

A FOREIGN NAVY USES EDISON BATTERY, TOO

M. R. Hutchison Says Three Submarines Equipped with Them Have Sunk Many Ships.

HYDROGEN GAS NO DEFECT

Amount Thrown Off by Device Infinitesimal, He Insists—E-2 Explosion Purely Accidental.

Thomas A. Edison's personal representative and chief engineer, Dr. Miller Reese Hutchison, declared last night that Mr. Edison's submarine safety battery was in use in the war in Europe. Up to that moment it had been supposed that the United States had an option on the exclusive use of the device if the tests to which it was to be subjected proved satisfactory.

The announcement came while Dr. Hutchison was defending the Edison battery in the E-2, in which there was an explosion in the Brooklyn Navy Yard, on Saturday, against hints and suggestions that the battery had created the hydrogen gas that is supposed to have wrecked the interior of the boat, killed four men and injured ten. As to the use of the Edison battery in the European war, Dr. Hutchison said:

Long in Use in Submarines.

"The Edison cells have been in use on submarines for a long time, although this is not generally known. Mr. Edison is not in the munitions business, and he has not sold any since the war, but before that three submarines of a certain European power were fitted with these batteries. They have not met with any accident.

"One of them has sunk seventeen vessels and another recently sank a transport filled with troops and the cruiser that was convoying the transport. Two of the United States Navy's big floating cranes, one at Hawaii and the other at the Boston Navy Yard, have used the Edison battery since 1913 without a sign of trouble."

The British submarine E-19 may be one of the three indicated by Mr. Hutchison. In the October campaign against German commerce in the Baltic she was credited with sinking 15 ships up to the end of that month, and four more were sunk two days later, two of them credited to the same boat. There have been reports from uncensored sources of British submarines doing effective work in the Eastern Mediterranean against troopships and transports, and the E-19 may have been sent there.

Earlier, Dr. Hutchison had said:

"I have made as complete an inspection of the interior of the submarine E-2 as conditions will at present admit. This was made as chief engineer and personal representative of Mr. Edison. I have formed a tentative opinion and have transmitted it to the commander of the Brooklyn Navy Yard, under whose jurisdiction the submarine was on Jan. 15, 1916. It is subject to revision when all the facts are brought forth by the Board of Inquiry which Admiral Usher has ordered.

"As to the Edison battery, with the facts and conditions before me, I see no reason to recommend to Mr. Edison any changes or alterations in the theory, construction, or method of installation of the Edison submarine type of battery. The battery in the E-2 does not appear to have been injured in the least.

Not Enough to Explode.

"In the tests to which the new batteries were subjected under actual working conditions," said Mr. Hutchison, "it was found that at first an appreciable amount of hydrogen gas was given off, but the amount steadily diminished until after nine hours it was only 1.56 cubic feet per minute.

"Suppose, for an illustration, that instead of batteries to generate current we had a glass tank, and that the only effect of current upon it was to decompose water electrically. Put a current of 700 amperes through, as in a submarine, and each ampere will generate .0004 cubic feet of hydrogen and oxygen per minute. With 200 cells in a submarine this will equal a total product of 56 cubic feet of oxygen and hydrogen per minute. This would be the product under the worst possible conditions. Hydrogen will not explode unless it reaches the proportion of one to six with the air.

"A proportion of 1 to 20 is considered good practice; we make it 1 to 40, and often go as high as 1 to 150 in actual use. Whatever hydrogen is formed is carried away from the battery tank immediately by the ventilating system, which forces 2,000 feet of pure air through the tank every minute.

"There could have been no explosion within any of the cells. There is a water trap which will not permit any flame to enter the cell from outside or to get out from inside. This trap is what allows any hydrogen gas that accumulates to escape. The battery in E-2 was in perfect condition when I saw it today, I think, for I touched one of the poles with a piece of tin and got a severe shock. If one of the cells in the series had been out of order this could not have happened. None of the cells was broken."

Accident, Upham Insists.

Admiral Usher, through his aid, declined last night to comment on the statement of Dr. Hutchison. The aid added on behalf of Admiral Usher that the Board of Investigation had been in session all day, but that it had not yet arrived at a definite conclusion as to the cause of the accident.

Reports that the explosion Saturday afternoon was deliberately caused were denounced as falsehoods yesterday by Commander Frank B. Upham, second in command of the navy yard. He said:

"Any statements that the explosion was the result of anything but an accident are absolutely false. The facts so far known prove that the explosion was accidental."

A large crowd of visitors, kept back by a squad of marines, gathered around the dry dock containing the submarines E-2 and the D-1, D-2, and D-3, comprising four-fifths of the Second Division of submarines, and watched the process of hauling out broken and twisted steel from the interior of the E-2. Scores of girls and women, who accompanied seamen and employees of the yard, were among the visitors.

The opinion of some yard employees and sailors was that a powerful explosive had gone off inside the submarine and that it was the result of a plot. The extent of the destruction was pointed to as proof that the force

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able me to state the cause of the accident, and I shall not be enabled to make such a statement until the official reports are before me.

No further information regarding the accident was given out by the Navy Department at Washington yesterday.

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had been too great to arise from a gas explosion.

Condition of the Injured.

Rear Admiral Usher sent the following report to the Navy Department yesterday afternoon:

The Board of Investigation in the accident to the E-2 continued its meeting this forenoon. The condition of the injured is as follows:

At the Naval Hospital—Miles, Chief Electrician, serious; Clark, machinist's mate, serious; Holsey, gunner's mate, serious, but less so than preceding two; Raymond Otto, electrician, second class, condition favorable.

Condition of all workmen at the Cumberland Street Hospital, favorable.

Chief Electrician H. L. Miles, who enlisted in the Navy at Newport, R. I., where his wife lives, suffered from deep burns about the face and body, and from inhaling superheated air. His condition is very low and it was said yesterday that he might live only a few hours. Machinist G. H. Clark, Jr., who enlisted at Frankfort, N. Y., suffered from burns of the head, face and eyes. He has practically no chance to recover, and, if he does, probably will be blind.

Coroner Wagner said last night that the burned civilian employes at the Cumberland Street Hospital would probably recover, but were in such pain that he deemed it inadvisable to question them. He said he might take statements from some of them today.

The body of John P. Schult, 26 years old, the yard workman who was killed by the explosion, was taken yesterday to the home of his father, Joseph Schult, at 32 Vernon Avenue, Long Island City. Schult was honorably discharged from the navy eighteen months ago, after serving an enlistment of four years and a month. He was on board the transport *Prairie* when she entered the harbor of Vera Cruz, Mexico, two years ago, and was with the landing party there. After his discharge he entered the navy yard and worked for a while on the battleship *Arizona*. He was classed as an instructor in steam engineering, with a first-class rating, and held many letters of commendation from his officers.

Secretary of the Navy Daniels left this city for Washington early yesterday afternoon and issued this statement at Washington last night:

I regret the publication of a statement quoting me as giving an opinion as to the cause of the explosion on the E-2. Immediately upon hearing of the accident, I communicated with Admiral Usher, Commandant of the New York Navy Yard. He has appointed a board, now in session, to investigate the matter. I am not yet in possession of information which would en-