THE "NEW ORLEANS."

On our front page will be found a spirited drawing, made from a photograph, of the "New Orleans," the new cruiser recently built at the Armstrongs, England, and purchased by the United States government from Brazil. The "New Orleans," as we pointed out at considerable length in our issue of March 26, is one of the finest representatives afloat of what is known as the protected cruiser class of warships. Vessels of this type are distinguished by great speed, a large coal-carrying capacity, enabling them to cover long distances without having to run into coaling stations, and by the comparatively light armor with which they are protected. They are entirely devoid of vertical side armor, protection against the entrance of shells into the vital parts of the ship being assured by a continuous deck of steel, which curves downward toward the bow and stern, and also toward the sides of the vessel, where it meets the side plating several feet below the water line. The space between the curved sides of the deck and the vertical plating of the ship is occupied by the coal bunkers, which are arranged along the side of the ship in the wake of the engines and boilers. The inclined steel deck in the case of the "New Orleans" is three inches in thickness, and this combined with six or eight feet of coal would serve to keep out all except the heavy rapid-fire shells of the enemy. A ship of this type never carries what are known as armor-piercing guns. She has no place in the line of battle, where she would be in danger of being sunk by a single shot from the big guns. The duty of the protected cruiser is to serve as the outlook, or eyes, of the fleet, keeping touch with the enemy and hurrying back to the main squadron as soon as she gets sight of the enemy.

The protected cruiser is supposed only to engage ships of her class or armed merchantmen which have been equipped with guns in the way in which it is intended to fit out the "St. Louis" and the "St. Paul." She must be swift enough to run away from the battleship, and swift enough to overtake and bring to an engagement vessels of her own class. Hence an up-to-date protected cruiser of the first class seldom has less than 20 knots speed.

The main dimensions, etc., of the "New Orleans" are as follows: Length, 330 feet; beam, 43 feet 9 inches; draught, 16 feet 10 inches; displacement, 3,600 tons. She is driven by twin engines of 7,500 horse power at a speed of 20 knots under natural draught. Under forced draught she attained a maximum speed of 21·05 knots per hour.

The armament is very powerful for the size of the ship. It consists of six 6-inch, four 4·7-inch and ten 2·24-inch rapid-fire guns, besides four 1-pounder Nordenfelts, four Maxims and two field guns for landing operations. Three above-water torpedo tubes are fitted, of which one fires right ahead, and one on each broadside. A very heavy fore and aft fire can be obtained, as two of the 6 inch guns are in shields on the poop and forecastle, and the other four are sponsoned well out, two forward and two aft. The 4·7-inch guns are carried in recessed ports, so as to be clear of the fire of the larger pieces. The ammunition is supplied through hoists worked by electric motors, and seven rounds a gun can be fired each minute. Four electric searchlights are fitted, one on a platform on each mast, and the others on deck. The ship is, of course, electrically lighted throughout.

An excellent feature of this vessel is that she is sheathed with wood below the water line and coppered. This will enable her to remain afloat for a great length of time without entering dry dock to be cleaned. The military masts are a conspicuous feature of the ship on account of their size and the double tops which they carry. In these tops will be located the deadly Maxims and Nordenfelts, whose duty it will be to repel torpedo attack and sweep the decks and exposed gun positions of the enemy.

The transfer of the ship took place at Gravesend, at the mouth of the Thames, England, when the ship was formally handed over by Commander Corres, of the Brazilian navy, to Lieut. Colwell, of the United States navy. The Brazilian flag was hauled down and the stars and stripes were run up, accompanied by a salute from the old fort at Tilbury, whose guns had not spoken for two centuries past. By the time this issue is in the hands of our readers the "New Orleans" will probably be in an American port.

THE LAUNCH OF THE UNITED STATES BATTLESHIPS "KENTUCKY" AND "KEARSARGE."

March 24, 1898, will always be a red-letter day in the annals of the United States navy, as having witnessed the launch of two of the most powerful ships of its first line of battle. The "Kearsarge" was released from the ways at 10:02 o'clock in the morning, and as the great ship began to move slowly down the ways, Mrs. Herbert Winslow threw the time-honored bottle of champagne against the bow, at the same time saying, "I christen thee 'Kearsarge.'"

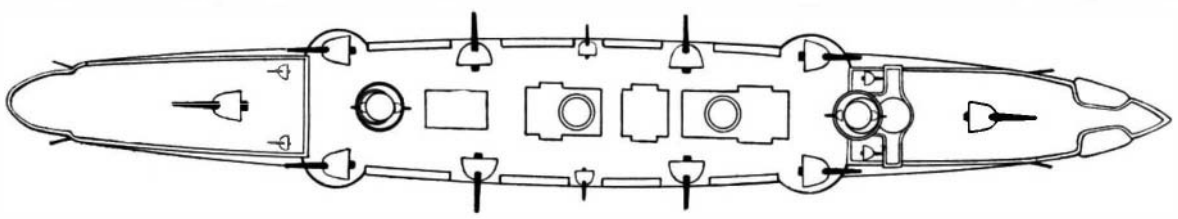
An hour and a half later, Miss Christine Bradley, on behalf of the Blue-grass State, whose name the ship will carry, flung a cut-glass bottle of water against the sister ship and gave her the name "Kentucky."

The two ships were built on opposite sides of a powerful traveling construction derrick, on ways specially prepared for them. They will be exactly identical and will form the most powerful pair of battleships in our navy.

The leading features of the two ships are as follows:

Waterline length	368 ft.
Beam	72 " 2½ in.
Draught	23 " 6 "
Freeboard forward	14 " 3 "
" aft	13 " 3 "
Displacement	11,525 tons.
Speed	16 knots.
Coal supply	410 tons.
Horse power	10,000
Armor nickel steel.	
Waterline belt	16½ in.
Side armor above belt	6 "
Turret armor	17 and 15 "
Barbette armor	15 "
Conning tower	10 "
Protective deck	2¾ "
Armament:	
Main battery	4 13-in. guns.
Submain battery	4 8-in. guns.
Secondary battery	14 5 in. R. F. guns.
	20 6-p'nd'r R. F. guns.

If it is compared with the "Indiana," it will be evident that the greatest change in the "Kentucky" is in the novel method adopted for carrying the 8 inch guns. In the "Indiana" there were eight of these disposed in four turrets, at the four corners of the central armored battery. By this arrangement it was hoped to be able to train four guns on either beam or directly ahead. In the gunnery trials, however, it was found that if these guns were fired direct ahead or astern, their blast rendered the sighting hoods of the 13-inch guns untenable. To prevent this "interference," as it is called, double-deck turrets were adopted. They constitute the most striking feature in these ships; nothing like it has ever been attempted before and it is not likely that it ever will be again. As far as the danger of interference is concerned, the device is likely to prove a success. The muzzles of the 8-inch guns project well beyond the sighting-hoods of the 13-inch gun turret below it, and no serious effects will probably be felt by the man stationed within them. It will be noticed, moreover, that the "Kentucky" will be able to bring the same number of 8-inch guns to bear in any direction as the "Indiana," that is, two ahead or astern, and four on either beam; in fact, owing to the inability of the 8-inch guns of the "Indiana" to be fired dead ahead or dead astern, the four 8-inch guns of the "Kentucky" may be said to be more efficient than the eight similar guns of the "Indiana." The great weight of two turrets and four guns with their ammunition is thus saved and can be put to other uses.



DECK PLAN OF THE "NEW ORLEANS."

Next to the turrets the most novel feature in these ships is the powerful broadside battery of fourteen 5-inch rapid-fire guns which it has been possible to substitute for the four 8-inch guns and turrets and the four slow-firing 6-inch guns of the "Indiana." This battery is shown in the engraving ranged within a central battery on the main deck between the two turrets. There are seven guns on each broadside, each gun firing through an arc of 90 degrees. Though the shell for the 5-inch gun weighs only 50 pounds as against 250 pounds for the shell of the 8-inch gun, so great is the rapidity of fire from the former gun, that three times the weight of metal will be thrown in a given time from the rapid-fire battery. The gunners will be protected by 6 inches of Harveyized steel.

On the deck above will be another battery of twelve 6-pounder guns, and eight others will be located forward and aft on the berth deck. It will be the work of these guns to repel the attack of the torpedo boats. A number of 1-pounders and Gatlings will be carried in the tops of the military masts for the purpose of sweeping the decks and other exposed portions of the enemy. It will be seen that the ship floats high out of the water. When her massive turrets, heavy guns and side armor are in place, together with her coal, stores and internal fittings, she will sink some 12 or 15 feet lower in the water.

Our engraving of the "Kentucky" is made from a photograph taken immediately after the launch as the ship was being towed to her berth. Just beyond her stern is seen the armored cruiser "Brooklyn," and in front of the bow of the "Brooklyn" is visible the flag flying from the stern of the monitor "Puritan."

An Electrician's Fatal Mistake.

Nelson W. Perry, a well known electrical engineer, who was formerly editor of our contemporary Electricity, died on March 27 at his home, from the effects of a poisonous liquid taken by mistake for water. The previous night he was experimenting with an incandescent gas burner which he had invented. On the table beside him were two glasses, one containing water and the other a solution of potassium bichromate. It was necessary from time to time to turn down the gas, and in one of the brief intervals of darkness he reached for the drinking water and picked up the wrong glass and swallowed a quantity of poison. He called for assistance and physicians were summoned, but death occurred the next evening. This lamentable accident should serve as a warning to our readers, who very frequently handle poisons, explosives or inflammable chemicals. All chemicals should be preserved in bottles, properly labeled and kept as far away as possible from medicines. In using poisonous chemicals it is always better to use beaker glasses or something which does not resemble the ordinary drinking glass. In working with inflammable chemicals the greatest possible care should be used to have the room well ventilated and have no open light. If possible, experiments requiring inflammable chemicals should be made only during the daytime. This will avoid most of the danger. During the last two or three years the number of accidents which have occurred to scientific men and inventors have been many and serious. Several lives have been lost, so that we do not consider our readers can be cautioned too often regarding the deplorable results of carlessness in experimenting.

Recruits from Cornell.

From a letter to Commodore Melville, Chief of Bureau of Steam Engineering, United States Navy, by Dr. R. H. Thurston, the writer states that there are a number of young men graduating from Cornell who are desirous of entering the navy. He calls attention to the fact that these men have had an exceptionally complete and practically valuable preparation for success in the navy, as they have had for four years a continuous and systematic course of instruction, training and practice in the workshops of the institution and in the laboratories. They have been systematically taught the science and practice of the art of machine designing and they have had considerable experience in its application to the designing of heavy machinery, principally the steam engine. They have in the mechanical laboratory of the department of experimental engineering learned to test all of the materials of engineering, and have conducted engine trials and boiler tests and are familiar with all the special apparatus of the engine, and its use is entirely and perfectly satisfactory in their hands. Dr. Thurston says these young men desire the privilege of giving to the nation their services. What is true of Cornell is probably true of other scientific schools in the United States, and it is gratifying to note there are so many fully equipped young men who desire to sustain the honor and prestige of their country, and the services of these highly educated young men will prove of the greatest possible value, should an emergency arise which would require them to act.

The Current Supplement.

The current SUPPLEMENT, No. 1162, contains several articles of interest. "Some Botanical Curiosities" describes the dragon tree of Teneriffe, from which we get the important resin named "dragon's blood." "The Restoration of Marienburg" describes the rebuilding of an interesting German castle. "The Laboratories of Cornell University" describes the modern laboratories equipped with the latest apparatus for teaching and conducting researches in bacteriology, pathology, histology, embryology, etc. "Tuberculosis and Vinegar" gives important facts as to the bacteriology of vinegar. "Linde's Method of Producing Extreme Cold and Liquefying Air" is a subject of an interesting paper, by Prof. Ewing, describing a novel process for obtaining extremely low temperatures and liquefying air. "Amateur Plaster Casts" describes simple methods of making plaster casts. This is an inexpensive amusement which may be enjoyed by every amateur. "Chinese Government Officials" describes the method of conducting business in the Celestial empire, including their famous civil service examinations. The "Speech of Hon. T. A. Jenckes in Defense of the Patent Office" ably sets forth the merits of our patent system.