

# Search-light "Sub" Destroyer for Ships

By H. Winfield Secor

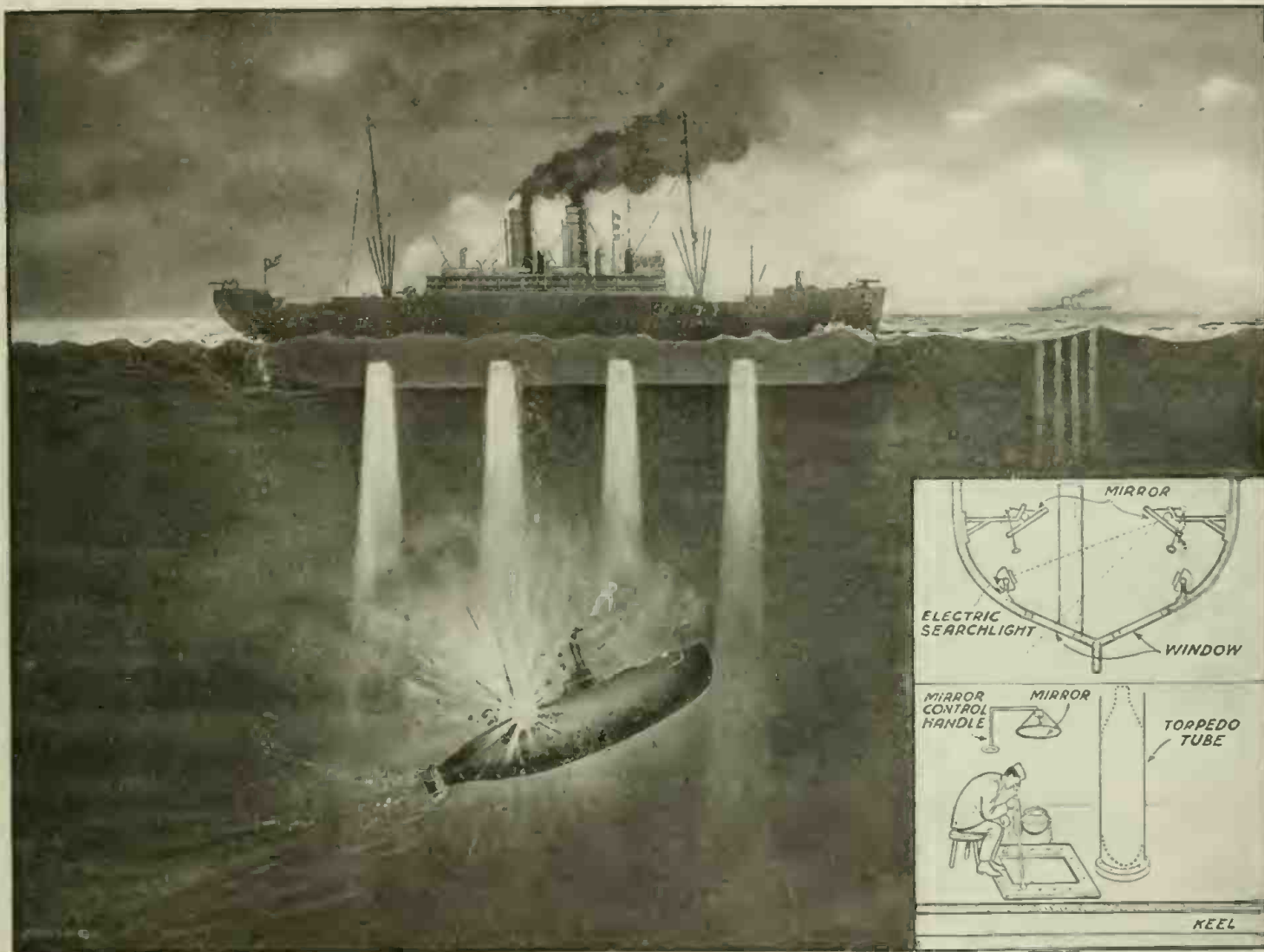
**I**T has happened now and then that a merchant vessel has past directly over an enemy submarine without knowing it. Likewise enemy submarines have dived under steamships for one reason or another—perhaps to escape being rammed, or again to get a better chance to torpedo the unsuspecting vessel. Now imagine what would happen if, just when the ship was over the sub-sea craft, it suddenly turned on a battery of powerful under-water search-light projectors, as shown in the illustration!

moved off the spot—a matter of a few seconds. Also, the lower part of the hull of ships so equipt could be strengthened and double-bottomed to stand the extra strain. Besides, why have the depth bombs detonate so quickly? Considering that the target is, under these conditions, fairly sure of being hit, why not use magnetic torpedoes—each torpedo to be provided with a powerful electro-magnet, so that when it reaches the "sub's" steel hull it will be attracted and held. Then, with suitable time fuses attached (or else by providing them

Sperry search-light, capable of developing over a billion candle-power in one concentrated beam.

This interesting scheme of combating submarines has been patented by an Illinois inventor, Mr. George W. Keister. In his patent specifications, among other things he says:

"The present invention relates to a device for torpedoing and destroying submerged objects such as submarines, and has for its object to provide a device of this character which embodies novel features of construc-



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A Recent Invention for Destroying Enemy Submarines, Which Involves the Use of One or More Powerful Electric Searchlights, the Beams of Which Are Projected Thru the Glass Windows in the Bottom of the Vessel's Hull. When a Submarine is Spotted, the Observer at Once Discharges a Depth Bomb, Which, if Fitted With a Strong Electro-Magnet, Will Attach Itself to the "Sub's" Hull, and Explode Later When the Time-Fuse Acts. This Allows the Vessel Time to Get Away from the Spot.

As soon as the observer stationed inside the ship's hull sees a black hulk, he discharged a torpedo or depth bomb with every chance of hitting its mark. Considering that the projectiles would come fairly close or right on the target, they would not have to be loaded as heavily as the depth bombs ordinarily used, with the consequence that the vessel discharging them would not be in such danger of self-destruction or injury, as are the present destroyers and other craft. By means of time fuses suitably applied the depth bombs need not detonate until the vessel had

with an electric diafram depth-gage detonator, as described in the January, 1918, issue of the ELECTRICAL EXPERIMENTER), the U-boat would continue on its way, suspecting nothing perhaps, unless it should have been the slight hump when the magnetic depth bomb "took hold," when suddenly—well, it would be all over for the Hun sub-sea sailors in less time than it takes to tell about it.

It is possible to see a distance of 75 to 100 feet with modern high power electric search-lights under water, especially with such intensely powerful projectors as the

tion, whereby a submarine, even tho it may be submerged to a considerable depth, can be located from a vessel directly above the same and a torpedo projected with accuracy in the direction of the submarine.

Further objects of the invention are to provide a device for destroying submarines which can be mounted without difficulty or great expense upon any small vessel of a sufficient size to carry a torpedo tube, which can be controlled by a single operator (providing only one sub-sea searchlight is used), and which will make it easy to locate

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# BOOK REVIEW

**POWER WIRING DIAGRAMS**, by A. T. Dover. 208 pages; size, 4¼ x 6¾ inches; 254 illustrations; semi-flexible covers, pocket size. The MacMillan Co., New York, American publishers, 1917. Price, \$2.25.

A handy pocket-size edition, which should prove of practical service to electricians, especially those who come in contact with the application of motor power to industrial plants.

It contains a very large number of diagrams of standardized apparatus and machinery, and so far as possible actual control apparatus has been kept in mind in laying out the various circuits.

The following list of chapters should prove of interest: Continuous-Current Motors and Control Apparatus, Continuous-Current Generators and Balancers, Continuous-Current Switch Panels, Control Apparatus for Alternating Current Motors, Power Transformers, Instruments, Instrument Transformers and Relays, Leakage Protective Systems for Continuous-Current and Alternating-Current Circuits, Alternating-Current Switch-Gear and Automatic Voltage Regulators.

A large and comprehensive appendix is also included which contains numerous charts, curves, tables and miscellaneous data of practical value.

A very practical work, and altho a large amount of the text deals with foreign types of apparatus and applications, the various ideas and theories will be found of value to American electricians and engineers.

**HOW TO MAKE HIGH PRESSURE TRANSFORMERS**, by Prof F. E. Austin. Second edition, 46 pages; illustrated; size, 4½ x 7½ inches; stiff covers. Publish by the author at Hanover, N. H., 1917. Price, 65 cents.

A timely work of unusual interest to amateurs and experimenters especially, that just fits the pocket, as well as the amateur's pocket-book. A wealth of information is included in a very small space pertaining to transformers, from the theory to actual constructional work. The first chapter defines the function of a transformer and gives tables and rules for computing various sizes of transformers with pointers which safeguard the occurrence of errors usually found in home-made apparatus.

The closing chapter gives complete directions for building transformers of the following sizes: 1 K.W., 20,000 volts; 3 K.W., 20,000 volts, and 1 K.W., 4,000 volts.

The above are secondary voltages. All three designs are intended to operate on 110 volts, 60 cycles A. C.

A useful table giving data on copper magnet wire is included and a complete list of parts necessary for the construction of each transformer, with prices, and it might be said that these prices are of course rather out with current fluctuations of quotations and cannot therefore be followed.

## SEARCH-LIGHT "SUB" DESTROYER FOR SHIPS.

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a submerged submarine and project a torpedo vertically downward for the destruction of the submarine, while the vessel is directly above the same.

At a convenient point in the length of the vessel a vertically disposed torpedo tube is arranged, so that a torpedo can be quickly released and projected vertically downward for the destruction of any object such as a submarine, which may be submerged below the vessel. Immediately to the rear of the torpedo tube a pair of transparent plates are inserted in the bottom of the hull, one of these plates being located on each side of the keel. These plates are all of a sufficient thickness to withstand the pressure of the water, and all of a sufficient size to enable the rays from searchlights to be projected downwardly thru the water for the purpose of rendering visible submerged objects under the boat.

A mirror is arranged above each of the transparent plates, being provided at the back thereof with a socket which engages a ball at the end of a bracket so as to provide an adjustable mounting for the mirror. Powerful searchlights are ar-



### Partial List of Subjects

Fundamental Principles of Electricity and Magnetism, Dynamos, Motors, Lighting Circuits, Power Circuits, Bell Circuits and Wiring, Automobile Circuits, Wiring Buildings, Electrical Signs, Burglar Alarms, Ignition Systems, Meters, Storage Batteries, Lamps, Equalizers, Controllers, Switchboards, Telegraphs, Telephones, Telautographs, X-Rays, Transformers, Calculating Wire Sizes, Electrical Heating, Installation of Electrical Systems, Electrical Testing, Illuminating Engineering, Maintenance of Electrical Apparatus, etc., etc.

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