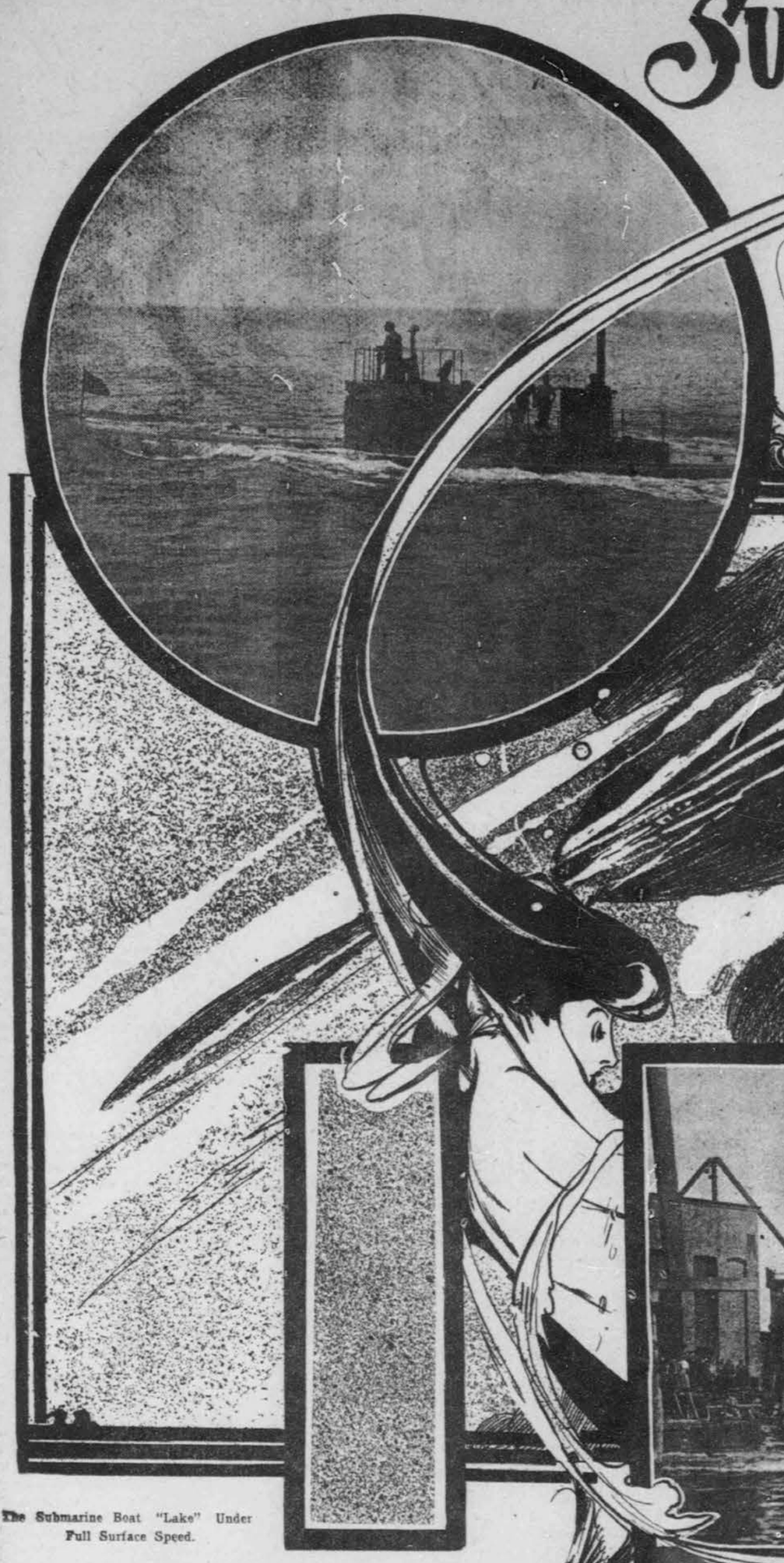
SUBMERGED NAVIES TO DECIDE SUPREMACY of the SEAS — HEREAFTER



The Submarine Boat "Lake" Under Full Surface Speed.

Sunken, Silent Stilettos of the Deep to Deal Deadliest Blows in Future Warfare on the Sea.

EVEN as the great American army of the not far-distant future promises to be equipped to do its most disastrous work to an enemy in the air, by means of the dirigible balloon or aeroplane, so will the great American navy of the near future be equipped to do its greatest damage to a hostile enemy beneath the seas by means of the torpedo submarine craft—the hidden stiletto of the deep.

"Twenty Thousand Leagues Under the Sea" was a wonderful imaginative romance of experiences that were scoffed at as impossible until within recent years, but if experiments which are to be conducted soon by the Navy Department to test the practicability of the submarine torpedo boat prove to be as successful as the officials who have carefully studied the subject claim to have reason to hope, then the revolution of methods of naval warfare and of water navigation will be such as no one but Verne ever dreamed—except Fulton—Fulton, whose first boat sailed under water, and Fulton, who invented the turbine!

Upon the success of these tests depends the future methods of warfare to be employed by the American navy, as well as the navies of many other Powers, some of which have progressed even further than ours in submarine navigation with war engines. In the dark and foggy sea of Japan, Togo won the climaxing victory of the war of the Far East with all lights out, while faint glimmers from the enemy assisted him in locating the targets of the Russian fleet. While scientists of naval equipment in Washington are experimenting to find the strongest search-rays to locate an enemy in the dark, scientists of naval

construction are experimenting with a deadly weapon with which they can strike the most vital blows unseen, beneath the full light of the brightest day.

Elaborate Submarine Tests.

Arrangements have been made by the Navy Department for the most elaborate series of submarine experiments and tests ever held in American waters. These maneuvers will take place in Narragansett bay, off Newport, beginning April 30, and will continue for probably ten days or two weeks. The purpose of these tests is not only to illustrate what submarine boats can do under exacting conditions, but, to a large extent, determine the type of boat which hereafter shall be constructed for the American navy.

The place of the submarine in the modern navy has already been fixed. The little terror has come to stay, for the greatest naval experts of the world agree that no naval defense is complete without a sufficient flotilla of submarines. Although the United States was among the first of the Powers to develop the submarine in its present state of efficiency and practicability, the navies of England, France, and Russia are far ahead of ours in the number of these engines of war. These great powers have been quick to perceive the possibilities of these boats and have forged ahead in the matter of their construction.

Under the naval building program, as now mapped out, however, the United States will, within a few years, have a formidable array of these destructive sea fighters, and when they are finally added to the American navy in sufficient numbers, every port in this country will be immune from the attack of an enemy no matter how strong. President Roosevelt, whose firmly fixed views upon the upbuilding of the navy are well known, is a thorough believer in this kind of boat, and it was in response to his strong recommendations that Congress, at its recent session, included in the naval appropriation bill an item of $3,000,000, for the purchase of submarines, and provided that those acquired shall prove by tests to be the equal of any which are now in the navy. Last summer the President made a submerged trip in the Plunger and expressed great delight over his experience.

Tests Here and Abroad.

The board which the Secretary of the Navy has appointed to conduct these tests consists of Capt. Adolph Marix, president; Naval Constructor D. W. Taylor, Commander Burns T. Walling, Lieut. Commander William S. Smith, and Lieut. John W. Timmons, members; and Ensign F. H. Sadler, recorder. The program which the board has formulated for these experiments provides for tests as to speed, both on the surface and submerged, maneuvering, submerging, torpedo-firing, mining and countermining, as well as operations to determine strength, endurance, and habitability.

It is a noteworthy coincidence that while these tests are going on there will open in Bordeaux, France, an international maritime exposition to commemorate the 100th anniversary of Robert Fulton's application of steam to navigation. The significance lies in the fact not generally known that Robert Fulton invented a submarine boat before he built the first steam boat. It has only been within recent years, however, that the submarine has been brought to such a condition approaching perfection that it has become a necessity. The first steps in this direction were taken by Secretary Whitney, the father of the modern American navy, but it was not until 1895 that the Plunger, the first submarine in the American navy, was contracted for by the department. Her motive power, however, was steam and she proved impracticable. Then the Holland was built on private account, and after demonstrating her efficiency, was finally purchased by the Government. Since then six others of the Adder type, an improvement upon the Holland, have been built and are now a part of the navy. Four others, the Octopus, the Tarantula, Cuttlefish, and Viper, have been contracted for and completed.

The Wonderful Octopus.

The Octopus, which will be one of the boats in the forthcoming competition, is the largest submarine ever built for the Government, and represents the latest and most improved type of the submarine. The submarines which the British navy is constructing are of the same type as the Octopus, the British naval constructors recognizing that the United States has succeeded in producing the best type of submarines. The Octopus has a radius of action of 1,000 miles, and although her contract speed is said to have been ten knots on the surface, and eight knots submerged, she has exceeded these requirements by more than one knot at her recent builder's trials.

THE NEW TYPE "OCTOPUS."

dred yards, yet it has a range of thirty degrees of the horizon. It catches every object within this horizon and by a cleverly devised system of mirrors and reflectors, the operator sitting calmly at his desk in the boat ten feet below the surface is able to see every object upon the surface as plainly as if he had projected his own head out of the water and was using a powerful glass. Thus the Octopus is enabled to approach within a few hundred feet of a battleship and discharge a torpedo powerful enough to blow a Dreadnought out of the water in thirty seconds and send it, a distorted wreck, to the bottom with all on board.

The Octopus dives and rises with almost the ease of a fish. When the order is given to dive, a sufficient volume of water is admitted into the tanks which she carries to destroy what is known as her reserve buoyancy, which keeps her afloat. A diving rudder on either side is adjusted, and her course is turned downward, so that instead of moving straight ahead on the surface she moves downward under her own motive power until the proper level is reached. The with the surface at all times. It is claimed for her that this plan gives her greater stability, although she cannot attain the same speed in submerging and emerging as the diving type of boat, which is a matter of the highest importance when in action.

One of the features of the Lake is a diving compartment in the bottom of the vessel, from which a door can be opened and a diver sent out from the vessel. It is the old and simple principle of the diving bell revived. Great advantage is claimed for the use of this compartment in the way of cutting cables, destroying mines, and affording an avenue of escape in case of accident. Naval men, however, seriously doubt the utility of such a device. The French builders, who have given careful study to every feature of submarine work, devised this scheme originally, but it does not now form a part of their improved boats. One of the great obstacles is the impossibility of seeing under water. But, nevertheless, the Lake is to be given an opportunity to demonstrate what she can do, and whether she will be able to perform the achievements which are claimed for her.

AMAZING FEATS POSSIBLE BY THE SUBMARINE OCTOPUS.

She can travel 1,000 miles above and below water to meet an enemy, rising and diving en route like a fish.

When submerged her officers may see what is going on above and around them.

She can discharge a torpedo, which no battleship could withstand, once every three minutes.

Great Britain is copying the general type of this latest addition to Uncle Sam's under sea fighters.

Her torpedo arrangement is so ingenious that she can fire and reload and fire again within six minutes. No battleship in the world can withstand one of these torpedoes.

Her complete complement is a crew of fifteen men, although she can be successfully operated with six. There is an abundant supply of atmosphere from compressed air in large tubes, cooking is done on an electric stove, and the boat is lighted throughout with electricity.

Has an Eye Above Water.

The Octopus has a device by which those navigating the boat submerged can plainly see what is going on for many miles around on the surface. This invention is called the periscope. It is a long tube rising above the conning tower. The boat comes within eight or ten feet of the surface and projects the periscope above the surface of the water. It cannot be seen at a distance greater than a few hun-

The Lake Type of Submarine.

The Octopus will have as her principal competitor at these tests the Lake, a boat of radically different type, but of practically the same size and displacement. The Lake sinks rather than dives. She is hauled up and down in the water much like an elevator, her keel being kept parallel

Murder Hours In England

IF one is murdered in England, the event, it appears, is most likely to happen between the hours of 10 p. m. and midnight. This is no attempt at prophecy, but the logical deduction from an official report just issued of the criminal statistics of England and Wales. The chances are greatest, too, that one who is fated to meet a violent death at the hands of a fellow-creature will receive his or her quietus on a Saturday night. It does not need any great amount of psychological research to account for this. The last day of the week is pay day and generally a half holiday among the poorer classes. It is then that most liquor is consumed and evil passions, inflamed by drink, lead to brawls and bloodshed.

But the fact, as shown by statistics, that Thursday's average of bloody deeds is second only to Saturday's may quite possibly indicate that this day is the more popular among the fashionable assassin. Great murders—those involving prominent people, seldom are committed on a Saturday night, but in a majority of cases, it appears, on a Thursday.

There are only fourteen hours during the whole week that one may rest practically immune from the assassin's knife, and that time is between 4 and 6 o'clock every morning. The statistics show that very few murders indeed are perpetrated during that period.

Throughout the morning one may feel comparatively safe, but from noon life is in increasing jeopardy up to midnight, when the chances begin to return in favor of your being allowed to enjoy another day. The climax of the whole week, as stated, is reached Saturday night. Fortunately murderers respect the Sabbath, at least they appear to rest, for the fewest number of crimes are reported on Sunday.