

We may now consider the details of the auxiliary periscope, as proposed. To begin with the floating tank carrying the conical mirror can be submerged, like the submarine itself. This is accomplished by the electric control of a sea-valve installed on the under side of the floating chamber. When opened, it floods a separate compartment with water, causing the device to sink. To make it rise an electrically operated pump, mounted within the buoyancy chamber, is started up. The sea-valve now being closed, the water in the submerging tank is soon pumped out. A check valve in the efflux pipe from the pump prevents the sea-water from backing up into the apparatus.

Attached to the floating mirror pontoon are two wire cables, which may be wound up on suitable drums, driven by electric motors within the submarine hull. These motors operate the cable winding drums through bevel gears; the shafts of the motors passing through water-tight stuffing boxes. To compensate for the rise and fall of the floating pontoon, if so we may term it, owing to a choppy sea, there are provided two automatic cable take-up reels, secured to the upper end of each winding cable. These reels act in a similar manner to those used on trolley cars for automatically taking up the slack in the trolley rope.

In order to haul in or lower the auxiliary periscope to its resting place especially provided at the top of the submarine, the sea-valve, regulated by an electromagnet, is opened to admit water to the submerging chamber, and by operating the electric motors connected to the wire cables the device is pulled downward into its proper place. To release it, the pump motor is started, which, emptying the water tank, renders the pontoon buoyant again.

The cable motors are released to permit the auxiliary sighting device to float upward by its own buoyancy.

The circular form of the pontoon and its central orifice tend to give reasonable steadiness unless the sea happened to be very choppy. By squirting oil on the sea the waves may be made to subside appreciably. Most important of all, it does not matter if the float and its conical reflector do bob around slightly, as the sighting accomplished by its aid is only intended for general reconnaissance and *not* for determining the exact range of an enemy vessel so as to torpedo her. Its primary purpose is, therefore, to render an inspection of the sea above the submarine a safer operation than where the usual periscope

is utilized for the purpose, as if this happened to be shot away by a nearby warship the chances are that part of the hull plates would be damaged also, and the unlucky crew sent to their eternal resting place—Davy Jones' locker.

RADIO CONTROLLED TORPEDO IN THE MOVIES.

WHAT would we do to-day if a foreign country invaded this land? Our army and navy at present are not very suitable for defensive and offensive work, and the quantity of ammunition which we have to-day is perhaps not sufficient for carrying on actual warfare for any appreciable period. The only way the invader can be checked from entering the country is by employing some defensive means that does not require a large number of trained men. For example the utilization of projectiles that can be fired and controlled at a considerable distance. It is possible to control a torpedo of either the aerial or water type by *wireless*, but

encourage the invention or contrivances for destruction and defense and offer prizes for the best death-dealing machines developed.

Winthrop Clavering, an alert and ingenious writer of detective stories, reads of the offer and calls the attention of his friend, Bartholomew Thomson, an inventor, to the item. Thomson has previously completed a wireless control mechanism with the financial assistance of Clavering. One of the needs suggested by the board is a *guided* aerial torpedo. Clavering urges Thomson to invent the desired torpedo and provides the necessary funds. Immediately experiments are started by Thomson and William Haverman, his assistant.

After spending a considerable amount of time and money the first experimental torpedo is built and made ready for a trial. It is assembled out in a secret place and the parts are all properly tuned up. Fig. 1 shows the testing arrangement. (In the movies they do it!)

Later the United States is invaded by the foreign hordes, who effect a landing in Southern California. The valiant defense by the submarine torpedoes controlled by wireless keeps the enemy from our coast on both the Atlantic and Pacific. The invasion of California, however, sets the country in a panic. Clavering and the young inventor lose no time. They co-operate with the Government experts for the manufacture of great quantities of aerial torpedoes provided with *wireless* control. In a short time they are transported to California, and stationed out of range of the enemy's guns. Naval and land battles have been lost repeatedly by the insufficient American forces. Fortresses are demolished and great stretches of territory speedily occupied by the enemy. At a critical

moment the new torpedoes are launched by the young inventor and his assistant. Fig. 2 shows a group of soldiers holding the radio-controlled torpedo ready for launching. When the propeller is released by a signal from the inventor (suitably protected at the radio control station. See Fig. 3), the missile darts towards the enemy. An ingenious device is employed in observing the course of the missiles. It is an *electric periscope*, supported by kites, from which connections are brought to an observation apparatus in the operating room. In the illustration at Fig. 3 the operators are using this periscope. In Fig. 4 one of the radio-controlled torpedoes is seen darting downward on the enemy.

According to the pictures, these torpedoes saved the country from the enemy.

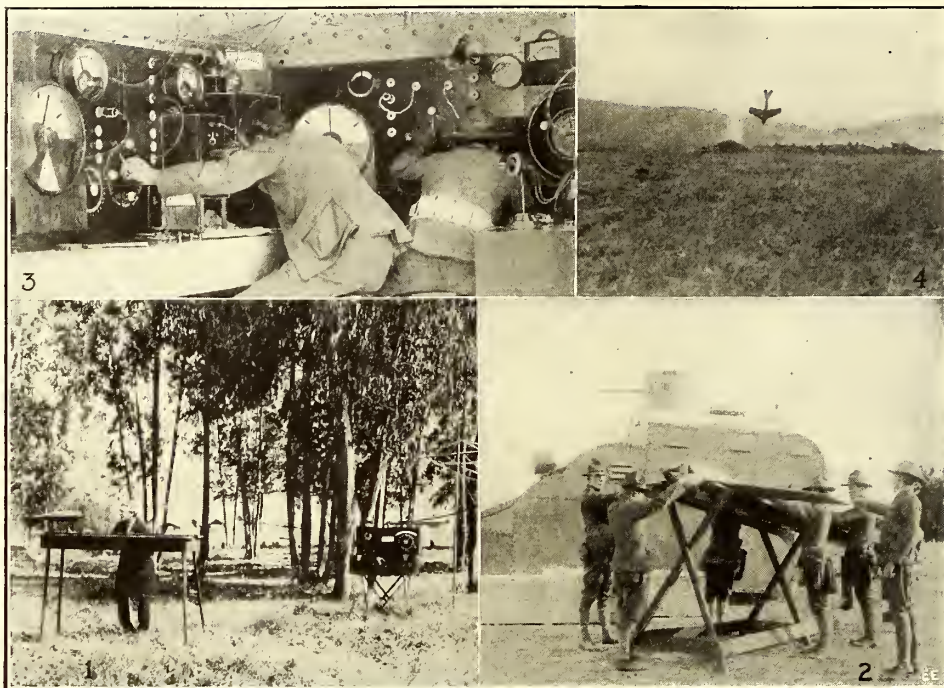


Fig. 1. How the Inventor in the "Movies" Develops a Radio-Controlled Torpedo. Fig. 2. One of the Aerial Torpedoes Ready for Launching. Fig. 3. Interior of Control Station. Fig. 4. The Radio Torpedo Destroying the Enemy.

although enormous sums of money have been expended by various inventors in an effort to develop a satisfactory radio-controlled torpedo, totally satisfactory results have not been obtained up to this time. In spite of the fact that, although the inventors were not successful in perfecting such a torpedo, a "movie" concern has already produced an elaborate and realistic film showing real aerial torpedoes controlled by wireless. This exciting film, "The Flying Torpedo," was produced by the Triangle Film Corporation. The picture is supposed to illustrate events in 1921, when the United States Government learns of a secret coalition of foreign powers against it. A technical advisory board, composed of the leading American scientists, is organized for the defense of the country. They en-

DATE OF ISSUE.—As many of our readers have recently become unduly agitated as to when they could obtain *The Electrical Experimenter*, we wish to state that the newsstands have the journal on sale between the fifteenth and the eighteenth of the month in the eastern part of the United States and about the twentieth of the month west of the Mississippi River. Our subscribers should be in possession of their copies at these dates. Kindly bear in mind, however, that publications are not handled with the same dispatch by the Post Office as a letter. For this reason delays are frequent, therefore kindly be patient and do not send us complaints as to non-arrival of your copy before the twenty-fifth of the month.