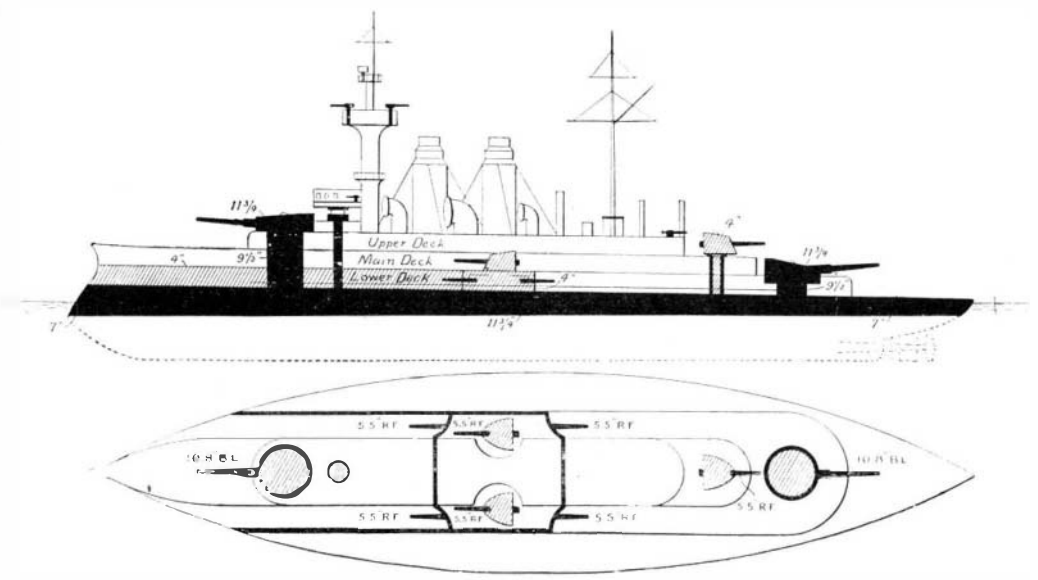
when it is remembered that all the things done by a Whitehead torpedo may be done by a submarine boat. Almost the only difference is that whereas in the torpedo the opening and closing of valves, the regulation of depth, the steering, the various safety devices and the length of the run are all automatic, in the submarine boat the corresponding things are all regulated by hand.

One point about the submarine torpedo boat which might almost be considered a disadvantage is the tireless, unremitting care which is an absolute necessity in order to keep the delicate apparatus in condition. Then there is the ever-present danger when the boat is making a trip submerged that the propeller will foul a buoy rope, or chain or mooring, in which event the fate of the crew would be sealed with tolerable certainty, since it would be well nigh impossible to make the needed repairs.

It is not generally known that the submarine torpedo boat "Plunger," building for the United States government at Baltimore, is of an entirely different pattern from the "Holland" (the trials of which at Peconic Bay are above described), although designed by the same inventor. The delivery of the "Plunger," which is a vessel 85 feet in length and of 1,500 horse power, has been delayed between three and four years by a series of unfortunate circumstances and she is not even yet completed. Several changes in the machinery are, however, to be made, and it is expected that the vessel will then be pushed to completion. A congressional appropriation made some time ago for the construction of two additional submarine boats will become available when the Navy Department shall have been thoroughly satisfied with a design.



ARMOR DIAGRAMS OF THE "HENRI QUATRE."

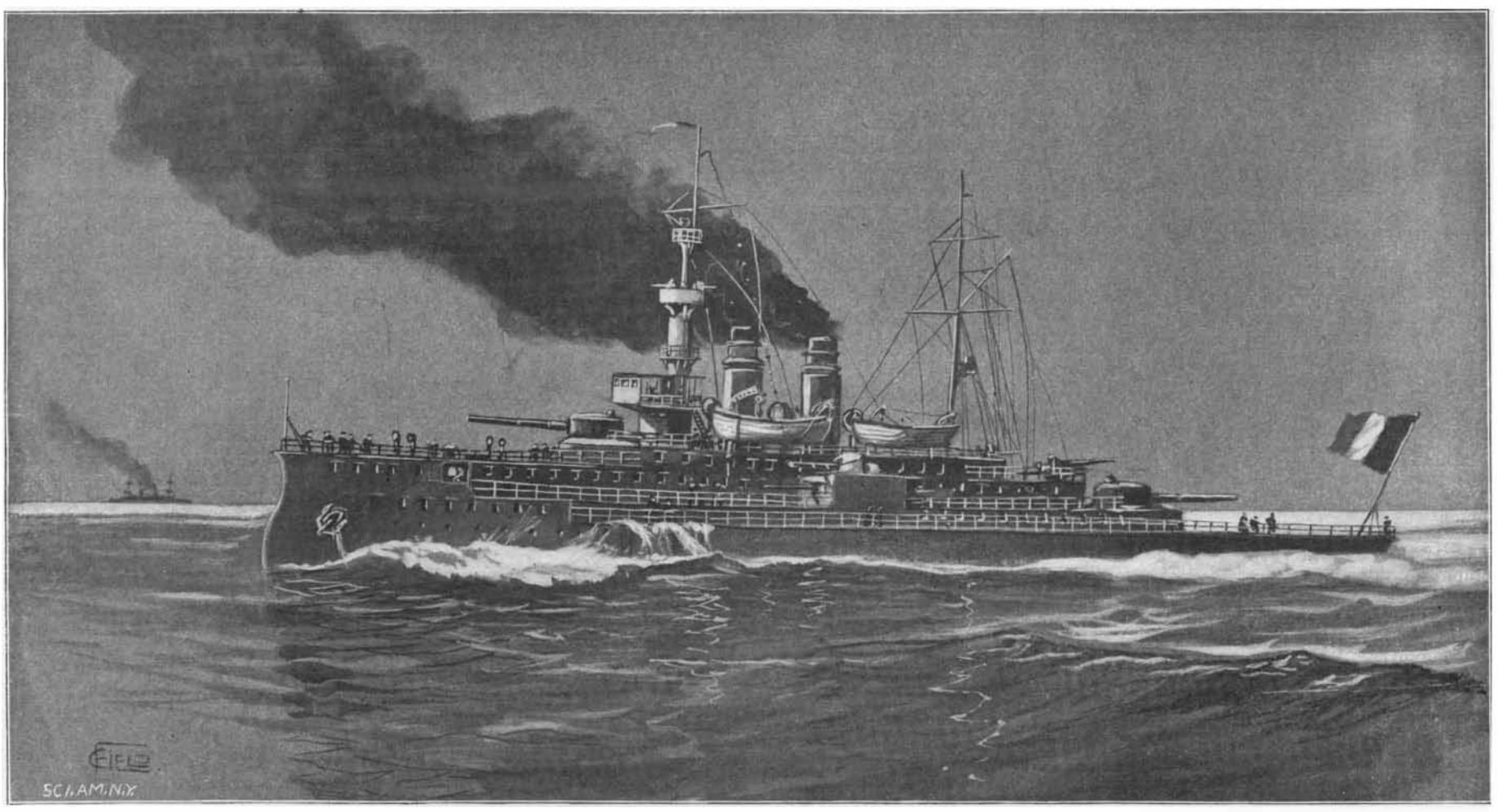
THE NEW FRENCH ARMOR-CLAD "HENRI QUATRE."

Fine fleet as have the French, it has been compared by one of their own experts to a museum of warships, so many and so various are its types. The armor-clad "Henri IV.," launched on August 23 at Cherbourg to the strains of the Marseillaise and (to please France's reputed allies) the Russian National Hymn, will be yet another and a very unique "exhibit" for the collection of men-of-war which the French naval constructors have set afloat in their endeavors to find an ideal type before they commit themselves to any particular line of design. After the experiences of the American fleet in the late war with Spain in which the monitor class proved so very unsatisfactory, it is truly remarkable that this, the latest French man-of-war to take the water, should be an adaptation of this discredited design. For though she has considerable free-board—about 20 feet in fact—forward, which will without doubt render her considerably more seaworthy and comfortable than a monitor pure and simple, yet from the foremost turret to her stern she is a very low freeboard vessel, with a long and high superstructure amidships.

For her displacement—8,948 tons—she will no doubt be an exceptionally powerful vessel both in attack and defense. Her main armament will consist of two long 10·8-inch guns, one of which is to be mounted in a turret forward at a considerable height above the water, while the other, which will be similarly mounted aft, will be placed very much lower down. As a secondary armament she is to be equipped with seven 5·5-inch quick-firing guns. Four of these are to be placed in a casemate or "box battery" amidships, protected by 4 inches of armor, another aft under a shield, high enough up to fire over the roof of the after turret, while the remaining couple are to be placed one on either beam on the top of the casemates. The "Henri IV." will carry in addition twelve light rapid-firing guns and two torpedo tubes. Her flotation is well protected by a very nearly complete belt of 11¾-inch armor which commencing at her bow only stops short a little forward of her ensign staff. Above this from the bow to the after end of the box battery there is another belt of 4-inch plating. The armor on the two turrets has a maximum thickness of 11¾ inches. She has also an armored deck about 2 inches in thickness, and this is continued downward and inward below the belt with the object of affording some protection against torpedoes.

Like most of the newer French ships of any size the "Henri IV." is to be fitted with three propellers, which according to some authorities are calculated to give a ship half a nautical mile an hour more speed than if she were fitted with twin screws. She is very much cut away under water aft, and the central screw will be much further aft than the others, being outside the rudder, which will probably be double.

The boilers of the "Henri IV." are of the Niclausse type and her engines are expected to work up to 11,500 horse power and to give her a speed of 17 knots. Her normal coal supply will be 725 tons, but at a pinch she can carry 1,100, which is calculated to give her a radius of action of 7,580 miles. Her complement has been fixed at 26 officers and 435 men.



THE "HENRI QUATRE." LATEST TYPE OF FRENCH BATTLESHIP.

Displacement, 8,948 tons. **Speed,** 17 knots. **Maximum Coal Supply,** 1,100 tons. **Armor:** Main belt, 11¾ inches; upper belt, 4 inches; barbettes, 11¾ inches; casemates, 4 inches. **Armament,** two 10·8-inch; seven 5·5-inch; twelve 3-pounders. **Torpedo Tubes,** two. **Complement,** 461. **Date,** 1899.

Diamond Production of the Transvaal.

According to the United States consul at Pretoria, the output of diamonds in the Pretoria district during 1898 amounted to 11,025 carats, valued at $43,151. In December, 1897, the output was 166 carats, valued at $710, and for the same month in 1898 the output was 3,100 carats, with a value of $11,626. The largest stone found in 1898 was 38½ carats. Although the diamond industry is not developing with abnormal rapidity there is every cause for satisfaction, the first stone having been discovered at Reitfontein only in August, 1897. The average value of stones found in the Pretoria district is $3.89 per carat, the average value of Kimberley diamonds $6.33 per carat, and those found at Jagersfontein, in the Orange Free State, $8.27 per carat. The diamonds in the Pretoria district are found in pipes, as on Schuller's mine and on Montrose. A similar formation has been found on Roodeplaats on the Pienaars River, and another is also reported at Kameelfontein and Buffelsduff. On the De Kroom farm, about 26 miles west of Pretoria, diamonds have been found, but according to the State geologist, not in a blue ground formation. At Byrnestpoort an alluvial deposit is being worked, also one on the adjoining portion of the Elandsfontein farm. The area of diamondiferous ground is very extensive, though its thickness is not considerable. The total quantity of diamonds found in 1898 in the Transvaal was 22,843 carats, valued at $212,812. At the alluvial diggings 12,283 carats, valued at $171,427, were found; while from the pipes 10,560 carats, valued at $41,374, were obtained. The difference between alluvial and pipe diamonds consists in the fact that river stones are of a far better quality and are generally larger.

THE cost of repairing the damage caused by the recent collapse of the columns in the temple of Karnak and strengthening the edifice is estimated at $250,000.