

the water. The method adopted on the "Ariadne," of which we present a detailed drawing, is one that was designed and patented in 1868 by Mr. R. R. Bevis, a former manager of Messrs. Laird's building establishment in Great Britain. This type was fitted by that firm to several auxiliary cruisers in the British navy, among which was the corvette "Caliope," which it will be remembered, was present at the terrific hurricane at Apia in the Samoan Islands, when so many American vessels were lost, and barely managed to steam out against the hurricane into deep water. The object of the device is to enable the

angle of the blades of a propeller to be altered, while they are in place under water, to the pitch most suitable for working with steam under varying circumstances, as well as to feather them in a fore-and-aft direction when the vessel is under sail, and the steam power is not in use. The propeller blades are rotatable on their axes, and they are moved by a pair of levers which are attached to a yoke at the outboard end of a rod that passes entirely through the propeller shaft into the engine room. Here the interior rod is coupled by means of a pin, sliding in a slot cut through the propeller shaft, to an outer, threaded sleeve, which is capable of fore-and-aft movement on the propeller shaft by means of a thread cut on the shaft. This sleeve is formed with a pinion on its outer periphery which is engaged by a spur wheel that can be operated by hand. To feather the blades, that is, to place them with their surfaces approximately parallel with the keel of the ship, the sleeve is moved forward into the position shown in our drawing. When it is desired to use steam power, the sleeve is screwed back upon the propeller shaft, forcing the interior rod to the rear, and by means of the connecting levers swinging the propeller blades around to the proper angle of pitch. The connecting levers, arms, etc., are entirely inclosed with the hollow boss of the propeller, and it will be seen that when the blades are in the fore-and-aft position, the drag or friction of the propeller is reduced to a minimum.

ENGLISH TURBINE-PROPELLED YACHTS.

BY THE LONDON CORRESPONDENT OF THE SCIENTIFIC AMERICAN.

Of the three high-speed yachts to be fitted with the Parsons marine steam turbine, two have up to the present been launched. They are the "Tarantula," owned by Col. H. McCalmont, M. P., and the "Emerald," belonging to Sir Christopher Furness, M. P. The "Tarantula" is of very special design, having been built on the lines customary to all vessels of the torpedo-boat class. As regards the hull and boilers the "Tarantula" is in fact identical with all first-class torpedo-boats. The boiler is of the Yarrow water-tube type. She is driven by three turbines, one high-pres-

sure and two low-pressure. The high-pressure turbine is placed on the central shaft and the two low-pressure turbines on the two outer shafts. There are thus three propeller shafts in all and three screws on each shaft, making nine screws in all.

The "Tarantula" is 160 feet long and 16 feet beam.

Her designed speed was 24 knots and her horse power is estimated as a little over 2,500.

The "Emerald" will displace 756 tons and her indicated horse power is expected to be about 1,500. The propelling machinery consists of three sets of steam turbines, each driving one length of shafting—one central and two side shafts—one propeller of about 3 feet diameter being attached to the center, and two propellers, each of about 20 inches diameter, to each of the side propeller shafts. All the propellers of the "Emerald" are of manganese bronze. The hull has been specially strengthened to prevent any vibration in the structure from the great speed at which the shafts will revolve. Her over-all length is about 236 feet, beam 28 feet 8 inches and molded depth 18 feet 6 inches, giving a tonnage of about 756 tons yacht measurement, and her speed will be 16 knots. At her launching her owner, Sir Christopher Furness, remarked that about all the Hon. C. A. Parsons, Messrs. Stephen and himself had in view in fitting the "Emerald" with turbines was to put into the vessel such power as would enable her to steam at the highest rate compatible with entire freedom from vibration. He believed that object would be attained and, still further, he believed as a business man, and as one engaged with ships and shipping, that the steam turbine would practically revolutionize yachting and yacht owning in the United Kingdom.

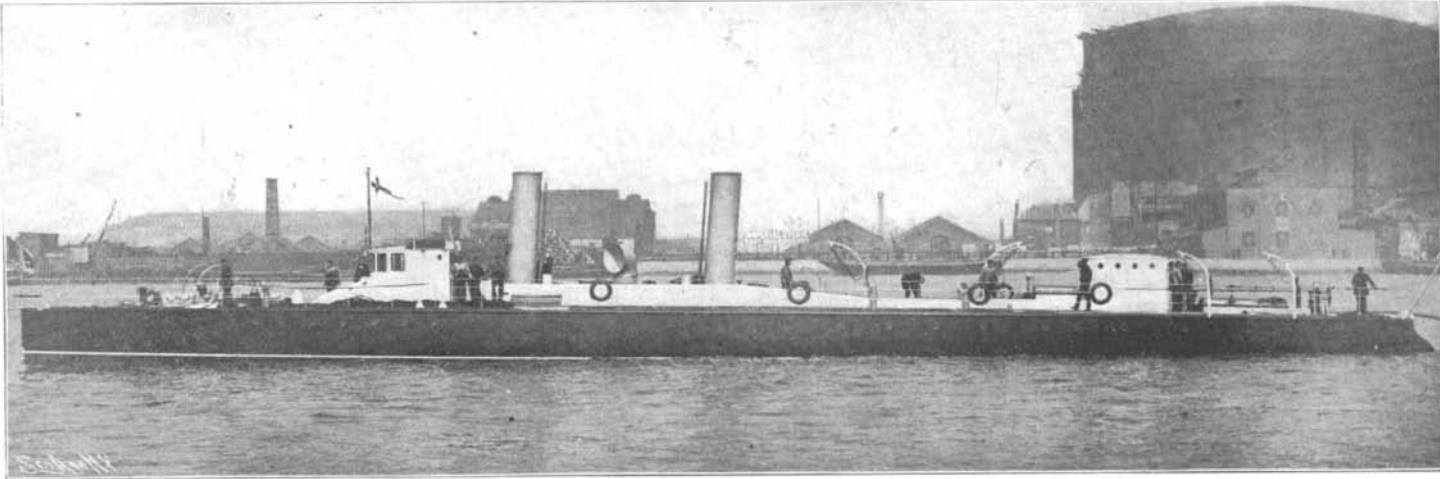
The third yacht, the "Lorene," is being built to the order of Mr. A. L. Barber, of New York. She will displace about 1,400 tons and she will be 260 feet 8 inches long and 33 feet 3 inches beam. The hull and boilers are being constructed by Messrs. Ramage & Ferguson, of Leith, Scotland, and her turbine machinery will come from the Parsons Marine Steam Turbine Company. Mr. Barber's yacht is expected to be launched shortly.

THE APPLICATION OF TURBINE PROPULSION TO PASSENGER VESSELS.

BY HERBERT C. FYFE.

Up to the present moment there have been built eight vessels that have been fitted with the Parsons marine steam turbine, while five are now in process of construction. The first was of course the little "Turbinia," launched in 1896 and in her day the fastest vessel afloat, her maximum horse power being 2,300 and

speed 34½ knots. Next came H. M. S. "Viper," whose maximum speed was 39.113 knots or nearly 43 statute miles, the horse power being 12,300; and H. M. S. "Cobra," whose maximum was 35.6 knots. The "Viper" was lost during the British naval maneuvers in the summer of 1901, owing to her striking a rock in a thick fog, while the "Cobra" went down off the outer Dowsing Shoal while on her way from the Tyne to Portsmouth on the 1st of Sep-

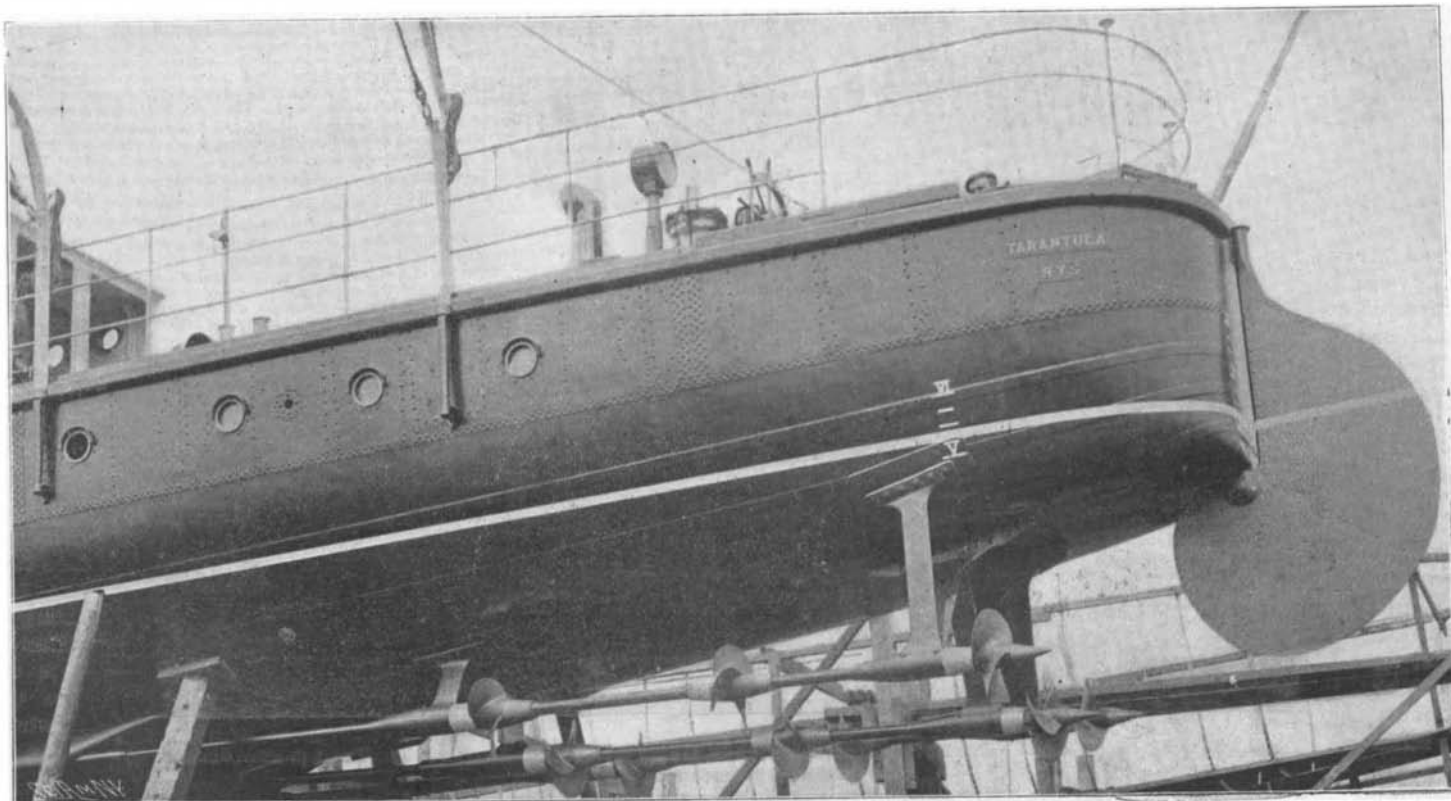


Length, 160 feet; beam, 16 feet; designed speed, 24 knots.

ENGLISH TURBINE YACHT "TARANTULA."



STERN VIEW SHOWING THE NINE PROPELLERS.



VIEW OF PROPELLERS, SHAFTING AND BRACKETS OF "TARANTULA."