keen rivalry of fourteen competitors, among whom were the leading armor plate manufacturers of England, France, Germany and Italy.

A Prize for a New Gas Burner.

The list of prizes offered for competition by the Committee of the Societe Technique du Gaz en France, which appears in the current number of the Journal des Usines à Gaz, contains an item of special interest at the present time. It is a prize of $2,000, to be awarded in whole or in part to the inventor of a new incandescent gas burner presenting some marked superiority over the burners now in existence. The burner is to be sent in before the 1st of April, 1895; but the committee will determine whether or not they will extend the time till the 1st of May, 1896.