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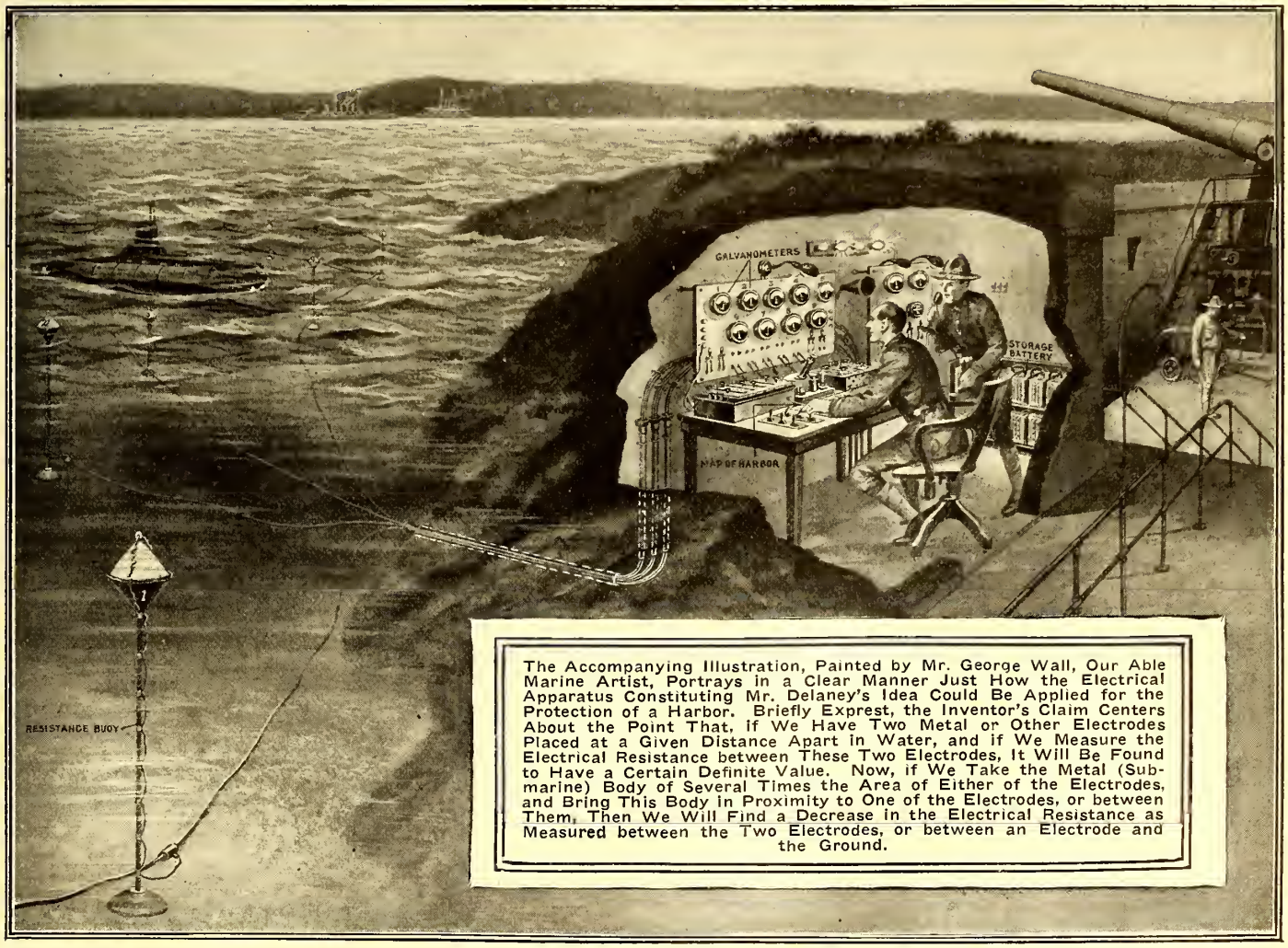
Locating Hidden Submarines by Electricity

By H. WINFIELD SECOR

AN extremely interesting and apparently heretofore unthought of electrical scheme of extreme simplicity for the detection and location of submerged metallic bodies, such as submarines or sunken wrecks, has been patented by a well-known American inventor, Mr. Patrick B. Delaney. The accompanying illustration, painted by Mr. George Wall, our able marine artist, portrays in a clear manner just how the electrical apparatus constituting Mr. Delaney's idea could be applied for the protection of a harbor. Briefly exprest, the inventor's claim centers about the point that, if we have two metal or other electrodes placed at a given distance apart in water, and if we measure the electrical resistance between these two electrodes, it will be found to have a certain definite value. If we take a metal (submarine) body of several times the area of either of the electrodes, and bring this body in proximity to one of the electrodes, or between them, then we will find a *decrease* in the electrical resistance as measured between the two electrodes, or between an electrode and the ground.

The illustration here reproduced shows the necessary apparatus as it might be installed in a suitably protected bomb-proof room in a fort or other suitable location, and as the officer in charge of this work would have before him a map of the area thus equipt with Delaney *electrode-buoys*, it would be a simple matter for him to quickly locate the position of an enemy submarine or other metallic body such as a wreck, et cetera.

It should be borne in mind also, that practically all American harbors are plentifully sprinkled with special *electric mines*, the position of each mine being accurately known and plotted on a map in possession of an officer on shore. Before him there is an electrical switch and signal board, with a contact on it for each mine by number. As soon as a ship approaches one of these mines the officer has but to press an electric

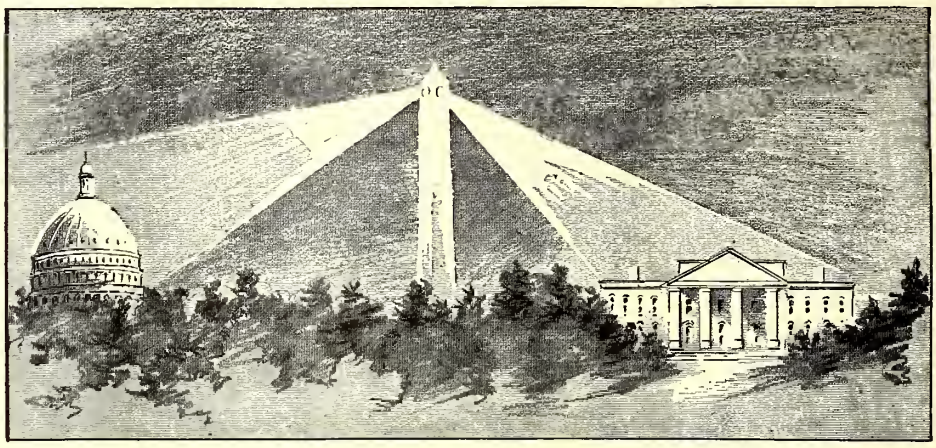


The Accompanying Illustration, Painted by Mr. George Wall, Our Able Marine Artist, Portrays in a Clear Manner Just How the Electrical Apparatus Constituting Mr. Delaney's Idea Could Be Applied for the Protection of a Harbor. Briefly Exprest, the Inventor's Claim Centers About the Point That, if We Have Two Metal or Other Electrodes Placed at a Given Distance Apart in Water, and if We Measure the Electrical Resistance between These Two Electrodes, It Will Be Found to Have a Certain Definite Value. Now, if We Take the Metal (Submarine) Body of Several Times the Area of Either of the Electrodes, and Bring This Body in Proximity to One of the Electrodes, or between Them, Then We Will Find a Decrease in the Electrical Resistance as Measured between the Two Electrodes, or between an Electrode and the Ground.

SCHEME TO LIGHT WASHINGTON MONUMENT, CAPITOL AND WHITE HOUSE WITH ONE SEARCHLIGHT.

A NOVEL patent has recently been issued to Mr. Frank H. Ellison whereby it is proposed to erect suitable large size mirrors at the top of the Washington Monument in Washington, D.C., so that a powerful searchlight beam projected from the Hotel Raleigh could, by means of the doubly reflected beams from the mirrors, be caused to illuminate the dome of the Capitol as well as the White House simultaneously. The idea involved is apparently to increase the illuminating efficiency.

The accompanying illustration shows the idea in a clear manner and the inventor certainly deserves credit, as it is the first time to our knowledge that such a double reflecting scheme has been proposed on such a large scale. The patentee has covered the details for the construction of the mirror supporting frames and also the angle they shall take with respect to the buildings to be lighted and also with respect to the walls of the Washington Monument. This scheme would seem applicable to many other illuminating problems where such a high structure as the Washington Monument is available on which to mount suitable mirrors or reflectors. The searchlight beam proper is not shown in the illustration here reproduced, but would be projected toward the Monument approximately from the position occupied by the reader of this article.



A Novel Scheme Worked Out by an Inventor of Washington, D.C., whereby a Single Searchlight and Two Large Mirrors Will Serve to Illuminate the White House and Capitol.

U-BOAT USED RADIO DECOY.

A recent dispatch from Amsterdam states that German submarines are now sending out S O S wireless signals to lure British vessels to destruction.

The *Telegraaf* learns from an officer of a large steamer of an important Dutch line that while on a voyage from the Dutch East Indies he received while in the Bay of Biscay an S O S message. The ship immediately rushed to the place indicated and found a German submarine, which was not in distress. The captain of the submarine exprest regret that it was a Dutch and not a British ship that had heard the call.

JAPAN'S NEW RADIO WITH UNITED STATES.

The efficiency of Japan's new wireless station, which is now in regular communication with the United States by way of Hawaii, was strikingly shown by its recent picking up of messages sent from Northern Germany and from some other continental wireless station. The Japanese station, which is situated at Funabashi, ten miles east of Tokio, was receiving a message from Hawaii when it picked up several cipher messages addressed to E. G. C., which stands for Madrid, which were being sent by some powerful station some 6,000 miles away.

button and the ship will be blown to pieces. These mines are so powerful that even tho a vessel might be some distance from them, they will be thoroly shattered and put out of commission. It is also possible in the latest type of electric mines to so control them from a fort on shore that they may be exploded automatically, so that ship will detonate the mine by simply striking against, but if a neutral vessel had to pass thru this mine field, then it is possible to open the proper circuits to the mines, so that it will not be detonated by a ship coming in contact with it.

The apparatus required for the application of Mr. Delaney's most ingenious and extremely simple yet important invention, are shown in the accompanying illustration and comprises principally a source of electrical energy of low potential, such as a storage battery and a suitable set of measuring instruments for determining the electrical resistance between any two of the submarine electrode-buoys. One side of the resistance test-circuit, which includes a very sensitive galvanometer and a source of current, is grounded and the resistance may be measured from the water to a submerged electrode-buoy or the resistance between any two or more buoys may be measured. A Wheatstone bridge is shown as part of the equipment and, of course, an operating room for this apparatus would be equipt with a loud speaking telephone, so that information could be freely exchanged between this room and other parts of the fortification. It would be very feasible to combine this apparatus in the same room with the electrical control switchboard for detonating the submerged mines as previously mentioned.

The inventor claims that with a suitable arrangement of galvanometers and a proper arrangement of electrode-buoys anchored at different depths, it is readily possible to quickly and accurately establish the approximate location of submarines or other metallic bodies brought into proximity with one of the buoys, and that it is also possible by such a scheme to determine the direction in which the object is moving and its course. The application of this arrangement has here been shown as applied to a harbor with a detecting station on shore, but it is obvious that the indicating instruments may be located on shipboard when desirable.

It is indeed remarkable that such a simple method of detecting submerged metallic bodies should not have been promulgated or proposed by electricians before, and great credit is due Mr. Delaney for bringing out this practical and efficient electrical submarine detection scheme at this time.

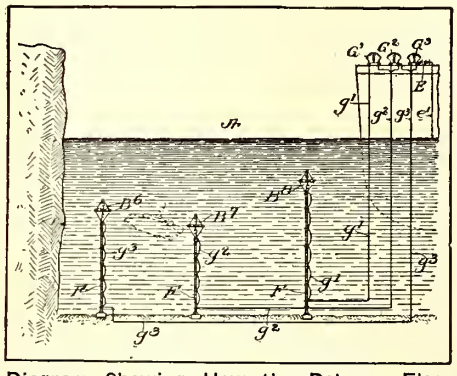


Diagram Showing How the Delaney Electrode-buoys May Be Connected Up, Each to a Distinct and Independent Galvanometer.

WHAT THE U.S. NAVY OFFERS TO YOUNG MEN.

Uncle Sam's Navy offers a wide variety of industrial courses to ambitious young men. If the recruit has had some training or experience in electricity, he may enter either the general or the radio classes of the electrical schools, one at the Brooklyn and the other at the Mare Island Navy Yard. The great advantages of these courses are discust in the annual report of the Secretary of the Navy. Here the course of instruction comprises machine-shop work, reciprocating steam engines, steam-turbine engines, internal-combustion engines, magnetism and electricity, dynamos, motor generators, alternating currents, batteries, and the like. In the radio group there is thoro practise in the radio mechanism for receiving and sending. In the Artificer School at the Norfolk Navy Yard men are taught to be shipwrights, ship fitters, blacksmiths, painters, and plumbers. Both at Newport, R.I., and San Francisco are yeomanry schools, where the men are perfected for the clerical work of the Navy to become expert stenographers, typewriters, bookkeepers, etc.

An attractive line in the Navy is the Hospital Corps, with schools at Newport, R.I., and San Francisco. Not a few men have gone out of these schools after their Navy service to make good doctors in civil life, after the thoro training received in anatomy and physiology, nursing, first aid, and emergency surgery, hygiene and sanitation, pharmacy, materia medica, toxicology, chemistry, and the like. Music is essential to vary the secluded life afloat, and boys with musical talent are instructed in the schools at Norfolk and San Francisco. The machinist school at Charleston is open to men who show themselves apt in mechanical work. The coppersmith school is located also at Charleston. The two commissary schools are at San Francisco and Newport. At Pensacola every three months a class of 16 enlisted men, selected by the commander in chief of the Atlantic Fleet, is trained for an 18 months' course in aeronautics. The course is divided into two classes—mechanics and flying. The men are afterwards transferred to general service and are entitled to additional pay of 50 per cent while detailed to the duty of actual flying. The seaman gunners' school is located at Newport where a special study of the torpedo is made.