

FIRST RACE OF THE CUP DEFENDER "RELIANCE."

Surely in all the long history of trial races, whether between cup defenders in America, or between cup challengers in their try-outs in British waters, there was never a race sailed that provided such sensational results as were achieved by the new yacht "Reliance" in her first trial race on Long Island Sound. In the first place, none of the American defenders has come to the line with so little actually known as to her sailing capabilities. Because of keen rivalry between the three contestants for cup-defending honors this year, neither "Constitution" nor "Columbia" has been willing to give "Reliance" any opportunities for those preliminary "brushes" and trying-out "spins" on the various points of sailing, which from time immemorial have been granted as a matter of courtesy by former champions to a new aspirant for cup-defending honors. Hence "Reliance" has been doing all her tuning up in very solitary fashion; and, although to those in charge of her she appeared to be thoroughly satisfactory, balancing well, carrying a light helm, and apparently showing great speed under all conditions of sailing, neither her owners nor captain knew exactly what her abilities were, as she drew near the starting line on Thursday last, and commenced to maneuver for position with that well-tested

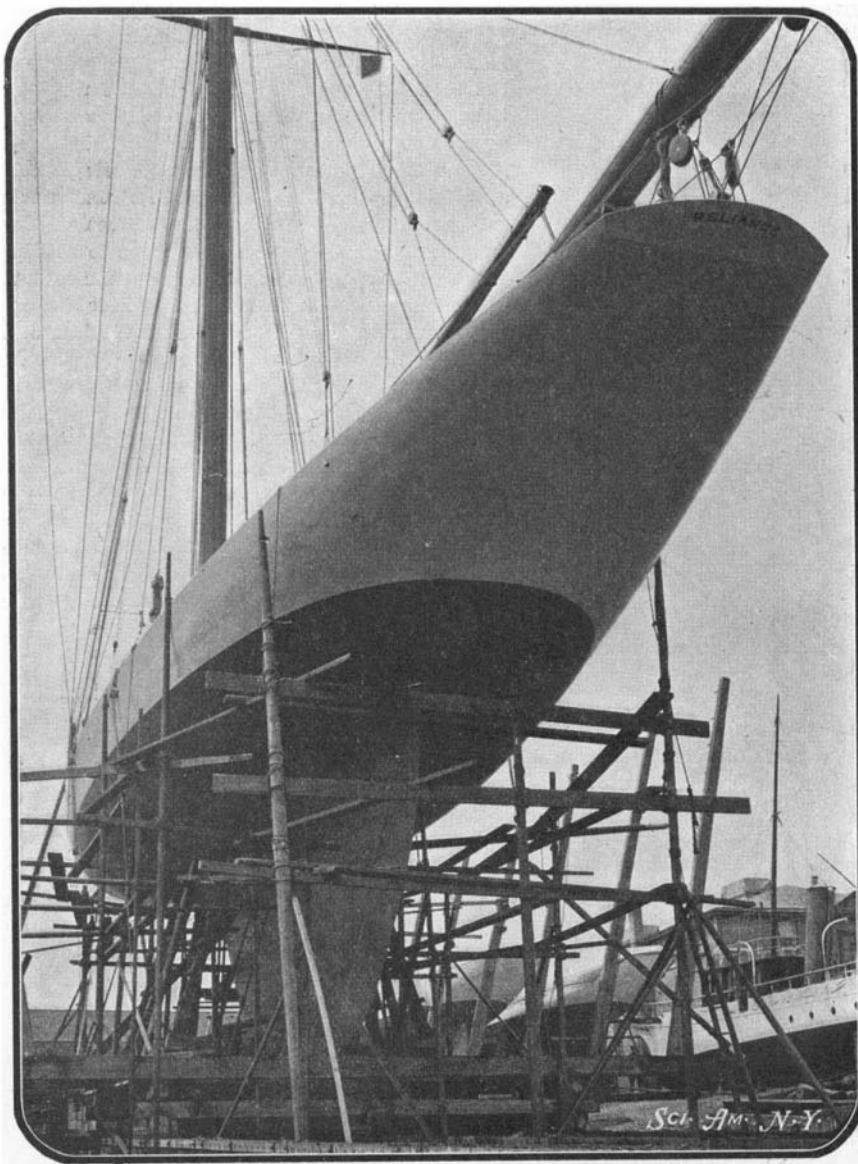
used to beat her two years ago under like weather conditions. After gibing round the first mark, "Reliance" heeled down to a freshening breeze until her lee rail was well under, and proceeded to show something of the well-known reaching ability of the scow type. Her water-line lengthened some 5 or 6 feet forward and drew out for fully 25 feet under the long counter; and considering that the yacht for the first mile of the 3-mile leg must have been going fully 14 to 14½ knots an hour, she made remarkably little disturbance of the water. There was no perceptible drag, and the bow and stern waves were extremely light for a boat of that size moving at such high speed. On this leg she beat "Columbia" 1 minute and 30 seconds, or at the rate of half a minute a mile. It is possible that some time may have been lost by "Columbia" because of the fact that while "Reliance" carried her jib in addition to her balloon-jib topsail and staysail, the older boat did not use her jib over a considerable part of the distance; but even if allowance be made for this fact, the performance of the new boat was most remarkable.

It was expected that when sheets were flattened in for the final thrash to windward, the great ability of "Columbia" on this point of sailing would show itself, and that she would at least hold the big boat, if she

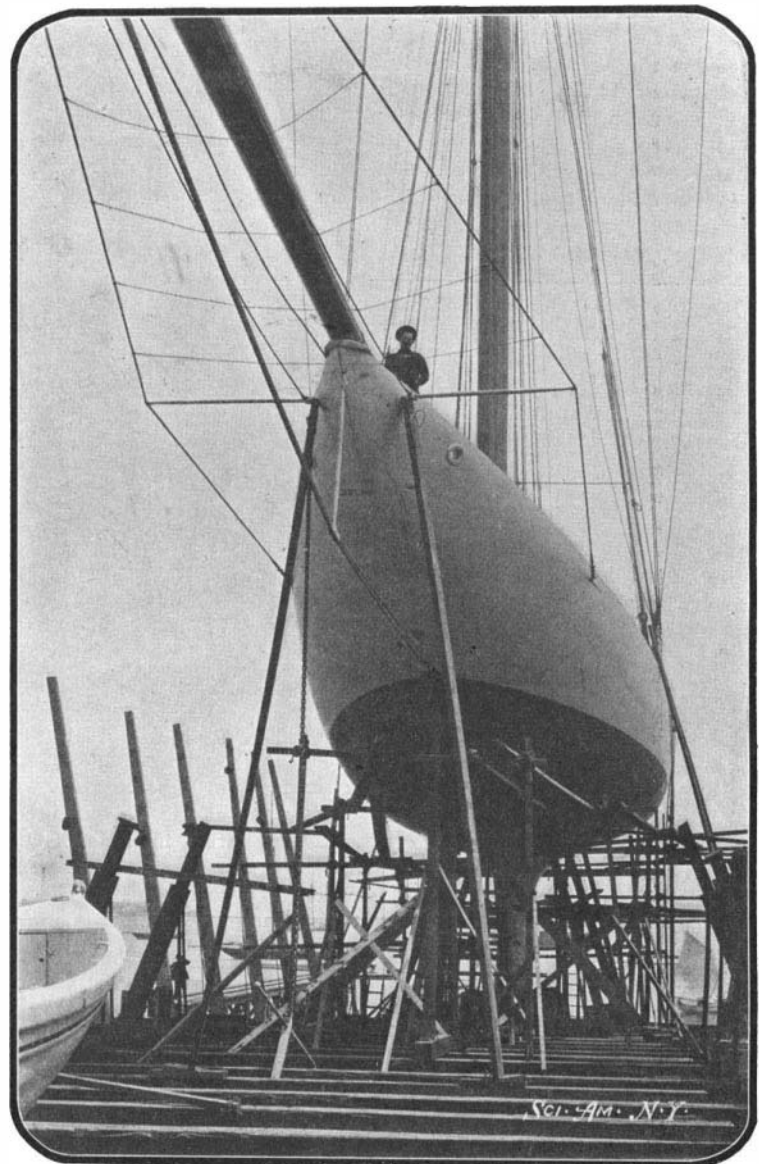
The accompanying views of the "Reliance" were taken when she was hauled out to clean the underbody for this race. The most surprising feature was the extreme breadth and shoalness of the forebody, the yacht showing up extremely shallow and flat from the forward waterline to the keel. Yet there was no suspicion of unfairness, the lines in every direction appearing to be remarkably sweet, with none of those "humps" or sudden, abrupt changes of curvature that so frequently mar the beauty of extreme boats of this type.

The Cape to Cairo Railroad.

The construction of the Cape to Cairo Railroad has now been completed to a point 167 miles north of Buluwayo, and this section of the extension to the Victoria Falls is open for public traffic. The railroad is now only 40 miles from the extensive Waukie coal fields, but of this stretch of track 15 miles of the necessary earthworks are finished. Already the Waukie coal has been experimentally utilized upon a heavy freight train weighing 376 tons, to ascertain its calorific value for this purpose. The run was made from Francistown to Buluwayo, a distance of 126 miles, and the coal was found to be in every way equal to that hitherto employed. One of the characteristics of this



Stern View, Showing the Great Overhang.



Bow View, Showing the Great Breadth and Shoal Body of "Reliance."

THE "RELIANCE" IN DRYDOCK.

veteran "Columbia." Because of an accident when being hauled out upon the ways, "Constitution" took no part in the race, being at the time in the ship-builder's hands for the straightening out of some plates that were slightly indented.

The race was sailed in a perfectly smooth sea and a breeze that varied from a knot or two per hour to a maximum strength of about eight or ten; and, therefore, the conditions were the very best possible for a boat with the broad and shoal body and great sail spread of "Reliance." The course consisted of an 11-knot leg down the Long Island shore with the wind over the starboard quarter; a 3-mile reach across the Sound with the wind over the port quarter; and a beat of 11 miles for home. The greatest surprise of the day was furnished on the first leg, when, with a wind that averaged about 3 knots in strength and never exceeded 6 or 7 knots, "Reliance" drew away very rapidly from "Columbia," gaining at an average rate of 40 seconds per mile. It was supposed that in spite of her much larger sail spread ("Columbia" having 13,200 square feet, and "Constitution" nearly 16,000), the greater weight and larger wetted surface of "Reliance" would cause her to show about the same drifting qualities as the smaller boat; but as it was, she beat "Columbia" about as badly as "Constitution"

did not cut down some of her lead; but, again to the surprise of the yachting "sharps," "Reliance" continued to pull away from her now badly-beaten competitor, and on the 11-mile beat she gained 4 minutes and 23 seconds, which is equal to a gain of about 24 seconds per mile, the speed of "Reliance" being a trifle over 10 knots per hour. In the broad reach over the 3-mile leg of the course "Reliance" averaged 13.2 knots per hour; and it is certain that if the breeze had held at the strength which it had on the first mile of this leg, the new yacht would have shown a considerably higher average speed than that.

We have said that the race was sailed under ideal conditions for a boat of the "Reliance" type, and in all probability she will not be able to pull away from "Columbia" in anything like such an impressive manner when there is a sea running, or when the race has to be sailed under shortened canvas; while the most disadvantageous conditions possible would be the combination of a lumpy sea and a light breeze. As there are yet some dozen or more races to be sailed between the two cup yachts, some of them to take place off Newport and over the cup course off Sandy Hook, this doubt is certain to be satisfactorily settled long before "Reliance" meets "Shamrock III." in an international race.

coal is that it is remarkably free from clinker, and not once during this particular trip was it found necessary to clean the fire of the locomotive. Even on the stiff gradients the coal consumption was only 58.4 pounds per mile for 376 tons, as compared with 70 pounds per mile for 300 tons with the ordinary coal. The earthworks for the railroad from Buluwayo to the Matoppos, provided for in Mr. Cecil Rhodes' will, are also well advanced, and the other various railroads in connection with the great trunk track through Africa are being pushed forward with great rapidity.

Sir William Ramsay, who, in conjunction with Lord Rayleigh, discovered the existence of argon, and subsequently krypton and xenon, in the atmosphere, has made a computation of the quantity of the two last elements present in the air. The results of his experiments and calculations shows that the air contains .000014 per cent of krypton and 0000026 of xenon by weight. To be more explicit there is one part by weight of krypton in 7,000,000, and one part of xenon in 40,000,000, of air. Measured by volume as constituent gases of the air, the volume of these two elements is more infinitesimal, since there is only one part of the former in 20,000,000, and one part of the latter to 170,000,000 parts of air.