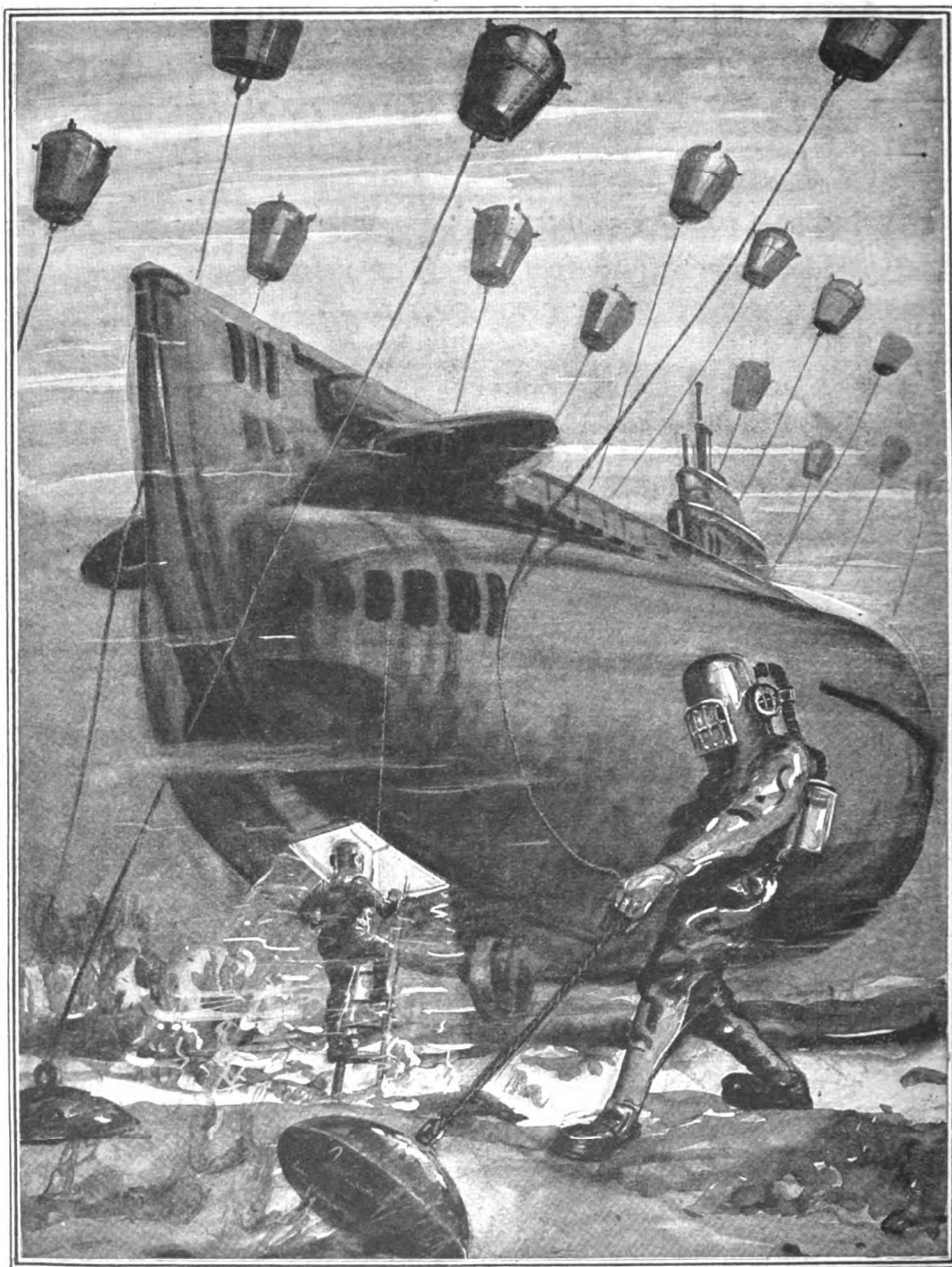


Creeping Through a Mine Field in Safety



The divers are clearing away the mines. They leave and enter the submarine by a door, just as they would a house. What keeps the water out of the boat? Just air, but at such a pressure that it pushes the water back. Wheels enable the boat to roll on the ocean bed

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Now Comes the Sea Tank

Did the Italians blow up the Austrian dreadnought in Pola with an American wheeled submarine?

By Robert G. Skerrett

WHEN Lieutenant Commander Pellegrini forced his way into the harbor of Pola and sank at least one of Austria's biggest dreadnoughts, what sort of craft did he command? The dispatches say that he used a "sea tank," and that "the boat was forty feet long, six feet wide, and propelled by electricity. There is an endless rotary chain around the vessel fitted with barbs which cut nets and other obstacles, like the land tanks. The craft has two torpedo tubes."

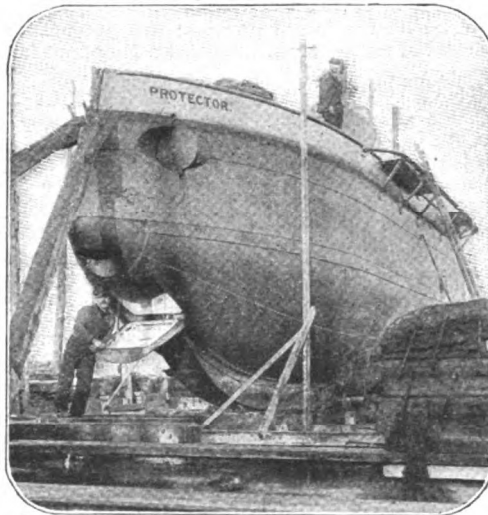
These particulars may be correct, and, again, they may be nothing more than governmental camouflage to cover up the laxity at Pola, which permitted the Italians to get by the guardship at the harbor mouth, to thread a maze of cunningly-planted mines, and, finally, to break through an inner defense consisting of a barrier net of wire rope. But if Lieutenant Commander Pellegrini did use a so-called "sea tank," its success was spectacular, and the public, both lay and technical, is naturally curious to know what new order of torpedo-boat has been evolved for naval warfare.

A bit of hitherto

unpublished history may help us to a fairly accurate idea of the real nature of the sea tank in question. As in the case of the land tank, we may find that the type is substantially a duplication of an American invention conceived primarily to facilitate commercial salvage operations under water. Pellegrini's sea tank was, in all likelihood, a modification of the wheeled submarine *Argonaut* built by Simon Lake in Baltimore in 1897.

The *Argonaut* was a stumpy cigar-shaped vessel of steel, thirty-six feet long, having a maximum diameter of nine feet. When fully submerged, her displacement was about fifty-nine tons. The boat was built to travel on the surface or to roll along on the oceanbed, and two big cog-

rimented driving wheels, driven by a gasoline motor through suitable gears, propelled her on the sea floor. By regulating the undersea craft's dead weight with water ballast the pressure or grip upon the bottom could be adjusted. The front compartment of the old *Argonaut* was a compressed air chamber or air lock that is used in tunneling beneath the rivers. The air in the chamber was compressed to such a degree that it



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This wheeled submarine of the *Argonaut* type was sold to Russia when at war with Japan

prevented the water from coming in through an open hatch while a diver could step from the chamber right out upon the bottom of the sea.

The purpose of the *Argonaut* was to make salvage operations safer and easier by furnishing the divers with a submerged base from which to work unhampered by weather conditions at the surface. The *Argonaut* cruised upon and below the waters of Chesapeake Bay in 1898 and also covered many hundred miles both under and above water. The following extract from the vessel's log, dated July 28 of that year, is very suggestive:

"We were desirous of making a search for the cables which connected with the mines guarding the entrance to the harbor at Hampton Roads, but could not obtain permission from the authorities, who were afraid we might accidentally sever them, which would, of course, make their entire system of defense useless."

However, Mr. Simon Lake had a cable laid upon the bottom at another point, and then approached it from a distance after taking his bearings by compass. The *Argonaut* rolled along with the door of the diving compartment open, and succeeded without any trouble whatever in hooking up the cable and bringing it into the chamber, where it was cut to complete the demonstration.

Early in 1906, Mr. Lake was in Europe, and went to Rome to interest the Italian Ministry of Marine in his naval sub-

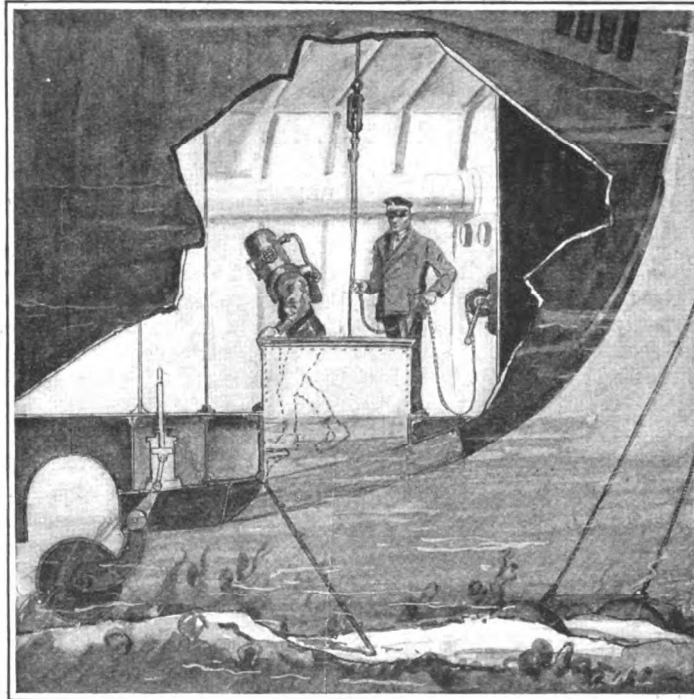
marines which he had developed after building the *Argonaut*. Mr. Lake laid much emphasis upon the distinctive features of his type embodied in the diving compartment and his improved form of bottom wheels. The Minister of Marine listened for a while and then suavely said to Mr. Lake:

"But, my dear sir, our shores dip too quickly and suddenly to great depths to make these wheels of value in defending our sea-coasts."

Mr. Lake promptly rejoined: "Yes, that is quite true, Your Excellency, with the exception of the Adriatic seaboard which lies

nearest to your likeliest foe, Austria. From Ancona northward and then eastward to the neighborhood of Pola the 120-foot depth line extends off shore anywhere from five miles to many times that distance, and that sandy sea-bed is just the area within which a submarine with bottom wheels could do its best work in protecting the Gulf of Venice from a hostile naval force."

Can it be that the Italians borrowed Mr. Lake's suggestion? This ingenious American has shown more than once how a couple of his submarines could sweep mine fields with little fear of detection. Divers could cut nets easily without disturbing in the least the supporting surface buoys that might otherwise betray the presence of the attacking submarine.



The air pressure on the inside prevents the water from entering the hold when the trap door on the bottom is opened for the diver