

TURBINE YACHTS AT THE INTERNATIONAL RACES.



ERTAINLY one of the most attractive features of the international yacht races this year was the presence of several steam yachts equipped with the latest form of motive power for marine propulsion — the steam turbine. Perhaps the most notable of these, because of her

high speed, which was exhibited at times, to the great interest of the fleet of sightseers, was Mr. W. K. Vanderbilt, Jr.'s, rakish-looking craft "Tarantula." Originally built for the late Col. McCalmont, who placed speed before every other quality in the yachts that he owned, she was subsequently purchased, through Tams, Lemoine & Crane, by her present owner, and arrived only a few weeks ago at Newport, after making an uneventful trip across the Atlantic. The "Tarantula," which is built upon the conventional lines of the torpedo boat, with sharp V-sections forward, changing to flat U-sections in the after body, has a low freeboard and a comparative absence of deck-houses, and with her two funnels and two pole masts presents a very rakish appearance. She is built of steel, and measures 152.5 feet in length, 15.3 feet in beam, and her depth is 8.4 feet. She has greatly exceeded her designed speed, making 26.75 knots an hour on her trial trip. Her displacement is about 150 tons. As originally constructed, she was designed to carry nine propellers, three on each shaft, but in subsequent trials, three of these were removed, with the result that there was a marked increase in her speed. In the impromptu race which takes place at the conclusion of a

cup contest between the steam yachts and excursion boats that witness the finish, it was remarkable to see the "Tarantula" thread her way through the fleet, passing such fast boats as the "Corsair" and "Kana-wah," at a speed which made them look to be relatively slow vessels.

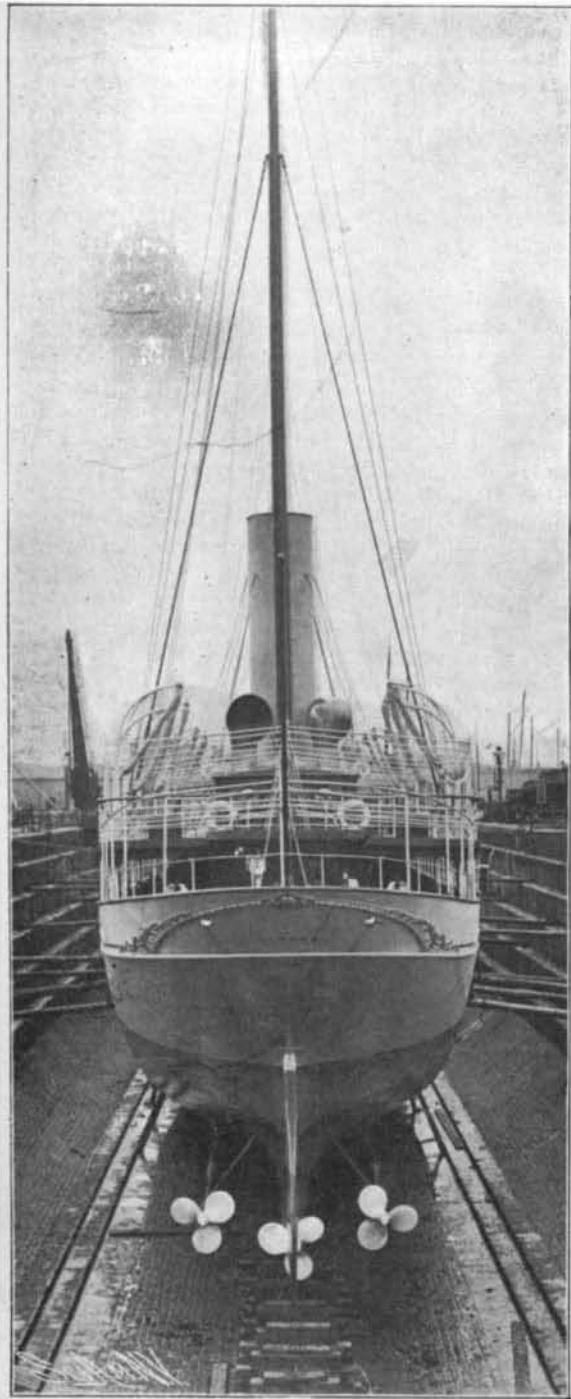
Another turbine yacht that possessed special interest for Americans at the race was the "Revolution," which is the first yacht to be driven by a turbine of American make. She is 178 feet over all, 140 feet on the water line, 17 feet in beam, and 7 feet in draft. Her turbines are of the well-known Curtis type, which is now being manufactured in large units for electrical power plants. The engine has shown excellent results. In a report of tests made by Prof. Denton, he says: "The economy found for the turbine is, therefore, probably quite equal at full power to that afforded by average high-speed marine triple-expansion engines and nearly the same for one-tenth of full power." The great advantage of the turbine is, of course, its small weight for the power developed, and the economy of space. The same authority states that the weight of each turbine from its throttle to the exhaust pipe flange is "8 2-3 pounds, and the space occupied one-tenth of a cubic foot, per indicated horse power—figures which are not approached by the average marine engine." Although the "Revolution" has not been designed for such high speed as the "Tarantula," she is, nevertheless, a much faster boat than the average steam yacht. Her lines are handsome, and the graceful sheer, which is one of her marked characteristics, is shown to advantage in the picture of the yacht which we publish.

The "Emerald," which is now the property of Mr. George Gould, is another turbine yacht that attracted considerable attention. She is 236 feet in length and 28 feet 8 inches beam, and she has a molded depth of 18 feet 6 inches, and a speed of 16 knots. Her engines, like those of the "Tarantula," are of the well-known Parsons type. As we illustrated this vessel in the SCIENTIFIC AMERICAN of December 13, 1902, the reader is referred to that issue for the various details of this handsome boat.

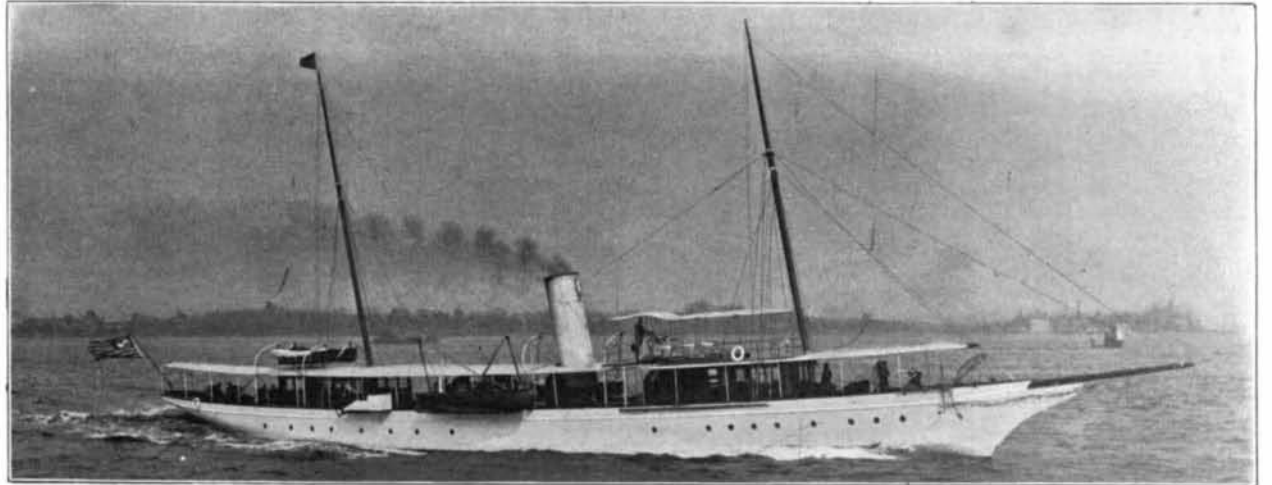
In this issue we also show views of a large turbine yacht that has recently gone into commission in England, which was built by Ramage & Ferguson, of Leith

for Mr. A. L. Barbour, of this city. The new vessel, which is known as the "Lorena," is not only one of the latest and most luxuriously-appointed yachts that have been built in Europe, but she is also one of the fastest, her speed on trial having been just under 19 knots an hour. She does not differ greatly in design or appearance from Mr. G. L. Watson's bigger boats, the most noticeable difference being that the counter is rounded off in a way that is strongly suggestive of older models. If she carried the square stern of the Watson type, she would be distinctly reminiscent of "Varuna." Her length over all is 300 feet; her water line 253 feet, her molded beam 33 1/4 feet, and her yacht measurement close upon 1,400 tons. She carries a raised deck forward about 60 feet in length, and there is a promenade deck extending through the vessel to within 20 feet of her stern. This latter deck is placed about 7 1/2 feet above the main deck, on which are deckhouses that extend for a length of about 170 feet, provision being made for alleyways on both sides which are about 5 feet in breadth. The vessel has the great advantage of compactness of the engine room which characterizes the turbine-propelled vessel. There are three turbines, one on each shaft, and two condensers. Reversing turbines are provided on each of the outer shafts, after the system which is being followed in the recent turbine-propelled passenger vessels. Instead of carrying five propellers, as in the case of the "King Edward," there are only three, or one on each shaft, as shown in our illustration. The total horse power is 3,200 indicated. The revolution of the center shaft is 530 and of the outer shafts 750 per minute. There are four cylindrical tubular boilers, fitted with Howden's forced draft, and the engines are run under a working steam pressure of 180 pounds to the square inch. It is a remarkable fact that all the turbine yachts that are at present in commission are English-built boats sailing under the flag of American owners.

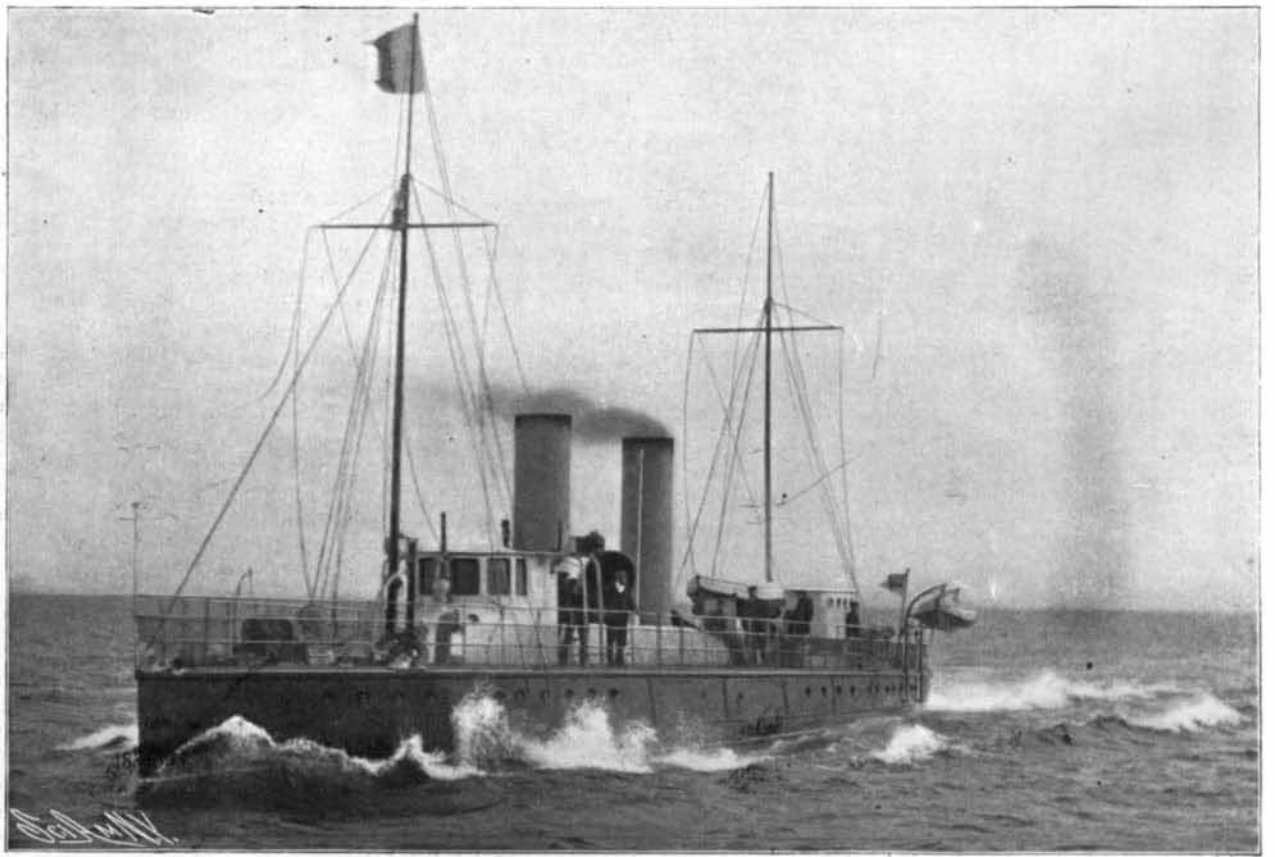
During the recent hot weather at Marseilles some chlorate of potash exploded spontaneously, the explosion being communicated to a line of barrels, one after the other.



Turbine Yacht "Lorena," Showing the Three Propellers.



The "Revolution," First Turbine Yacht Built in this Country.



Turbine Yacht "Tarantula." Speed 26.75 Knots.

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