

The Vesuvius threw dynamite by compressed air pressure. She proved a failure as the aim was inaccurate and was recently broken up.

## TORPEDOES, TORPEDO BOATS AND TORPEDO DESTROYERS

The navigable torpedo is a very modern weapon of offence in naval warfare, says an exchange. Its first test was at Wei-haiwei in 1895, when the Japanese sank three Chinese battleships by its use. Already several great Russian battleships have been put out of action in the present war by Japanese torpedoes, and the naval experts of all nations are beginning to express the belief that the torpedo is likely to bring about very important changes in naval construction. The weapon used by Japan is the Whitehead navigable torpedo. It is from fourteen to fifteen feet long, about eighteen inches in diameter, and looks not unlike a sturgeon in its passage through the water. The explosive charge is carried in a section at the nose of the torpedo. It consists of gun cotton, which is always kept wet to prevent accident.

The weight of the charge employed by different nations is not the same. It rarely falls below a hundred and fifty pounds or exceeds two hundred pounds. Only about two years ago a British or German house was making torpedoes for Japan in which the charge was two hundred pounds. It is not unlikely that some of these were employed in the recent engagement at Port Arthur. Russia is reported to have favorably considered the adoption of three hundred pounds. Directly in front of the wet gun cotton is a dry primer of the same material and a small quantity of fulminate of mercury, which serves as a detonator when it is itself struck sharply by the firing pin. The latter projects from the nose of the torpedo and is driven in when it hits any solid object. The compressed air which operates the

propelling machinery is supplied under a pressure of 1,000 pounds to the square inch, and the walls of the chamber are tested to stand 1,700 pounds. A few

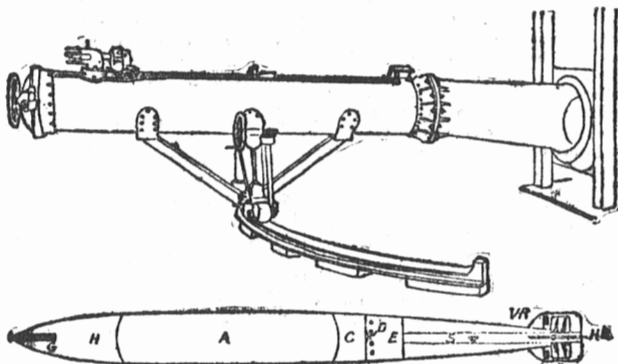
years ago the distance which could be traversed under that impulse was six hundred or eight hundred yards. The best Whitehead torpedoes have a range of nearly or quite 1,000 yards, or over half a mile. If possible, though, they are launched when the torpedo boats are much closer than that to their targets. As the modern torpedo is self-propelling, it is necessary only to start it on its way with a gentle push. A torpedo tube for launching the missile is a horizontal cylinder, only a little longer than the missile and shielded at the outer end by a simple valve designed to keep out water. A gate, or door, at the rear end opens for the admission of the torpedo. A vigorous puff of compressed air effects the launching after the projectile has been aimed by the proper steering of the boat.

Nowadays nearly all big warships have three or four torpedo tubes, but it is doubtful if they will ever prove serviceable. For real work much smaller and much faster craft are needed. The size of torpedo boats has undergone some curious changes. Their original function—theoretically, at least—was coast defence. It was hardly thought that they would ever be employed outside the harbors of the country which owned them. They were meant to resist invaders, not for aggression. They had a displacement of only 25 or 30 tons, and could have been hoisted up to the deck of a battleship or cruiser, to be taken to a distance, if necessary. Then came a rapid development in proportions. The 'Vesuvius,' which represents the influence of that movement, displaces 930 tons. England projected several boats of from 800 to 1,000 tons each. At length, however, a reaction set in, and to-day the limit is about one-quarter or one-third of the latter figure. The 'Dupont' (American) displaces 185 tons, and the 'Sokol' (Russian) 240, while the ill-fated 'Viper' (British) had a displacement of 370 tons. The greatest advances, however, are in ranging qualities, armament and speed. The best torpedo boats to-day have guns that will enable them to sink unarmed

vessels of that class, and are able to cross the ocean. Practically all torpedo service now is performed by 'destroyers.' These are adapted to making from 25 to 30 knots an hour, whereas the earlier torpedo boats were good for only about 20. The 'Vesuvius' is credited with 22, the 'Dupont' with 28, the 'Darig' and 'Havoc' (British) with from 28 to 29. The 'Sokol' made 30.3 knots on her trial trip; between 30 and 32 knots was expected from the last batch of Japanese destroyers, nineteen in number, whereas the 'Viper,' equipped with Parsons engines, made 32 knots before her accidental destruction.

The newest type of torpedo boat is the submarine. This style of vessel runs on the surface until within a mile or two of the enemy, then becomes partially or entirely submerged, and completely disappears from sight just before discharging a projectile. So long as its smoke

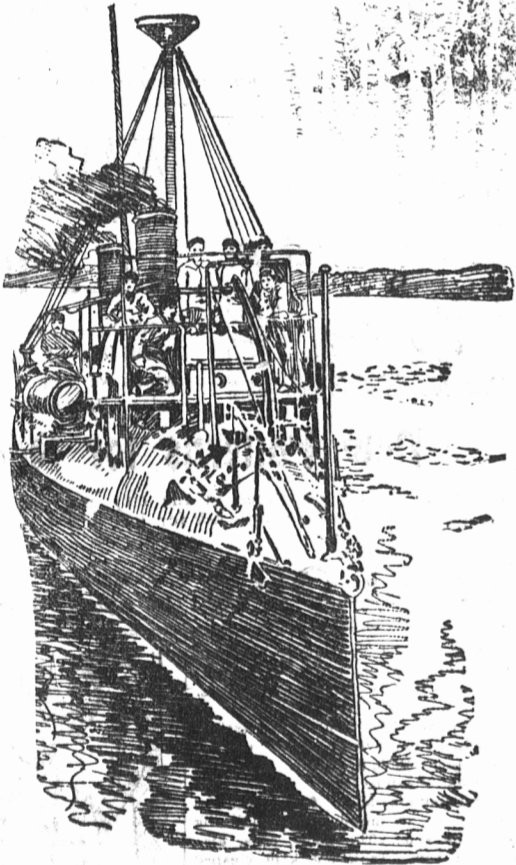
stack can be allowed to 'stick up' of water the boat is propelled by gasoline engines. When she dives the screws are driven by storage batteries and an electric motor. Even on the surface these boats run slowly, none yet built making more than ten or eleven knots or travelling faster than six or eight when fully immersed. They are also much smaller than the average destroyer. Boats of this kind are provided with additional mechanism to maintain a level course under the surface, to take in and eject water freely, and for making observations when the hull is completely out of sight. For this last purpose an optical instrument of peculiar construction is mounted at the very top of a tube, which starts up like a telescope, and in which mirrors or prisms transmit the picture to an observer inside the boat. The method of discharging a torpedo is the same with a submarine as with any other torpedo boat.



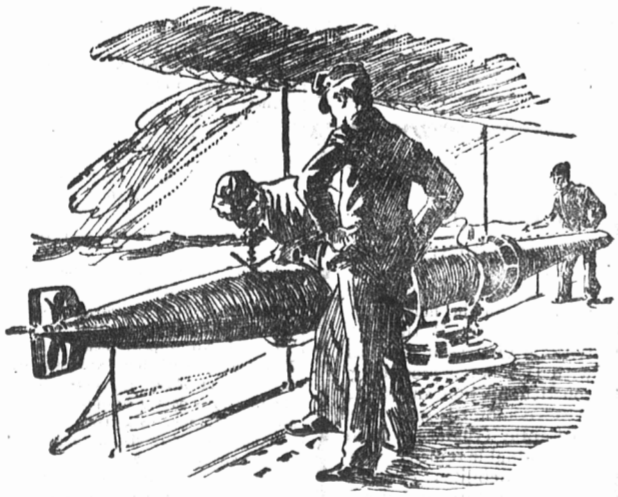
TORPEDO AND TORPEDO LAUNCHING TUBE.

H—War head containing 250 pounds of wet gun cotton. G—Primer of dry gun cotton. A—Air flask. C—Immersion chamber. D—Hydrostatic piston displacement. E—Engine room. B—Propeller shaft. P—Propellers. V—Vertical rudders. H R—Horizontal rudders.

The torpedo is built of steel in the shape of a porpoise, with a big double bladed tail. Ready for firing it weighs 1,100 pounds. Its length is about 16 feet 5 inches, its greatest diameter 17.7 inches. It is assembled in four sections—the head, air flask and immersion chamber, after body, and tail—all fitted together with sleeve joints. The walls are made of the finest forged steel to resist the enormous air pressure. Compressed air is the motive power. This is contained within the air flask, a hollow forged steel cylinder nearly half as long as the torpedo, and the pressure attained is 1,800 pounds to the square inch.



TORPEDO BOAT WINSLOW.



PREPARING TORPEDO FOR LAUNCHING.

Mrs. Hughson, of Chicago, whose letter follows, is another woman in high position who owes her health to the use of Lydia E. Pinkham's Vegetable Compound.

"DEAR MRS. PINKHAM:—I suffered for several years with general weakness and bearing-down pains, caused by womb trouble. My appetite was fitful, and I would lie awake for hours, and could not sleep, until I seemed more weary in the morning than when I retired. After reading one of your advertisements I decided to try the merits of Lydia E. Pinkham's Vegetable Compound, and I am so glad I did. No one can describe the good it did me. I took three bottles faithfully, and besides building up my general health, it drove all disease and poison out of my body, and made me feel as spry and active as a young girl. Mrs. Pinkham's medicines are certainly all they are claimed to be."—Mrs. M. E. HUGHSON, 347 East Ohio St., Chicago, Ill.

Mrs. Pinkham Tells How Ordinary Tasks Produce Displacements. Apparently trifling incidents in women's daily life frequently produce displacements of the womb. A slip on the stairs, lifting during menstruation, standing at a counter, running a sewing machine, or attending to the most ordinary tasks may result in displacement, and a train of serious evils is started. The first indication of such trouble should be the signal for quick action. Don't let the condition become chronic through neglect or a mistaken idea that you can overcome it by exercise or leaving it alone. More than a million women have regained health by the use of Lydia E. Pinkham's Vegetable Compound.

If the slightest trouble appears which you do not understand write to Mrs. Pinkham, at Lynn, Mass., for her advice, and a few timely words from her will show you the right thing to do. This advice costs you nothing, but it may mean life or happiness or both.

Mrs. Lelah Stowell, 177 Wellington St., Kingston, Ont., writes:

"DEAR MRS. PINKHAM:—You are indeed a godsend to women, and if they all knew what you could do for them, there would be no need of their dragging out miserable lives in agony. I suffered for years with bearing-down pains, womb trouble, nervousness, and excruciating headache, but a few bottles of Lydia E. Pinkham's Vegetable Compound made life look new and promising to me. I am light and happy, and I do not know what sickness is, and I now enjoy the best of health."

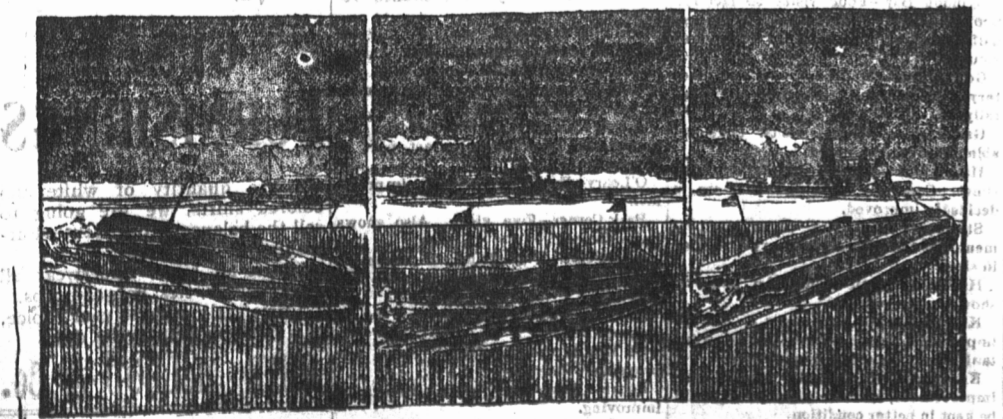
Lydia E. Pinkham's Vegetable Compound can always be relied upon to restore health to women who thus suffer. It is a sovereign cure for the worst forms of female complaints,—that bearing-down feeling, weak back, falling and displacement of the ovaries, and all troubles of the uterus or womb. It dissolves and expels tumors from the uterus in the early stage of development, and checks any tendency to cancerous humors. It subdues excitability, nervous prostration, and tones up the entire female system. Its record of cures is the greatest in the world, and should be relied upon with confidence.

\$5000 FORFEIT if we cannot forthwith produce the original letters and signatures of above testimonials, which will prove their absolute genuineness. Lydia E. Pinkham Medicine Co., Lynn, Mass.

If somebody told you that you were "behind the times," you would not like it. You can avoid being told so, by using

## The Headlight PARLOR MATCH

It is up-to-date and the only match to use indoors. For sale at every live grocery. 5 cents a box, 3 boxes 12.



THE HOLLAND DIVING, SUBMERGED AND RISING.

The Holland submarine torpedo boat is one of the most interesting warships of the navy. She is somewhat in the experimental stage at present, but numerous tests have demonstrated that she cannot only dive in safety far beneath the waves, but that she can safely come to the surface again. When beneath the surface, she discharges a torpedo into the hull of an enemy's ship above her, and when on the surface she throws a dynamite shell for a considerable distance with deadly effect. If she does all that her inventor claims she will do, she will revolutionize naval warfare. The largest battleship will be powerless to resist her attack and will be compelled to seek safety in flight when ever her approach is detected.

### Woman's Weakness

A woman's reproductive organs are in the most intense and continuous sympathy with her kidneys. The slightest disorder in the kidneys brings about a corresponding disease in the reproductive organs. Dodd's Kidney Pills, by restoring the kidneys to their perfect condition, prevent and cure those fearful disorders peculiar to women. Pale young girls, worn-out mothers, suffering wives and women entering upon the Change of Life, your best friend is

### Dodd's Kidney Pills