

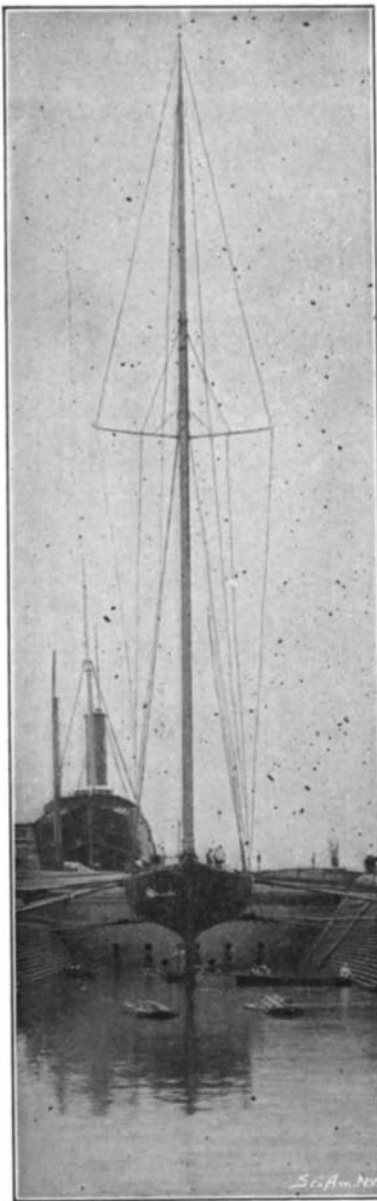
try still continues disturbed, rendering retail trade impossible, with the result that all importers have large stocks on hand. Exports are suffering from the continuance of warlike operations. Owing to the insecurity of life in many sugar-producing districts, owners of properties have not in many instances been able to visit their estates and, therefore, plant crops, the consequence being that in this and the Visayas districts the arrivals of sugar are trifling compared with those of past years."

THE ELEVENTH CHALLENGER FOR THE AMERICA CUP—"SHAMROCK II."

When the under-water form of "Shamrock II." was laid bare in the Erie drydock, two facts were at once made evident: First, that G. L. Watson has designed an entirely original boat; second, that the much-talked-of towing experiment in the Denny testing tank were evidently responsible for the most striking departures in her lines from what might be called the orthodox form of a 90-foot racing cutter. It may further be stated, without much fear of contradiction, that with the exception of a certain fullness in the sections from about the wake of the mast forward for several feet into the overhang, she has the most refined form ever seen in a Cup challenger, not even excluding that beautiful creation of the Herreshoffs, "Columbia." Her afterbody, from the point of greatest beam, which lies not very far aft of the shrouds, to her narrow and shallow stem, has been refined to a degree which makes one ask how it can ever be possible for the boat to carry her great spread of 14,500 square feet of canvas; particularly as the peak of her club-topsail will be 175 feet above the waterline. Yet, carry it she does, and shows a stiffness, moreover, that is greater, if anything, than that of her predecessor "Shamrock I."

The accompanying end-on view of the yacht, which was taken from a point about 300 feet distant, and slightly below the level of her water-line, conveys a closely approximate idea of her midship section. It will be seen that Watson has returned somewhat to the midsection which distinguished his two most successful boats, "Queen Mab" and "Britannia." There is not the slightest suggestion of the high bilges of the scow form, as seen in "Independence," nor is there the comparative hardening of the bilges, as seen in "Columbia," and even more markedly in the Herreshoff 70-footers of last season. So easy, indeed, are the bilges that we have to go back to "Defender" to find their like, and they round into the broad sweep of the freeboard curve at the fin with a true reverse curve, without so much as a suggestion of a straight line in the floor. These features, taken with the rather full and round sections toward the bow, the finely-drawn-out run and quarters, and the easy curve and great length of the diagonals, point toward a form that will be easy to drive at the higher speeds, and will show but little of that wave-making tendency which was a marked fault in "Valkyrie III." and "Shamrock I." The model is distinctly original, and, as we have said, bears upon it the mark of the towing-tank. We venture to say that the model of the boat will commend itself at the very first glance to any naval constructor who may chance to see the "Shamrock" in dry-dock.

While the body of the boat would suggest great speed in fresh winds, particularly in running and reaching, we think that she will not prove to be relatively so speedy in light airs. It is surprising to find that the lateral plane shows an area of fin that is at least as large as that of "Shamrock I." Watson and Fife are reported to have collaborated in the production of this yacht, and so striking is the likeness in depth and length of fin, and in shape of bulb, that one could almost believe, were it not for the utter dissimilarity of the body above, that one was looking once more at "Shamrock I." In view of the splendid weatherly qualities of "Columbia," whose keel is several feet shorter, one would have expected Watson to have reduced his lateral plane, and so saved some 80 to 90 square feet of wetted surface. Of course, a long keel means a low center of gravity of the lead, with a proportionate increase in sail-carrying power; and the good results are seen in the ease with which "Shamrock II." carries her club-topsail in a fresh breeze. In lighter winds area of wetted surface becomes a factor of greater importance than ease of form, and in winds of 8 knots' strength and less we look for "Shamrock II." to show to less advantage. The dimensions of the hull are: Length on deck, 137 feet;



End-on View of Shamrock II. Showing Midship Section and Lofty Rig.

beam, 24 feet; draught, 21 feet 3 inches. The sail-plan of the new challenger is relatively narrow in proportion to its height. The steel pole mast of the "Shamrock" measures 158 feet, 8 inches over all, and buries 8 feet 8 inches in the hull, thus making the height from deck to truck 150 feet. As the club-topsail extends 20 feet above the truck the peak of that sail will be 175 feet above the water-line; and if the yacht were ranged alongside the Brooklyn Bridge its club-topsail would extend 40 feet above the roadway! Compared with its height the sail-plan will have a comparatively narrow base, the boom being exactly 102 feet 9 inches long, and the bowsprit 30 feet outboard.

Compared with "Shamrock I." the new yacht has a foot less beam, a few inches less draught, less displacement, less wetted surface, and over 10 per cent more sail area. She is also lighter in construction. In her earlier trials against the older boat she failed to show any marked superiority; but in her later trials she seems to have "found herself," and has beaten the Fife cutter under any conditions of wind and sea.

A NEW LUMINOUS FOUNTAIN.

A recent number of the Transactions of the French Academy of Sciences describes a very ingenious

luminous fountain which owes its invention to Gustave Trouvé. Luminous fountains have been not the least attractive feature at every international exposition held since 1889. In a few public parks of American cities and in certain places of amusement abroad such fountains have been permanently installed. But it is safe to say that the great majority of people have never seen a luminous fountain. It is for these less fortunate ones that M. Trouvé has devised a portable apparatus which can be set up in a house and made to spurt streams of light which seem like luminous water.

In order to overcome the difficulty of installing a system of water pipes—a difficulty which has hitherto prevented the general introduction of luminous fountains—Trouvé decided to dispense with water altogether and to secure the effect of falling drops by means of grains of wheat, barley and rice and by means of small balls of colored celluloid. The rice and the celluloid proved most effective.

In its general construction the apparatus includes a sheet-metal cylinder, the raised bottom of which is provided with a number of incandescent electric lamps. Through an opening in the center of this bottom a blow-pipe extends. Within the upper portion of the cylinder a receptacle is supported communicating with the blow-pipe and resembling in form an inverted mushroom, the stem of which constitutes a chimney-like passage for the escape of the wheat grains or celluloid balls contained in the receptacle. When air is forced through the pipe the grains or balls are blown up through the hollow stem to a considerable height, only to fall back again into the receptacle.

In order to impart to the contrivance the appearance of a fountain the cylinder is provided with radiating bamboo rods, upon which a green fabric, properly draped, is hung. This artificial basin can be adjusted at any angle to the cylinder and serves the purpose of receiving the balls blown through the central stem or nozzle, so that they may roll back to the receptacle in order to be discharged again.

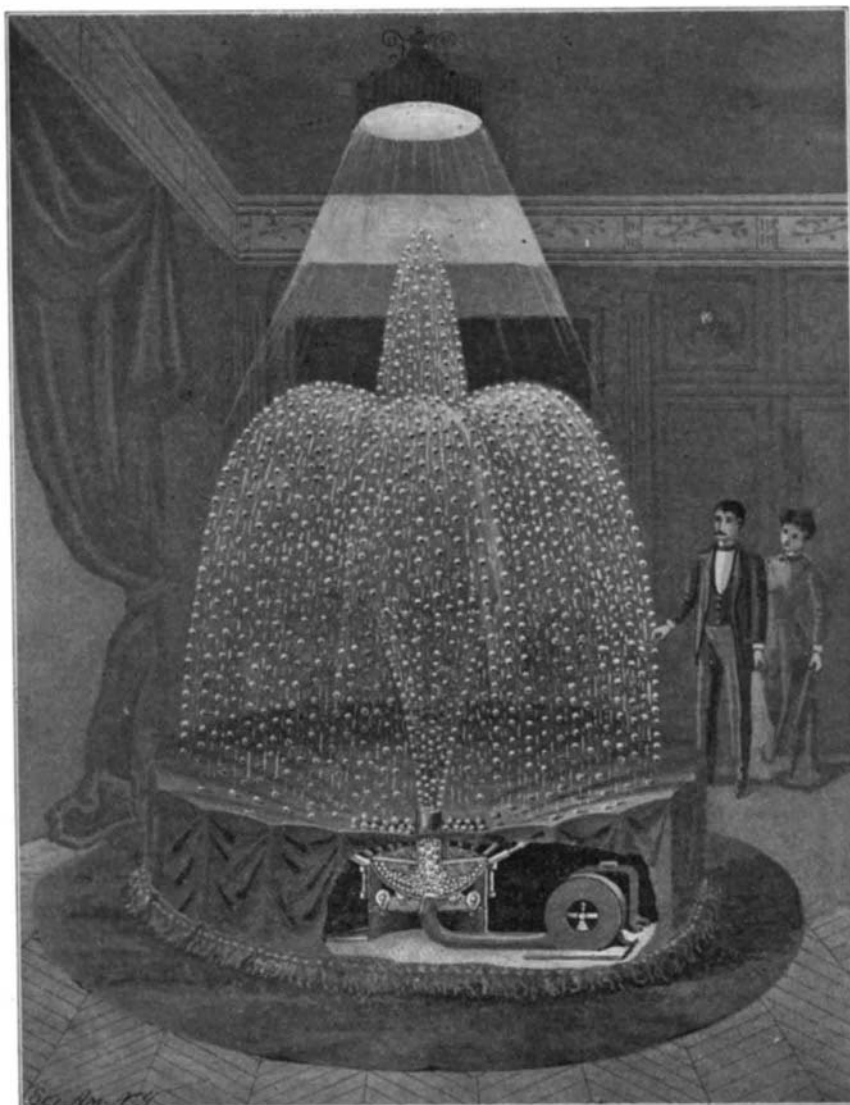
Light is thrown down upon the fountain by incandescent lamps mounted in a reflector secured to the ceiling. The polychrome effect produced by the beams reflected by the balls is exceedingly picturesque and decidedly illusory.

A New Rangefinder.

A new rangefinder, invented by Prof. G. Forbes, F.R.S., was on view at the Bisley rifle meeting, says Nature. The want of a rangefinder that is portable and workable, that has not more than 2 per cent inaccuracy at 3,000 yards, and that does not require a telescope so large as to require a stand, is much felt in infantry work, especially with maxims. All these conditions, says The Times correspondent at the meeting, are met by the one in question. It consists of an aluminium base, 6 feet in length, which can be folded in the middle and strapped across the back, and a field-glass carried in the usual fashion. The base is a square tube, hinged at the middle. Each half has at each end a doubly-reflecting glass prism. The rays of light from a distant object strike the outer pair of these four prisms, are reflected at right angles along each tube, and are then reflected at the two middle prisms into the two telescopes of the binocular, which can be easily fixed to the center of the base when in use in directions parallel to the original rays intercepted by the outer prisms. By the measurement of the angle between these rays the distance of the object looked at is determined. This angle is measured by two vertical wires, one in each telescope, seen by the two eyes. One of these wires is fixed, the other moved by a micrometer screw until the two wires appear as one at the same time that the object is seen distinctly. The instrument gives the distance, in the hands of an ordinary observer, at 3,000 yards to within 60 yards, at 1,500 yards to 15 yards. The 6-foot base folds to 3 feet 3 inches, and weighs under 3 pounds.

Yellow Glass for Fixed Signals.

The use of yellow glass for the lamps of fixed signals is steadily increasing, says The Railroad Gazette. The latest installation is on the joint line of the Erie and the "Big Four," between Marion Junction and Gallion; and this example will be of particular interest because the yellow lights will be used under more trying conditions than they have been subjected to anywhere else. Doubt has been expressed on all sides whether a yellow which is dark enough to be quickly



A NEW LUMINOUS FOUNTAIN.

SCIENTIFIC AMERICAN

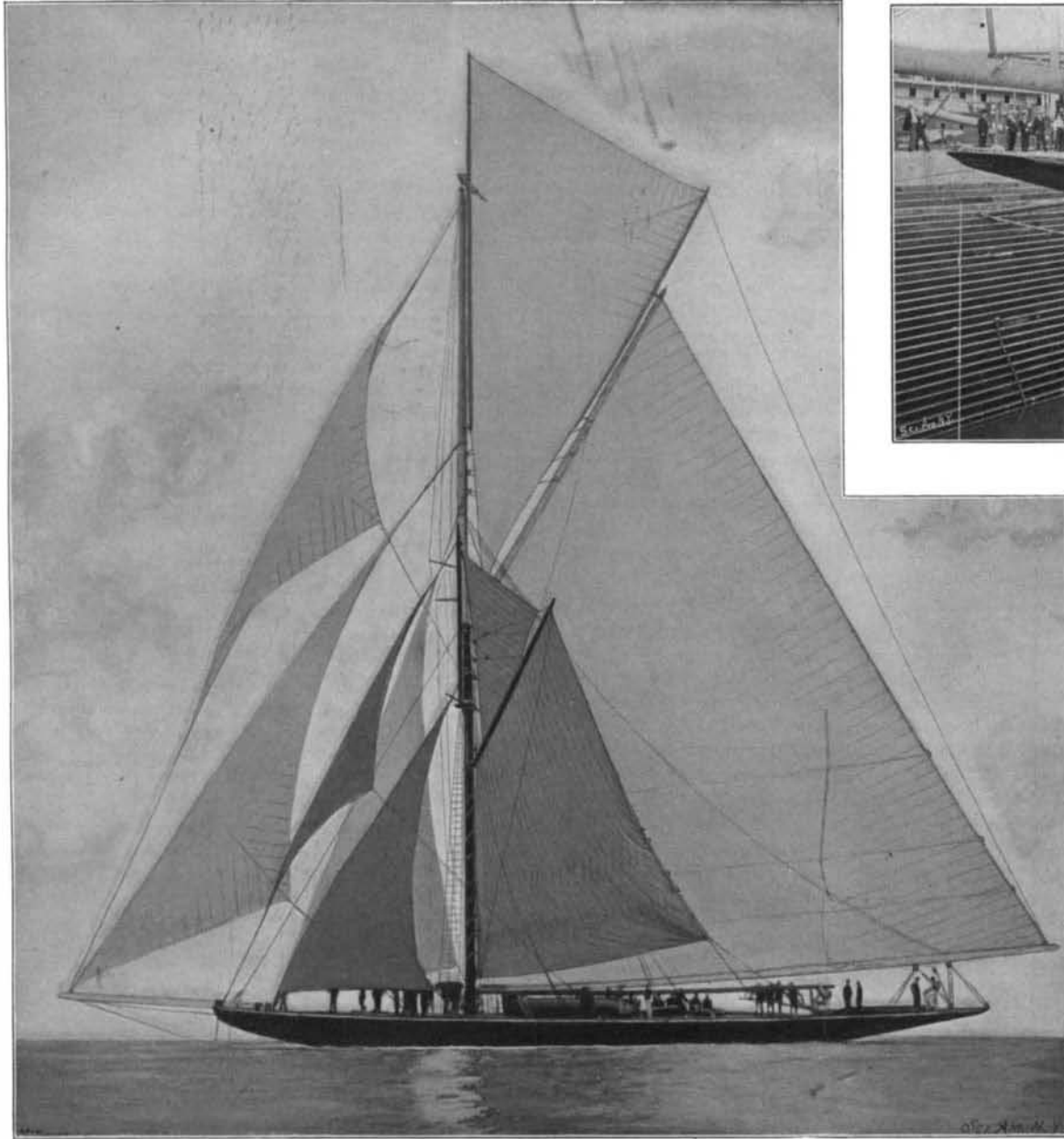
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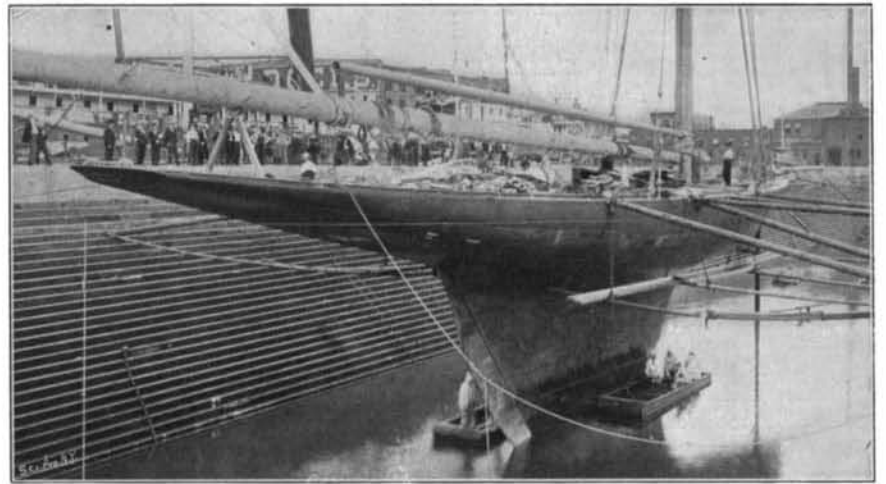
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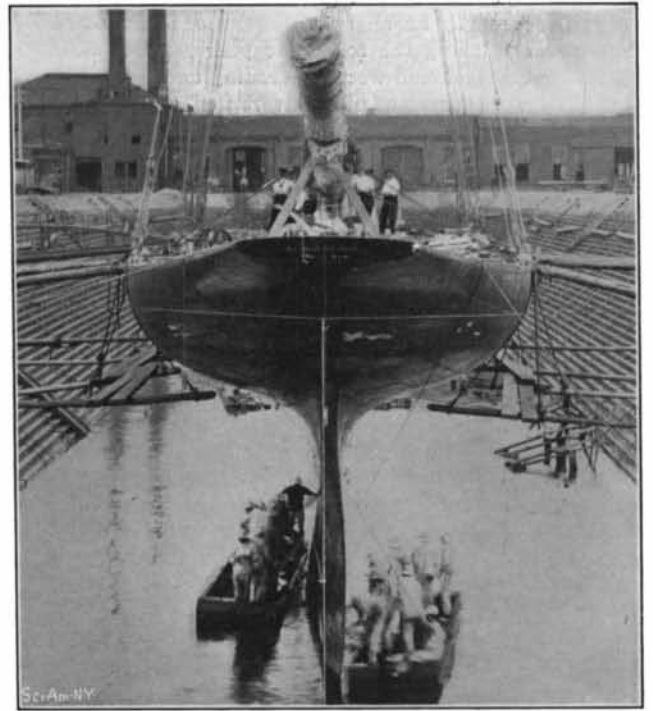
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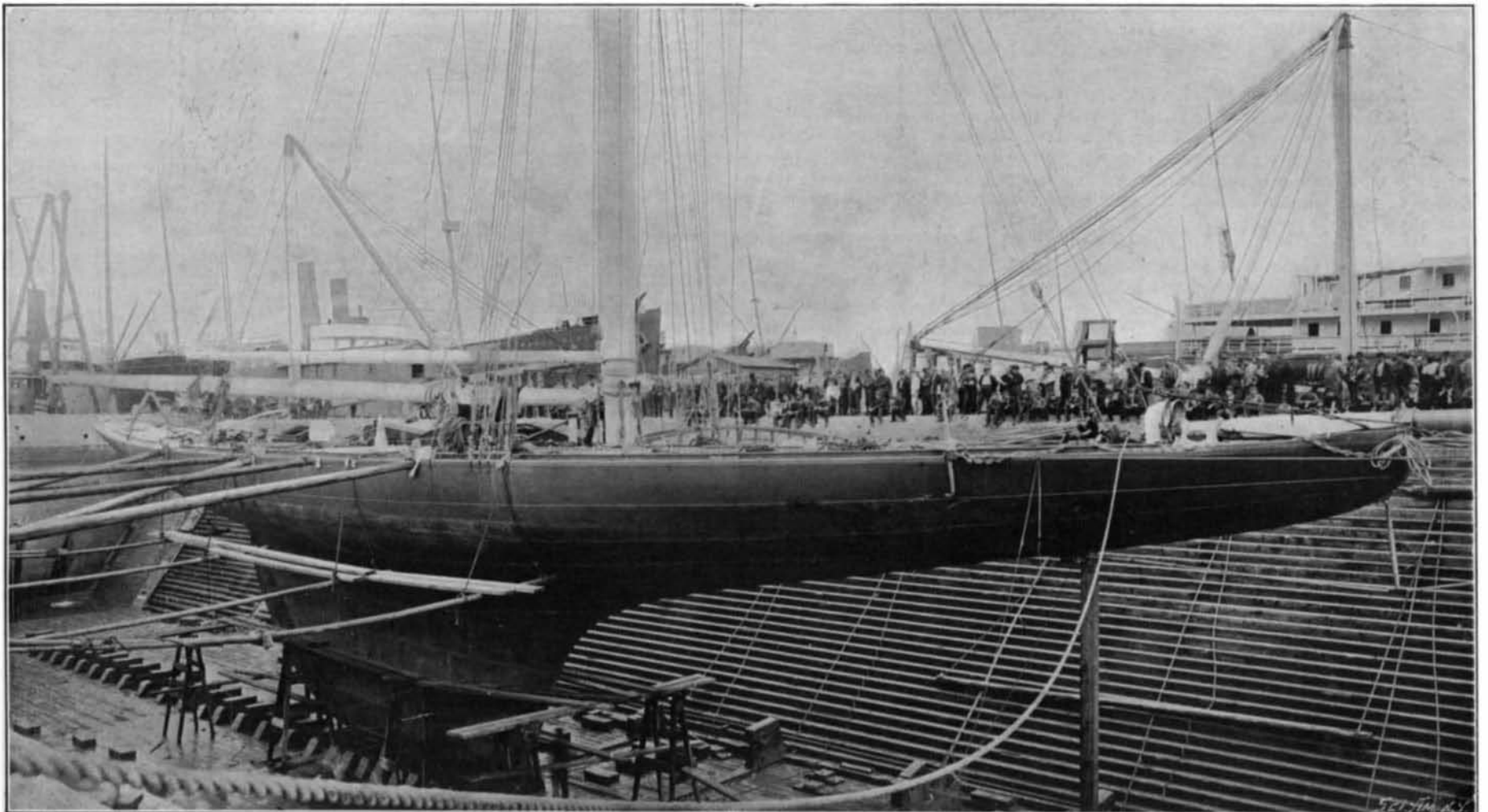
"Shamrock II." in Ocean and Racing Rigs.



View from off Starboard Quarter.



View from Dead Astern.



View from Off Starboard Bow.

THE ELEVENTH CHALLENGER FOR THE AMERICA CUP—"SHAMROCK II."—[See page 122.]

Length over all, 137 feet; beam, 24 feet; draught, 21 feet 3 inches; pole-mast, deck to truck, 150 feet; boom, 103 feet 9 inches; gaff, 66 feet; sail area, 14,500 square feet.