

**UNITED STATES STEAMSHIP IOWA.**

In the battleship bearing the above name the United States government will possess a vessel of great power and endurance, fully able to cope with any vessel of her size afloat. She was designed by the Navy Department to meet the requirements of the naval appropriation bill of July 19, 1892, calling for a battleship of about 9,000 tons displacement and not to exceed a cost of \$4,000,000, the size and cost being based upon the United States steamships Indiana and Massachusetts now building. The preparation of the design was intrusted by the Secretary of the Navy to Commodores Wilson and Melville, and so well have they performed the task that a vessel 1,000 tons larger than the Indiana is to be built within the same limit of cost. The dimensions of the Iowa are as follows:

Length on load line .....	360 ft.
Beam extreme .....	72 " 2½ in.
Mean draught .....	24 "
Displacement .....	11,296 tons.
I. H. P. ....	11,000
Speed, in knots, per hour .....	16
Coal bunker capacity .....	2,000 tons.

The main battery consists of four 12-inch breechloading rifles and eight 8-inch breechloading rifles mounted in turrets. The 12-inch gun turrets are armored with solid steel plates of 15 inches thickness, and the 8-inch guns are protected by armor of 8 and 5½ inches in thickness. All this armor is treated by the Harvey process, which gives the plates a casehardened surface, gradually shading off to a soft back.

The secondary battery is made up of six 4-inch rapid-fire breechloading rifles. These rifles throw a shell weighing thirty-six pounds, and are capable of being fired ten times per minute. These guns are protected with light armor against machine gun fire, and are disposed so as to have as great a range of fire as possible. The auxiliary battery consists of twenty 6-pounder and nine 1-pounder machine guns, with six torpedo tubes.

The protection to the hull and machinery is afforded by a steel belt of 14 inches maximum thickness, covering over seventy per cent of the load line. This belt extends from 4 feet 6 inches below the load line to 3 feet above it. Above this belt to the main deck bevel between the 12-inch gun turrets, a belt of 4-inch armor is worked to cause shell loaded with high explosives to break up before entering the vessel. On top of the 14-inch armor a horizontal deck 2¾ inches thick is worked, and from the ends of the side armor to the extremities of the vessel a similar deck 3 inches in thickness is provided. Above the armor decks, belts

of cellulose to prevent the inrush of water in the event of the vessel being injured are provided. The hull is built on the cellular system, with inner bottom, and great attention has been given to the subdivision of the vessel into a large number of watertight compartments, each provided with its own means of pumping and draining.

The machinery and boilers are arranged in six watertight compartments. The engines are of the inverted,

torpedo nets reaching from water line to keel are ready to receive the torpedoes discharged.

**HOW TO COLOR LANTERN SLIDES.**

BY GEO. M. HOPKINS.

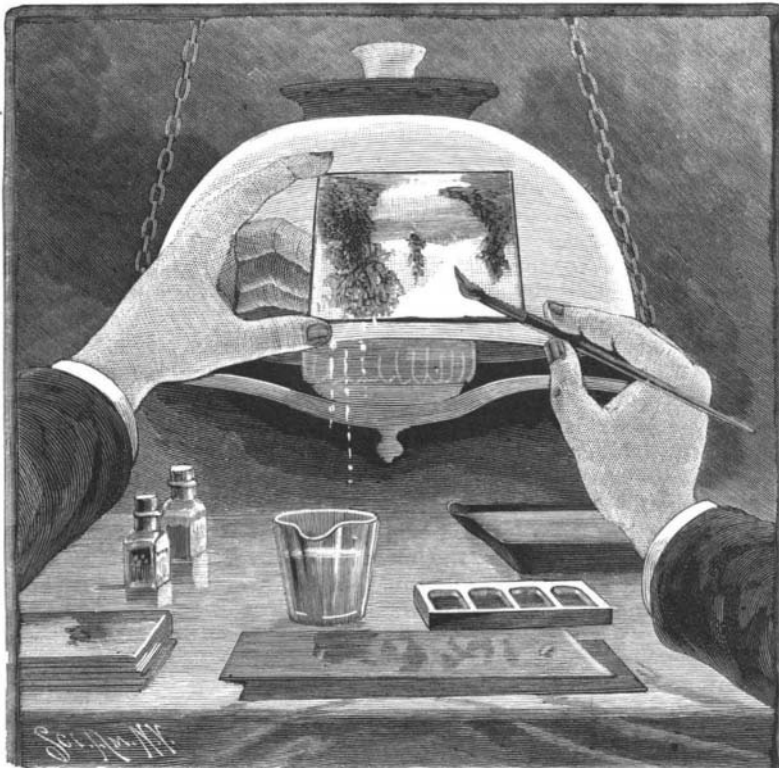
Nothing is more interesting and satisfactory to the amateur photographer than to place upon the screen, by means of a good lantern, the results of the summer's work; and, while it may be questioned whether anything can be more desirable for projection than a really first-class, well-toned lantern slide, yet experience proves that the majority of people who enjoy an evening with the lantern are pleased when a well-colored slide is shown.

A suitable subject carefully printed and artistically colored, when reflected from the screen, strongly resembles a huge water color picture, the great difference between such a picture and a water color being a superabundance of detail, which is inherent in photographic pictures and which is not desirable in a water color. A photo. can be made which will answer admirably for coloring which would not be satisfactory as an uncolored picture. Such pictures are taken through a large diaphragm or with full opening. The foreground is made sharp, while the middle distance and distance are softened down by being a little out of focus; however, it is not advisable to try to make negatives expressly for colored pictures.

The print for coloring should be moderately light and without great contrasts. Inky shadows are to be avoided, and it is well to vignette off the distance to give atmosphere. The sky should be transparent, unless cloud effects are to be shown. While specks, pin holes, and lint are very damaging to an otherwise fine lantern slide, they entirely spoil a picture for coloring. In a picture well broken up, as in a woods

scene, where little sky appears and when there is no placid water, these small defects do little harm; but in a sky or in a clear lake or pond, they can never be concealed or removed so as to be unnoticed, so that the first requisite for a good colored lantern slide is a good print of the proper intensity, and with transparent lights. The second requisite is a knowledge of colors and coloring, and the third and last thing needed is an assortment of colors and brushes.

With regard to the slide itself, it might be mentioned in passing that anything which tends to harden the film in developing, fixing, or after treatment interferes with the free working of the colors. For instance, alum in the fixing bath, intensifying and re-

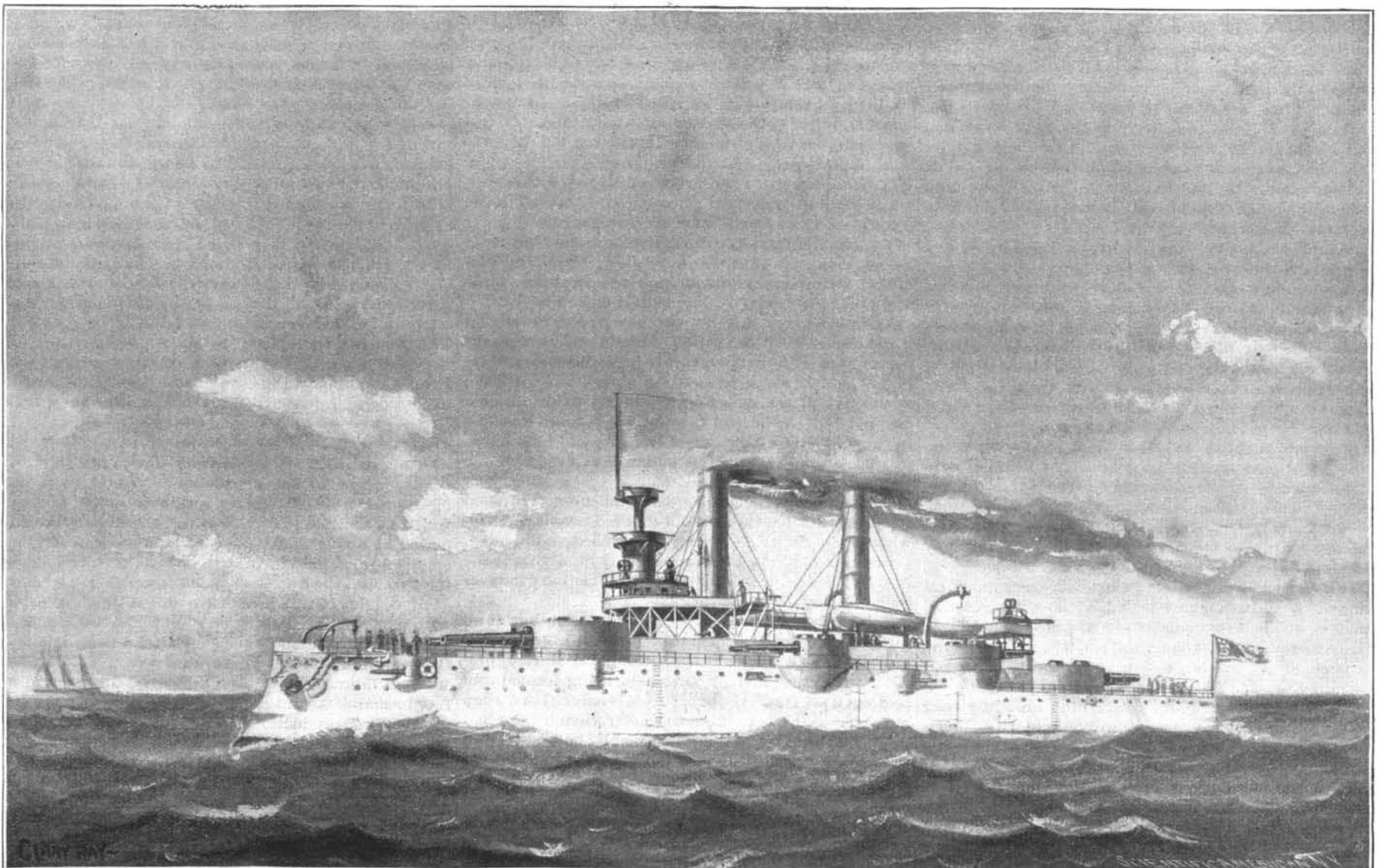


**LANTERN SLIDE COLORING.**

direct-acting, triple-expansion type, driving twin screws. The smoke pipes are in height 100 feet above the grate bars, and the performance of the boilers under natural draught is expected to be a great improvement over boilers in existing naval vessels.

The ventilation and incandescent lighting plants of the vessel have been especially studied, in order to insure comfort and health to all on board.

Electric search lights of great power are provided, capable of lighting up a zone about the vessel through which no torpedo vessel can pass unnoticed, and the machine guns are so disposed as to bear upon all portions of this zone, and should a craft by any means get through this area of light and gun fire, stout



**THE UNITED STATES BATTLESHIP IOWA—9,000 TONS, 11,000 H. P.**