

Subject:



Naval Torpedo Station,

NEWPORT, R. I.,

Jan. 7th., 1893.

Reference No.

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My dear Sebree:--

Replying to your letter of Dec. 26th, requesting some information in regard to the course in diving at this Station, etc.:--

(1) The regular course in diving embraces three weeks of practical work, during which the men are taught, (a) how to handle the air pump; (b) to dress a diver; (c) to communicate and receive signals to and from him; (d) diving in shoal water; (e) diving in deep water. In addition to this course of instruction they have during the time they are here a great deal of practical work to perform, for example, during the last summer they put down an extension, one-hundred feet long, to the ways for the "Cushing" doing all the work of scarfing the ways, aligning, putting on the iron straps, etc. under water, and so well was the work performed that not a single hitch occurred the first time the cradle was run down and the "Cushing" put in place at the lowest of neap tides. More recently, they have worked for three successive days in upwards of 50 feet of water with the temperature of the air nearly down to freezing, and successfully raised a submarine boat, displacing approximately 10,000 pounds. They also, last month, did work on the bottom of the training-ship "Portsmouth".

(2). The telephone has not been used to any extent either here or abroad, so far as I am aware. Many devices have been made and some

of the experiments are reported as successful, I believe those made in Germany. I have had consultations with some of the prominent wreckers in regard to the matter, and they all seem opposed to its use. One objection seems to be that in almost any form in which it has yet been proposed to use it, it simply adds one more line and one more chance for the diver to become entangled. Another is that the present means of signalling seems to answer all requirements, and still another objection, in my opinion the true one, is an evident disinclination on the part of those who are under water, and on the spot where work is to be done, to be bothered or to be obliged to receive definite instructions from those who are attending them from the deck of the vessel, who can, from the nature of their position, know little or nothing of the details of the work which they cannot see. In this opinion, I must agree that the diver to be a successful workman must be boss of the situation, and the duty of those who are attending him must be simply to supply him with air, according to his directions, carry out instructions which he has previously given them, and to guard against any accident happening, whereby his safety may be imperiled.

(3) The usual signals employed are as follows:-- One twitch on life-line or hose, "More air"; two twitches, "Less air"; three twitches, "Come up" or "I wish to come up"; four twitches as agreed upon, for instance, "Send me a hammer", "Lower down a weight", "Already, hoist away" or any similar message according to the work. Shaking of the life-line from time to time, "I am all right", or "Are you all right". Special signals or combinations of these signals are used as by agreement made at the time. Each signal answers in kind.

(4) Regarding the cost of a diving suit;-- A complete diving apparatus, including pump, helmet, hose, weights, etc., etc., and two pairs of diving dresses, costs about \$600.00. After the outfit is once purchased it is really necessary to procure no supplies other than dresses, which cost about \$35.00 each, snap-tubing, etc. Our apparatus at this Station has been in use from 15 to 20 years, and the pumps are still in good condition. As a rule we obtain two diving dresses a year, this being necessary on account of the extreme wear and tear caused by the frequent dressing and undressing made necessary by the course of instruction.

(5). We have not yet published anything in regard to instructions to divers, but one of the officers has the preparation of a handbook on diving under way and it is my intention to have it completed and published by Spring. Some of the principal features which I desire to embody are illustrations of pumps and the various articles of outfit.

(6) As to the question, which kinds of suits are the best, I hardly know what to say. As a rule we get all of our apparatus from Alfred Hale & Co. of Boston, Mass., having started out with them and finding it desirable to always obtain articles which will fit other apparatus which we have on hand. Andrew Morse & Son, also of Boston, make good apparatus, as do also two or three firms in New York, one especially by the name of Schroeder, if I mistake not, who supplies largely to the Merritt Wrecking Co. We have also a complete suit of English apparatus made by Siebe & Gorman, the pump being intended to be used with two divers if necessary. Our experience with this has been, however, that unless both divers are working at the same lev-

el the one nearest the surface is apt to get the greater part of the air at the expense of the poor fellow who happens to be under him.

Still, it works.

I am glad to learn of the success which you had in keeping the bottom of the "Baltimore" clean, and also that the "Boston" was able to do the same. Capt. Sampson told me last summer that he cleaned the bottom of the "San Francisco" with the divers and believed there was no difficulty whatever in keeping vessels of that class in good steaming condition with their own crews and a comparatively inexpensive diving outfit.

It is particularly pleasing to me to know that the instruction which has been given to these men at this Station is at last bearing fruit. If you could realize how hard a fight it has been in the past to get encouragement for continuing this work, and the reluctance which the men themselves for a long time had to working under water, you would comprehend what I mean. A change of sentiment seems to have come over the men, as well as over the service at large. Now those who are here qualifying for seamen-gunners, without exception, unless absolutely forbidden by the Surgeon, qualify as divers, and seem to like the work. It is the usual thing when a detail of men is wanted for deep water diving to have more volunteers than are required for the work, and this too, when at this Station they are not allowed extra compensation for any work however important and even supplementary to the course of instruction.

I forgot to state that in the operation of raising the submarine boat a few days ago, our instructor in diving was ill, and the officer who has regular charge of that branch of instruction was absent on

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detached duty. The entire operation was successfully performed by the men, of course under the general supervision of an officer.

If I can be of any further service to you in this matter, please let me know. I shall be only too happy to give you any information in my power.

Very truly yours,

Lieut. Commander Uriel Sebree, U.S.N.,
Naval Academy,
Annapolis, Md.

P.S. Some of the wrecking vessels are fitted with air pumps worked by steam, and I saw one in use not very long ago similar in appearance to the small donkey pumps used on board ship which could not have weighed more than 250 pounds.

I think that the day is not far distant when all of our vessels will be fitted with a pump of similar description, located at some convenient place amidships, so that the length of hose required for those engaged in cleaning the bottom need not exceed at the utmost 200 feet

G.A.C.