

THE MAKING OF PICTURES IN WOOD.

Salem, Mass., counts among its residents a Mr. E. C. Larabee, whose peculiar art it is to make beautiful pictures from bits of wood, so skillfully that even a practised eye cannot always discover what material has been used. In the simplest method of constructing these pictures two panels of wood, a glass table which can be inclined at any angle, and a Fleetwood jig-saw are employed.

A pen and ink drawing of the picture to be reproduced is glued on a panel of wood $\frac{1}{8}$ of an inch thick. To the panel a wood backing of the same thickness is secured. Both pieces of wood are then sawed along the lines of the drawing. The sawed portions of the top piece are then removed, and the spaces thus formed are filled by the corresponding sawed portions of the lower panel. The finer the saw used, the less kerf will there be.

The reproduction of a picture in colors requires the most consummate skill. It is no mean task to arrange several hundred minute pieces of colored wood so that the tints will blend to produce the effect of an oil painting, without the slightest rigidity and without the faintest suggestion that wood has been employed. In order to secure a good effect, Mr. Larabee assures us that he has spent five hours seeking in his collection of rare woods a piece which was inlaid in five minutes.

The wood is not stained or in any way colored, but is employed in its native tints without any preparatory treatment. Much of the wood comes from parts of the world rarely visited by travelers. A certain sacred tree which grows in India and which formerly was employed only in the making of idols has furnished Mr. Larabee with many a precious bit. Rare woods from Cuba, Porto Rico, and the Philippines found their way into a portrait of President McKinley which now hangs in the White House. The "Parisian Street Musician" reproduced herewith is composed of many woods but little known. In the coat, for example, are pieces of Madagascar black ebony; the hat contains striped ebony from the River Congo; the trousers are inlaid with Alabama persimmon; the eyes are composed of English white holly; the cravat and cuffs consist of American maple; part of the vest is of gold and satin-colored babbool from India; the face and hands are of cream-colored olive-wood from Palestine; the shirt is made of cream quince from Massachusetts; the material of the violin-bridge is Cuban pepil; and parts of the trousers are made of ashen gray impee from Manila.

In making a picture ten by fourteen inches in size from four to six dozen imported Swiss saw-blades are worn out, and from six hundred to eight hundred pieces of wood, one-sixteenth of an inch in thickness, used. Often the sawing of the wood exacts the utmost patience on the part of the artist. Cocoabollo, for example, contains a gum which clogs the teeth of the saw so quickly that not more than six cuts at a time can be made. Some of the most beautiful woods are so rich in oil that they must be baked and partly dried in order that the glue may hold.

Governmental Supervision of Forestry.

During the past year considerable work has been

done in private tracts under advice from the Division of Forestry of the Department of Agriculture. In October, 1898, an offer was made to give advice and assistance to private owners in handling their woodlands. This year applications were received from owners in thirty-five States, and the total area covered with these applications was about 1,600,000 acres. Sixty students have taken up forestry as a profession under the instruction of the Division of Forestry, and they have been at work in the forests of the various



"A PARIS STREET MUSICIAN"—PAINTING REPRODUCED IN INLAID WOOD.

States during last summer, under the supervision of trained foresters. The results are of great value. All the expenses of the students are defrayed by the government while the men are in the field. The ultimate object is to prepare the students for service in the Forestry Division of the United States government. At the present time the call for experts is comparatively slight, but is increasing with great rapidity.

THE NEW ARMORED CRUISERS OF THE "CALIFORNIA" AND "MARYLAND" TYPES.

No feature of our latest naval programme shows more forcibly the impress of the lessons learned by our late war with Spain than the new armored cruisers now nearly ready for the bidding contractors. Our new battleships are typically fine craft and thoroughly up to date; but it is the armored cruiser that marks most sharply the pace we have cut out for ourselves. The armored cruiser, besides being the eyes and ears of the fleet, will take its place if need be in the line of battle. The "New York" was an advance upon her British prototype; the "Brooklyn" was

an improvement; but the "California" and her class are really second-class battleships with armored-cruiser speed, any one of which against the combined batteries now on the "New York" and "Brooklyn" could hold its own with a very fair prospect of giving the two other ships a pretty bad drubbing. Such is the rapid rate of naval development to-day. The six ships in question were provided for by the acts of Congress of March 3, 1899, and June 7, 1900, respectively, three ships being appropriated for at each time; and those of the earlier act are required to be sheathed and coppered, while the last three allowed for were not so specified. Should authority be given to sheathe and copper the latter vessels, the contractors must stand ready to do so.

The general dimensions of the sheathed and coppered ships are as follows:

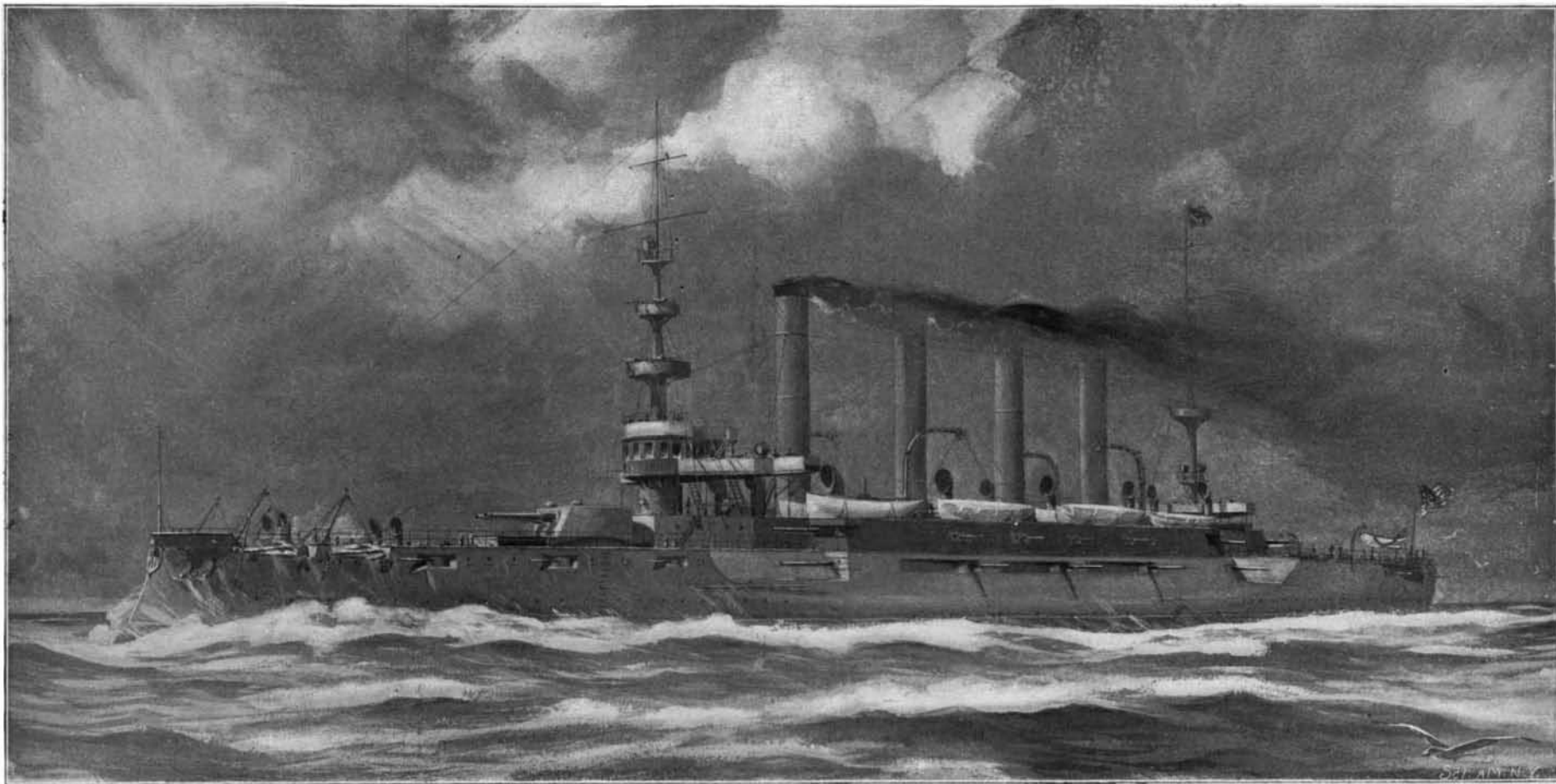
Length on load water-line.....	502 feet.
Beam, extreme, at load water-line.....	70 "
Trial displacement, about.....	13,800 tons.
Mean draught at trial displacement, about.....	24 feet 6 inches.
Greatest draught, full load.....	26 " 6 "
Coal carried on trial.....	900 tons.
Total coal bunker capacity.....	2,000 "
Feed water carried on trial.....	75 "
Speed not less than.....	22 knots.
Maximum indicated horse power.....	23,000

The only dimensional particulars in which the sheathed ships will differ from the others are a maximum beam six inches less and a lighter trial displacement by 400 tons; in other respects they are alike.

The ships will have the usual extensive bulkhead system and close water-tight subdividing common to all modern fighting ships, and the double bottom will be so arranged that a reserve supply of fresh water may be carried there. The ships will have both docking and bilge keels. The main deck will be the only wooden deck, the others being laid with linoleum; and the use of wood will be restricted to the last degree, all of that within the vessels being fire-proofed.

The fighting positions and the "vitals" will all of them be sheltered behind walls of Kruppized steel, and the arrangement of armor protection will be as follows: First, a water-line belt 7 feet 6 inches wide extending from bow to stern. The belt carries its maximum thickness $4\frac{1}{2}$ feet from the top down, whence it tapers to the armor ledge. For a distance of 244 feet amidships, the armor will have a maximum thickness of 6 inches and a minimum of 5; thence to the bow and to the stern the belt will have a uniform thickness, top and bottom, of $3\frac{1}{2}$ inches. For a distance of 232 feet amidships, above the water-line belt and up to the main deck, the sides will be reinforced by 5-inch armor; transverse bulkheads, turning inboard at the ends of this side armor, will complete the central casemate housing the ten 6-inch guns. These transverse bulkheads will be 4 inches thick. The protective deck will be continuous from bow to stern; on the flat it will be $1\frac{1}{2}$ inch thick and on the slopes 4 inches thick. Above this protective deck, a cellulose belt 3 feet thick will be worked along the sides from one end of the ship to the other. It is required that the water-line armor belt be so placed that at least a foot of it will be out of water at deepest load draught.

The armament will consist of: A main battery of four



Drawing by R. G. Skerrett.

NEW ARMORED CRUISERS OF THE "CALIFORNIA" AND "MARYLAND" TYPES.

Length, 502 feet. Beam, 70 feet. Displacement, 13,800 tons. Speed, 22 knots. Bunker Capacity, 2,000 tons. Armor: Belt, 6 inches; deck, $1\frac{1}{2}$ to 4 inches; gun positions, 6 inches. Armament: Four 45-caliber, 8-inch; fourteen 60-caliber, 6-inch; and eighteen 50-caliber, 3-inch rapid-fire guns; thirty smaller guns. Torpedo Tubes, 2 submerged. Complement, 829.

45-caliber, 8-inch, breech-loading rifles and fourteen 50-caliber, 6-inch, breech-loading rifles; and a secondary battery of eighteen 14-pounders, twelve 3-pounders, four 1-pounder automatic guns, four 1-pounder single-shot guns, two 3-inch field guns, two machine guns, and a half a dozen small caliber pieces for boat service. There will be two submerged torpedo-tubes, to be placed on the broadsides pretty well forward. The 8-inch guns are to be mounted in two balanced elliptical turrets on the main deck forward and aft of the superstructure. These turrets will be generally 6 inches thick with slanting faces $\frac{1}{8}$ inch thicker. The turrets are to be controlled electrically, and are to fire through arcs of 270 degrees. The rate of ammunition supply is one complete round of powder and projectile to each electric hoist every fifty seconds.

The four 6-inch guns mounted on the main deck are to be placed in sponsons at the four main corners of the superstructure, and are to fire through arcs of 145 degrees—the forward ones from dead ahead aft, and the after ones from dead astern forward. These guns are protected by 5-inch armor. The ten other 6-inch

will be of steel five inches thick. The pilot-house will be of bronze. All magazines are to be carefully insulated, and certain of them are to be chilled by the refrigerating plant. All are also to be easily susceptible of instant flooding.

Because of the extensive application of electricity, the ships will carry pretty large generating plants, having a total output from the seven units of 6,250 amperes at 80 volts—power enough to run all the ammunition hoists, work the turrets, drive some of the ventilating fans, run the machine shop, and furnish power for the steam laundry which is to do the major share of the officers' and crew's washing. Owing to the high freeboard of the ships and to the fact that it is carried uniformly from bow to stern, very excellent accommodations will be provided for the officers and enlisted men, of which the complement will consist of: 1 flag officer, 1 commanding officer, 1 chief of staff, 20 ward-room officers, 12 junior officers, 10 warrant officers, and 777 enlisted men, a total of 822 persons.

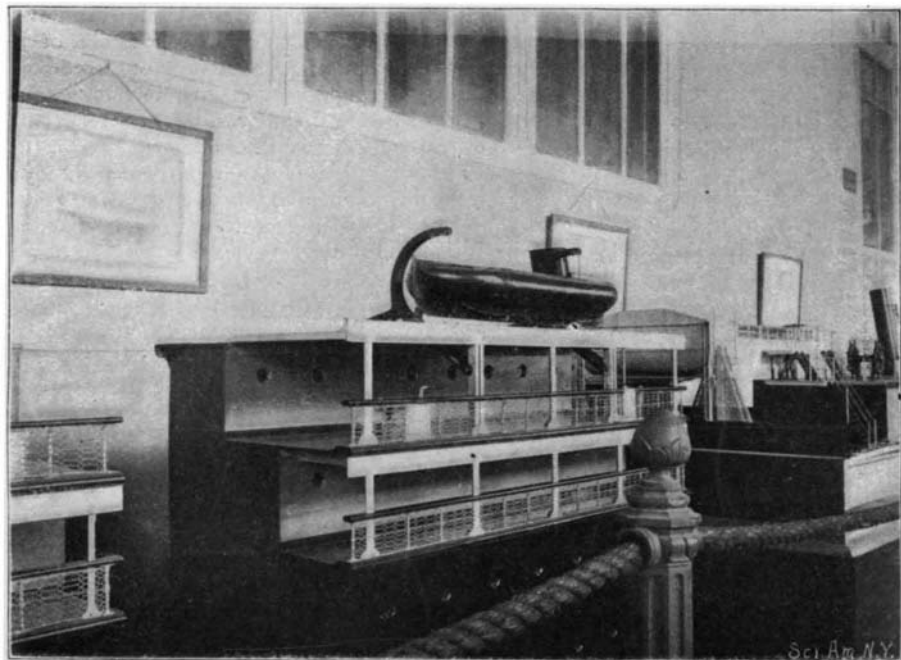
The ships will have twin screws, driven each by its own triple expansion engine of the four-cylinder type.

every care has been taken to minimize the consequences of accident or injury. Three years is the maximum time limit for construction, and the maximum limit of cost is \$4,000,000 in the case of the ships of 1899 and \$4,250,000 in the case of the ships provided for during the present year.

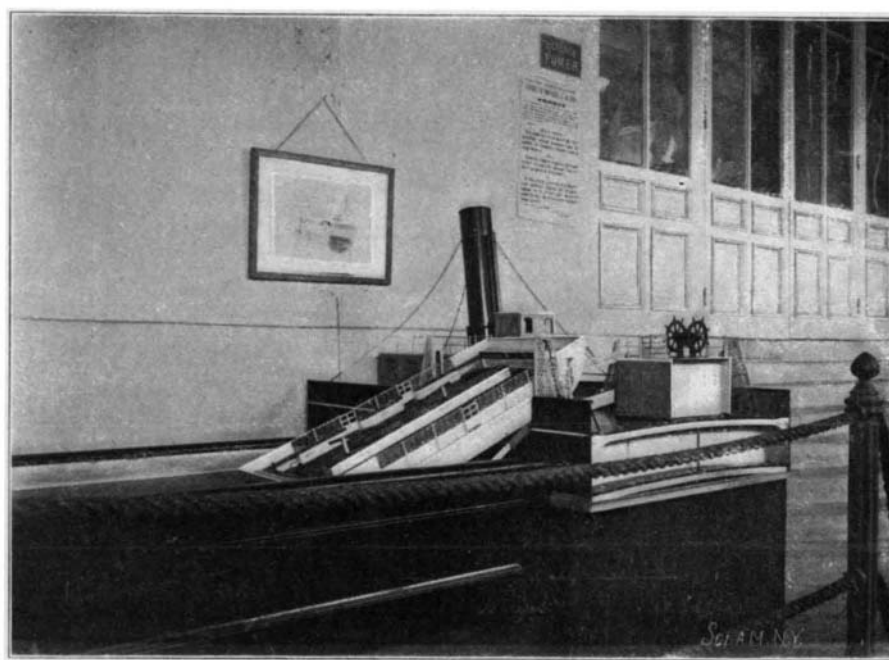
We have ample reason to be proud of these latest products of our naval designers; and in either peace or war they are bound to command a wholesome respect.

THE POLLAK PRIZE FOR LIFE-SAVING DEVICES.

The competition for the Pollak prize offered for the best life-saving devices brought together an extensive exhibit, which was contained in the Navigation building of the Paris Exposition. Mr. and Mrs. Pollak, of Washington, D. C., were among the passengers lost on the ill-fated vessel "Bourgogne," and their heirs decided to found a memorial prize of \$20,000 to be awarded for the life-saving devices which, in the opinion of a committee of experts, would be the most efficient in preventing such disasters or in saving the



The Roper System of Launching Lifeboats



The Roper Life-Raft in the Act of Launching.



Some of the American Inventions.



Individual Life-Saving Appliances.

COMPETITION FOR THE POLLAK PRIZE OF \$20,000 AT THE PARIS EXPOSITION.

guns, five on each broadside, are to be placed amidships on the gun deck—the forward ones firing dead ahead, while all the other guns on each side will have arcs of fire of 110 degrees, and will be arranged to house within the side line. These guns will be separated by $2\frac{1}{4}$ -inch splinter bulkheads. The ammunition hoists will be run by electricity, and are to supply each 6-inch gun with three complete rounds every minute. The 14-pounders will be mounted on the gun deck and up in the superstructure, two forward and three aft of the 6-inch battery on each side, and four on each broadside between the 6-inch guns up in the superstructure. The 3-pounders are to be mounted on the superstructure deck and on the bridges, while most of the 1-pounders are to fill the military tops. Each 14-pounder is to be supplied six rounds a minute, while the 3-pounders are to have ten.

The firing stations for the torpedoes will be sheltered from the reach of 6-pounders and lighter pieces, and are to be located above the torpedo tubes. The conning-tower, located at the fore end of the superstructure, will be of steel 9 inches thick, and the signal tower, located at the after end of the superstructure,

The high-pressure cylinders will be 36 inches in diameter, the intermediate-pressure cylinders will be 59 $\frac{1}{2}$ inches in diameter, and the two low-pressure cylinders of each engine will be 69 inches in diameter. They will have a common stroke of 45 inches, and the engines will make about 133 revolutions when developing the maximum indicated horse power of 23,000. Steam will be supplied by 80 boilers of the straight-tube water-tube type placed in 8 water-tight compartments. They will have a combined grate surface of at least 1,590 square feet and a total heating surface of quite 68,000 square feet. The four funnels will rise 100 feet above the grate bars. The normal reserve of fresh water will be 150 tons—just half of that carried on trial, and, excepting coal, the trial displacement will call for two-thirds of all other stores.

The ships will carry ammunition enough to put up a good long fight; 500 rounds being allowed the 8-inch guns, 2,800 rounds for the 6-inch guns, 4,500 rounds for the 14-pounders, 6,000 rounds for the 3-pounders, and a pretty liberal supply for the rest. Provision is to be made for closing many of the water-tight doors automatically, i. e., from a single controlling station, and

passengers in case of shipwreck. Circulars were issued by the United States government stating the conditions of competition, and the Paris Exposition was selected as the most appropriate place for the assembling of a collection of this kind. The French government and the different foreign commissioners also issued circulars in their respective countries calling for inventions of this nature. As a result, more than four hundred competitors from Europe and America sent models of life-saving devices, or plans and descriptions, and these were seen in the Navigation building, near the Seine. An international committee of naval experts was appointed, including prominent naval officers or constructors from different countries, among whom may be mentioned Lieutenant Sims, late United States naval attaché at Paris; Commander Clavaud, director of the French life-saving society; Captain Sigel, German naval attaché at Paris; Rear-Admiral Naoumoff, chief inspector of the Russian life-saving society; Signor Pasella, naval constructor, professor at the Italian school of naval architecture; M. Couvert, president of the Chamber of Commerce at Havre; Captain Wallenberg, of the