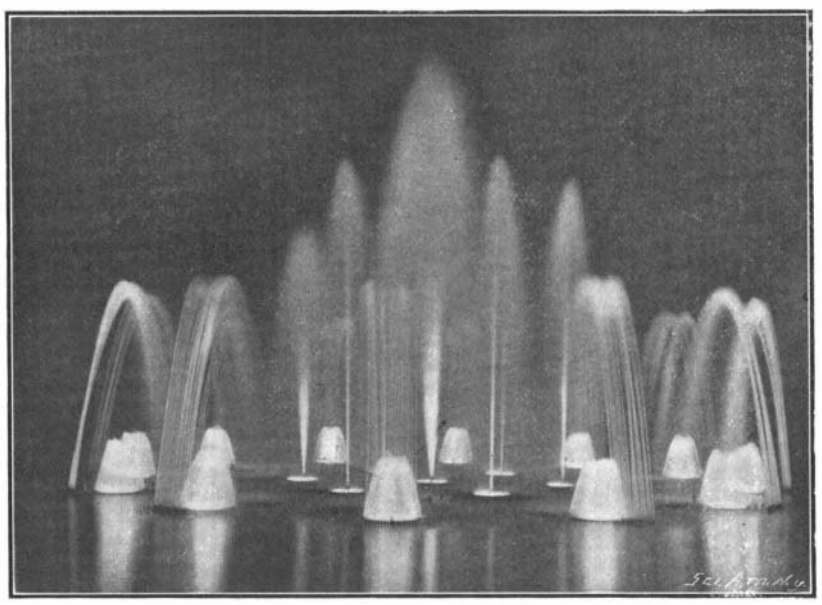
ELECTRICALLY ILLUMINATED FOUNTAINS.

Of late years the electric illumination of fountains has been carried to such a point that the best of them form a spectacular display, which will continue for two hours before the series of designs which can be formed is exhausted. A fountain was recently erected in Philadelphia, which shows over fifty different designs illuminated in various colors by the system of illumination employed. As an amusement feature, these displays have proved very attractive, and city authorities as well as owners of private parks have gone to considerable expense in securing them. In Prospect Park, Brooklyn, a fountain is in operation, which cost $25,000.

In planning the electric fountains, the basin to contain the water is constructed of stone or concrete in the usual manner, except that portions of the bottom are covered with glass. The electrical apparatus is usually located in a chamber beneath it. The chamber is connected with the surface by an underground passage, which is also used as a conduit for the electric cables. The wires of the cables connect with a stand, or switchboard, containing a series of electric buttons, and extend to lamps of both the arc and incandescent type, placed in the various pipes or funnels, through which the water is forced. The lamps are protected from the water by panes of colored or clear glass, some of them being covered with a set of movable panes which can be swung or whirled by the use of compressed air. Arc lights are utilized for the general illumination, and their rays are intensified by movable reflectors, so that beams can be thrown upon the upper or lower part of the water and at any angle desired. The buttons are colored to represent the tint desired in the illumination. For instance, the operator presses a red button when he wishes to introduce light through the red glass, a yellow button when it is desired to give a yellowish hue, and a green button when it is desired to give a green tint, etc. The designs in water are created by the shapes of the pipes through which it is thrown into the air, and by the arrangement of the holes in them. A conduit supplying a one-inch stream may have its nozzle pierced with holes in the shape of a star, an umbrella, or open to form a single jet, as desired. If its stream is to be thrown vertically into the air the pipe is, of course, placed in a vertical position. If it is to form an angle, the position is varied accordingly. As the larger fountains may have several hundred pipes arranged in various positions in the basin, an idea can be gained of the combinations. The water is conducted from the reservoir or pumping station to the fountain by underground conduits in the usual manner. Valves are set in the conduits and in the smaller pipes, and are connected with the operating chamber in such a manner that each is controlled merely by the pull of a lever. The set of levers is arranged somewhat similar to the apparatus in a railroad block signal station. In planning the display, the piping and wiring are, of course, installed to allow the use of single jets and combinations, and the introduction of colored illumination, as desired. This must all be arranged in advance, as the pipes and wire cables are generally inclosed in concrete, or other waterproof material, after being connected with the various funnels and jets beneath the basin.

Such is the simplicity of operation that only two men are required—one to work the levers, and the other the buttons. A small window of thick glass allows them to note the water formation from their stand in the underground chamber. When the time for the display arrives, the electrician takes his place at the switchboard, and gives his orders to his assistant. The latter pulls the lever he indicates. As soon as the column of water appears, the electrician illuminates it by pressing a button on the switchboard. If it is a single jet, it is allowed to play for two or three minutes; then several others are added by another pull of the lever. It remains illuminated by the white light until the electrician presses another button and the tint is changed. Different effects are produced in the same manner. As already stated, the combinations which can be arranged are really remarkable in their extent. The Brooklyn and Philadelphia fountains, which were designed by Mr. F. W. Darlington, of Philadelphia, display umbrellas, various flowers, sheaves of wheat, globes of liquid, and spiral columns which writhe in the air like snakes. At Willow Grove Park, Philadelphia, the arrangement is such that a cascade can be formed in the shape of a fan extended. This constitutes a background, or curtain, on which colored pictures are thrown by means of a stereopticon, giving a novel, yet beautiful, effect.

The quantity of water required varies from a few thousand gallons an hour to as high as 100,000 gallons in the larger fountains. A pressure of from 125 to 150 pounds to the inch is required for the more elaborate displays, and usually the supply is forced to the fountain by a powerful steam or electric pump. There is no necessity for waste, as the water can be forced back to the pumping station or reservoir and used over and over if desired. An electric current of 500 volts is usually sufficient for the illumination. For the larger fountains it is sometimes generated in an individual station, but when they are set up in pleasure grounds owned by street railway companies, or in cities where the municipal authorities have their own electric light plant, the current can be carried from the central station by means of the cable system.



ELECTRIC FOUNTAIN EFFECTS.

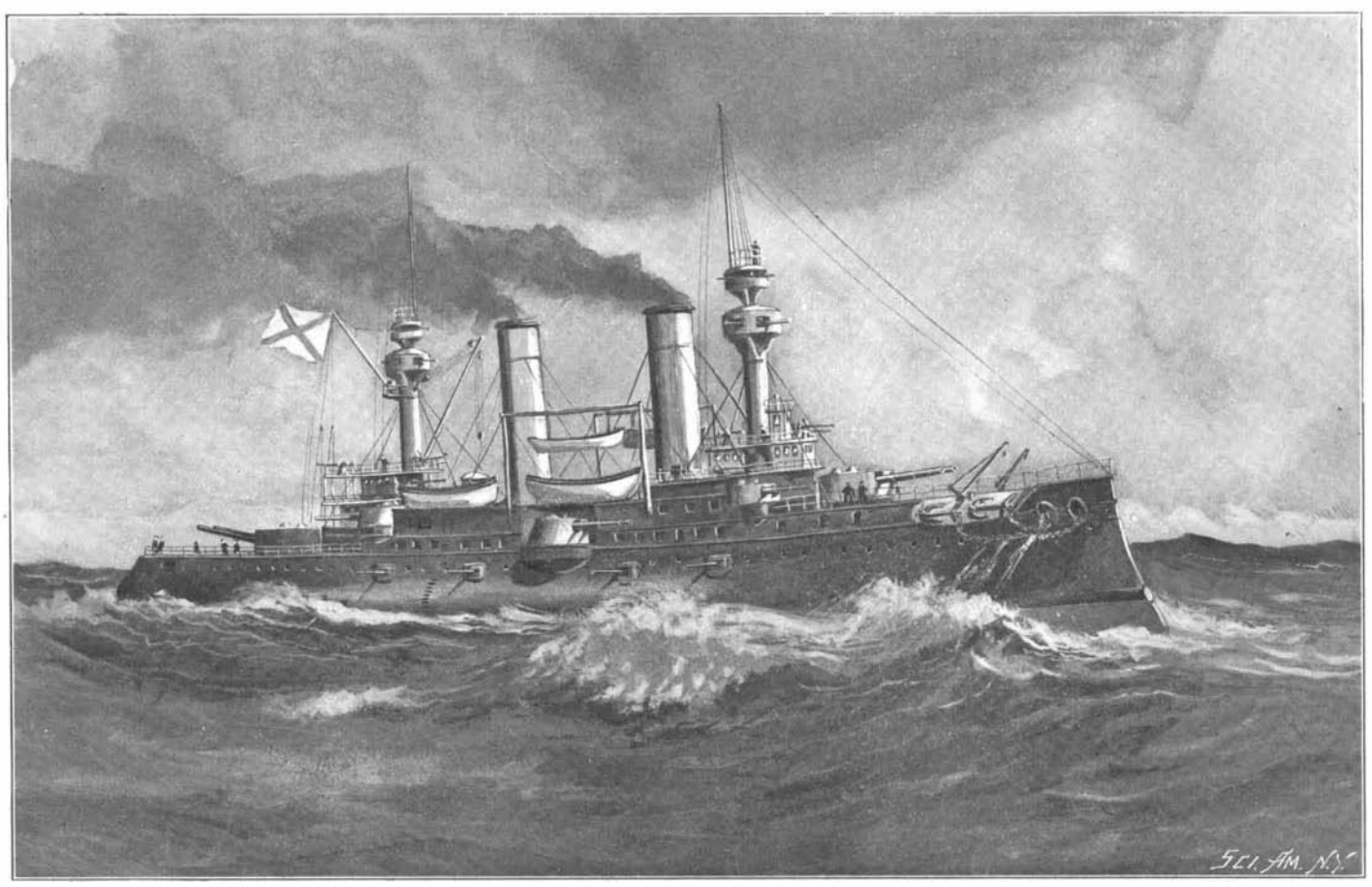
THE NEW RUSSIAN BATTLESHIP "CZAREVITCH" AS SHE WILL APPEAR WHEN COMPLETED FOR SEA.

The sudden effort at expansion in which the Russian navy is just now engaged has led to orders for the building of new battleships and cruisers being distributed in a large number of different places and countries. Like America, France has come in for her share in this business, and one of the most important warships now under construction for the Russian navy in that country is the "Czarevitch," which is being built at the well-known yard at La Seyne, near Toulon, belonging to the Forges et Chantiers de la Mediterranée.

This ship, when complete, will be a big armor-clad of 13,000 tons displacement, bids fair to be a very formidable ship of war, and has that somewhat "ferocious" appearance for which French battleships are conspicuous. Her masts, heavy, castelated, and bristling with guns; her tumble-home sides; her high superstructure and numerous "tourelles," or turrets, all contribute to impress the onlooker with the idea of war-like power. This appearance, like others, is, however, not infrequently somewhat deceptive, but in the present case cannot be considered so, as both in offensive and defensive equipment the "Czarevitch" is extremely well provided.

Her armament consists of four 12-inch guns, twelve 5.9-inch rapid-firing guns, twenty 12-pounders, twenty-pounders, six 1-pounders, and a couple of 2-pounders, or sixty-four guns in all, equaling the number carried in the old sailing battleships of the early part of the century. Her defensive armor is of considerable area. In the first place, she has a complete belt of armor having a maximum thickness of 9 inches, and upper and lower armored decks, while all her heavier guns are placed in barbette turrets, the heavier of which, containing the four guns forming her principal armament, are 11 inches thick in the turrets, and 10 inches in the barbettes. The hoods of the six turrets containing the twelve rapid-firers of her secondary armament are 6 inches in thickness on barbettes of 5-inch plating.

The "Czarevitch" is provided with



NEW RUSSIAN BATTLESHIP "CZAREVITCH."

Displacement, 13,000 tons. **Speed,** 18 knots. **Armor:** Belt, 9 inches; gun positions, 10 and 11 inches for main battery, 5 and 6 inches for secondary battery. **Armament:** Four 12-inch; twelve 6-inch rapid-fire guns; twenty 3-inch; twenty 3-pounders and 8 smaller guns. **Torpedo Tubes,** six. **Complement,** 700. **Date,** 1901.