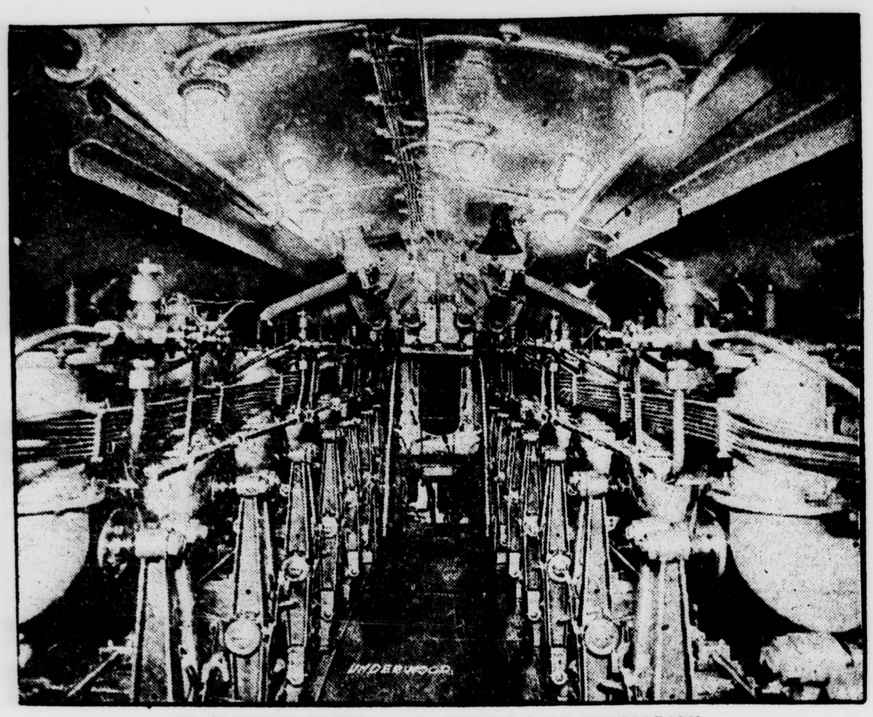
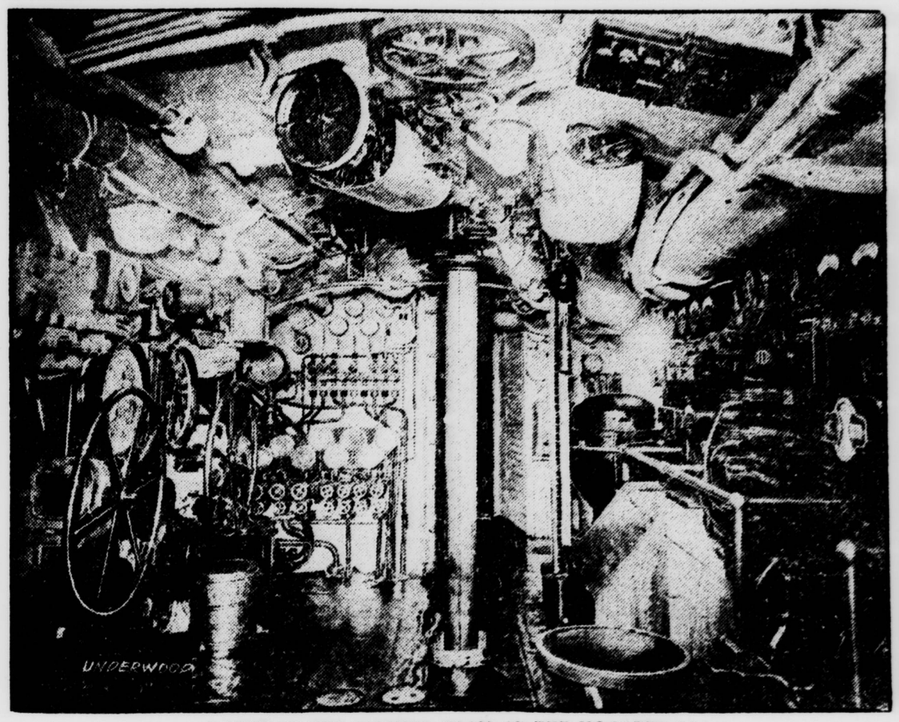
Unsurpassed Bravery Marked Attempt to Reach Crew of S-4

Query as to Whether Navy Did Everything in Its Power to Save Imprisoned Men Answered by Officer Who Directed Salvaging of the S-51 and Went Back Into Service to Aid This Rescue Work.



ENGINE ROOM OF THE S-4. AN OFFICIAL NAVY PHOTOGRAPH.



A VIEW OF THE CONTROL ROOM OF THE ILL-FATED S-4.

Ellsberg's Record

Lieut. Comdr. Edward Ellsberg, who was awarded the Distinguished Service Medal for his accomplishment as salvage officer in raising the S-51, fails to mention the fact that he nearly lost his own life while attempting to carry aid to the survivors on the stricken S-4.

While diving to determine if the S-4 could be lifted bow first, Comdr. Ellsberg plunged from the slippery side of the submarine and sank over his head into the mud of the ocean floor. Before another diver could go to his assistance, he had succeeded in freeing himself.

Comdr. Ellsberg left the Navy soon after the salvaging of the S-51 and became chief engineer of the Tidewater Oil Co. On learning of the S-4 disaster he immediately volunteered his services and arrived at the scene the Monday following the tragedy.

BY EDWARD ELLSBERG,
Lieutenant Commander, United States Navy.

A WILD leap in the darkness from a plunging surf boat brought me over the icy rail of the Falcon. With her anchor cable paid out to its maximum, the little vessel was trying grimly to hold its position over the sunken submarine S-4, while the freezing gale roared by and the seas swept over the Falcon's bow.

Still covered with ice from head to foot, I passed through the airlock into the inner chamber of the Falcon's recompression tank. It was 3 a.m. on Monday morning. There in the chamber were Eadie and Carr, both exhausted from their own dives, working feverishly to bring Michaels back to life.

The previous Saturday afternoon the S-4, running submerged with a crew of 40 men and officers, on a measured mile course outside of Provincetown Harbor, had come to the end of the course. Lieut. Comdr. Jones, her captain, had ordered "Left rudder" and "Hard rise on the diving rudders" and was planing to the surface while making a turn. The Coast Guard destroyer Paulding, coming in from sea at 18 knots, suddenly saw the periscope and radio antenna of a submarine break surface almost under its bow.

There was a hard crash; the men on

LIEUT. COMDR. R. K. JONES, WHO WAS IN COMMAND OF THE S-4 WHEN SHE WAS RAMMED AND SUNK BY THE PAULDING.
Wide World Photo.

the Paulding's bridge saw the periscope keel over sharply to port; the stern of the submarine rose above the surface for a moment, and then everything disappeared, while the crew of the Paulding frantically threw their engines to "Full speed astern."

The Paulding heaved over several buoys to mark the spot, lowered her boat to care for any survivors, and then, with her own bottom gored, she steamed in to avoid sinking in the open sea. Meanwhile her radio was active and broadcast news of the disaster.

It is a well understood rule that while a submarine is on the surface she has the same rights as any other vessel, but when she is submerged she must look out for herself. She submerges for the purpose of concealment; when she does so in the open sea, as in this case, the duty of keeping clear rests with the submarine. It seems that in this instance the submarine never saw the Paulding, for if she had her captain probably would have dived deeper instead of coming up.

The Paulding's messages were picked up by several stations. There is no salvage gear at Boston, the nearest station, but such vessels as were available were sent immediately. From Portsmouth, 60 miles away, the mother ship Bushnell started in two hours. At Newport the divers there, headed by Chief Torpedoman Eadie and Michaels, started immediately over the road by automobile, their way cleared through both Rhode Island and Massachusetts by detachments of the State police. At New London Lieut. Hartley gathered his scattered crew, and within an hour his ship, the Falcon, the Navy's diving vessel, was on her way, carrying also Admiral Brumby.

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IN New York lay the only possible means of help—six of the eight pontoons which raised the S-51. These were hurriedly put in the water, a task which took all night, and early next day were started toward Provincetown in tow of the Sagamore and Iuka, the most powerful tugs in the vicinity. Meanwhile a private salvage company offered the use of its two derricks to the Navy. Now this company had delivered two derricks to the Navy for salvage when the S-51 sank and for five days had been compelled to keep its derricks in port because of the rough weather outside, and then had brought them out on a calm day, only to fail to budge one end of the sunken submarine. Having learned from that experience that derricks are wholly useless for lifting damaged sumbarines outside of harbor waters, the Navy Department nevertheless grasped even at that straw and ordered the derricks out to the scene of the S-4.

Meanwhile, on Sunday morning the Falcon had arrived off Provincetown and taken the divers on board. On Saturday night, dragging with grappling hooks, the Coast Guard surf boats had caught the submarine, but had lost her again in a few hours. Dragging again during the night and Sunday morning, they finally grappled something once more about 10 a.m.

The weather was unsafe then for diving, but the Falcon steamed in over the submarine, anchored heading into a freshened wind, and ran out hawsers from each quarter to the minesweepers Lark and Mallard, which had meanwhile anchored themselves off her port and starboard quarters. With this improvised mooring the Falcon yawed badly in the sea.

A little after 1 p.m. Chief Torpedoman Eadie slid down the grappling hook line and found himself on the bridge of the S-4. The moment his lead-soled shoes hit the deck he heard some raps, apparently coming from the conning tower and found it slewed to port, its muzzle pointing down. A mass of twisted steel which had been the keel plates of the Paulding hung from the muzzle down the port side of the S-4. Just forward of the gun the deck was ripped away and Eadie scrambled cautiously across the opening.

Finally, near the bow, he came to the torpedo room hatch. Stooping over, Eadie placed one hand on the hatch while he rapped on the metal plate with a hammer. Instantly, and directly below his hand, came the answer. Six raps, a pause, six raps again, another pause, and then once more six raps. Eadie thought a moment. "Six men alive in the torpedo room." Giving another tap in acknowledgment, he went forward to the extreme bow, so those on the Falcon could get the heading of the submarine from his trail of bubbles on the water. Then he went aft.

Once more he crossed the torn decks of the submarine, crawled over the gun and came to the conning tower. Here he tried going farther, but the dangling antenna and submarine net clearing lines, hanging low over the deck, caught his helmet and stopped him. Leaning aft as far as possible, he hammered the deck again. This time he heard no signals either from forward or aft. As he had been down an hour, Eadie was then hauled to the surface and reported.

His report showed the boat damaged in one spot only, just forward of chance to close theirs. If such was the case, then a considerable amount of buoyancy still remained in the hull.

Acting on this assumption, the officers on the Falcon decided to try to blow the water from the submarine's ballast tanks. (These tanks are flooded by her crew when the submarine dives and contain about 200 tons of water. This amount was considerably in excess of the lost buoyancy in the damaged battery room.) The idea was that if the after compartments had their doors closed and were dry, the blowing of the ballast tanks would lighten the boat enough to float her. Even if the stern proved to be flooded there was still a chance that the buoyant bow might rise if the ballasts could be blown dry.

Chief Boatswain's Mate Carr was selected for the job. With the wind and sea picking up, Carr went down with an air hose to couple to the ballast tank blow valve in the side of the conning tower. Carr first had to remove the grappling hook line and secure a heavy 4-inch manila line to the rail of the S-4 to act as a descending line. He then found the trap door in the side of the superstructure plating, which he had considerable difficulty in opening. Beneath it was the salvage air valve, and to this he screwed his hose. All this took about an hour and a half, during which time the sea got worse and the tenders on Carr's lifeline and hose were in constant trouble paying out and taking in as the Falcon yawed back and forth. Carr came up.

The first effort then of the salvage force was to lift the whole boat, or at least the bow, by blowing dry the ballast tanks. Air was turned on and forced below. For perhaps half an hour no bubbles came to the surface, indicating that water was being ejected. It seemed as if the scheme were working, when a few bubbles came, then increased in quantity, and an hour after blowing had commenced as much air was coming up as was going down the hose. The air was escaping through a hole made by the Paulding. The boat did not come up.

The sea was now very rough. The Falcon, held by her improvised moorings, was sweeping unsteadily across her position. Darkness had come on and a freezing wind was covering the Falcon with a coat of ice. The men in the torpedo room had an air supply good for 72 hours in all—nearly 30 hours of that was gone, but they reported their air still good. But, realizing that the storm might last for several days and that new air would be vitally necessary before then, it was decided aboard the Falcon to disregard the great danger to the diver and send down another air-hose. This one was to be coupled to the compartment salvage line in the submarine, which leads to each compartment on the ship, including the torpedo room.

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CHIEF Torpedoman Michaels, in charge of the remaining divers, was told to select a man to go down. Under the circumstances—darkness, a battered wreck below, ice-cold water (it was 34 degrees Fahrenheit at the water bottom) and the Falcon straining at her precarious moorings, threatening to draw her anchors or part the heavy mooring lines at each blow of the sea—it was practically suicide to go down. Should a hawser part or an anchor come free while the diver was down, the Falcon would shoot to leeward, the diver's hose would part, and we would have another man on the bottom beyond all help. In addition, the alternating pressure on the diver as the waves sweep over him will burst his ears and give him the fatal "bends." Diving is not attempted under such conditions. The men knew it. Michaels knew it.

Michaels selected nobody. He elected to go himself.

At 8 o'clock on Sunday night Michaels disappeared over the Falcon's rail, his diving lamp gleaming a moment in the black water and then fading out as he slid below. Half an hour passed and no word from Michaels. The Falcon yawed violently in the gale, not daring to hold too tightly lest her 8-inch manila mooring lines should part. At the rail the freezing spray made the tenders and the life lines a mass of ice as the tenders on the Falcon's side struggled to keep Michaels' air hose not too slack, not too taut. It was hopeless in that seaway.

Nearly an hour and Michaels has not reported, nor does he answer signals on his life line. Michaels is fouled below. Hastily Eadie is roused out of his bunk, where he has been resting since his first dive. Quickly the dressers case him in his 200-pound diving rig, and, armed with a knife and a diving lamp, Eadie also disappears from sight into the icy sea that is holding Michaels.

Eadie lands near the conning tower. Here he finds Michaels' lamp, the wire tangled in the descending line. About 10 feet away he finds Michaels, stretched face down, flat on the S-4's deck, with his life line and air hose forming a tangled net across his back, holding him down. Swinging his lamp to starboard, Eadie notes that the hose is fouled in the jagged cut made by the destroyer. Looming to port, he sees that there it is caught far down the side in the twisted plates torn from the Paulding's keel.

Eadie tries first to pull the air hose clear, but quickly desists. The broken steel plates are sharp and jagged. A strain will cause them to cut the hose, and then Michaels is gone.

Eadie telephones up, "Send down a hacksaw." A few minutes later a hacksaw, tied to a shackle, slides down his own air hose and bumps his diving helmet.

Eadie stoops over the prostrate diver and forces his lamp into Michaels' free hand. "Here, Mike! Hold the lamp for me!" But Michaels is unconscious and his nerveless fingers do not act. Eadie props the light against the gun, leans into the S-4's death wound and starts to saw away the twisted plates holding Michaels' line.

* * * *

IT is slow work. He must be careful not to break the fragile blade. He works an hour, and at last the steel is cut. Gingerly he lifts the air hose free. Michaels, released on that side, seems to rise to an erect position, buoyed up by the air in his suit, but he still is caught on the port side. Eadie slides down there to clear him. A sharp edge somewhere catches his suit and cuts a gash in it. Immediately Eadie's suit is filled with freezing water up to his neck. His own position is serious now. If he should lose his balance the helmet also will fill and he will drown.

Carefully Eadie gathers in a little slack and frees Michaels' air hose of the wreckage, then climbs back over the broken steel to the S-4's deck. Michaels is swaying unsteadily, his air hose caught in Eadie's. Eadie clears his own and releases Michaels, who floats to the surface. Then, chilled to the bone himself, Eadie starts up. He has been down over two hours, Michaels nearly three and one-half.

Shortly afterward Eadie is hauled through the storm-swept surface to the Falcon's deck, having fought a battle at the bottom of the sea that stands out brilliantly in the records of the Navy. On no shell-swept field of battle has a harder or more courageous rescue ever been effected.

Meanwhile the storm increased in fury. At 3 o'clock next morning, when I first boarded the Falcon, the weather-beaten sailor who manned the Coast Guard surf boat which brought me out doubted his ability to boat me alongside. However, he succeeded, and my first glimpse of my old shipmates was the sight of Eadie and Carr struggling in the decompression chamber to bring Michaels' frozen body back to life.

Monday dawned with the storm unabated. Diving was out of the question. The S-4 reported the air still good. The doctor said Michaels must go to the hospital if we would save his life. As we could not dive, and it was dangerous to transfer Michaels too many times, the Falcon up anchored, ran 40 miles to Boston and hurriedly returned to the wreck. The storm kept up.

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MEANWHILE communication had early been established with the S-4. The Falcon, the S-8 or the Bushnell sent oscillator signals, using the standard international Morse code. These sounds, transmitted through the water, were easily heard in the S-4, where the answering signals were sent by rapping on the hull with a hammer, one rap being a dot and two raps a dash. These raps were picked up by the microphones in the ships above. No divers were required for communication.

By this method of transmitting messages we learned the names of Lieut Fitch and the five men trapped with him. We asked if they had tried the gag valve leading to the line where Michaels had nearly lost his life in attempting an air hose connection. They replied they had, but as a stream of water came through, they had closed it again. The line was leaking somewhere, probably due to the damage in collision, and we thus learned that even if Michaels had been successful, we could not have blown air in that way.

Meanwhile a message came through that the oxygen bottle in their compartment would be gone by 6 p.m. Monday. Could we give them another?

We could, provided only that we could dive while they still had strength enough inside to operate the torpedo tube doors. The procedure was for them to open the outer tube door. A diver outside would push in the oxygen bottle, some food disclosed in water-tight cans), some flashlights and some cans of soda lime for purifying the air. We got ready all these articles, incasing some of them in water-tight rubber sleeves. Once the material was in the torpedo tube, the crew inside would close the outer door, open the inner one and remove the supplies. Only a little water would be taken in during the process. But it required a diver and that required weather in which diving was remotely possible. And the storm swept on remorselessly.

* * * *

A LITTLE investigation and we found that, provided the men in the torpedo room were using their S-C tube for listening in, and consequently had opened the inside valve we could supply air through it by attaching air hoses in place of the rubber ears on the deck of the submarine. But to do this it also was necessary to dive, and diving was not possible.

Late Monday the message came from below, "Oxygen all gone." And a little later, "Is there any hope?" To this last the S-8 replied: "There is hope. Everything possible has been and is being done." But we on the surface knew there was no hope unless the storm abated before the men inside became unconscious.

It was not lack of air alone that constituted their danger. They were in an unheated steel cell, with the sea water outside at a temperature of 34 degrees, and the inside of their prison was damp, flooded with 18 inches of cold water and chilled to the same temperature as the outside water. They were without heavy clothing and were soaked through by the rush of water which came through before they got their door closed. They had no light.

Monday passed and Tuesday came. Still the storm swept by. By mail and telegram we were flooded with ideas on how to help the imprisoned men. Our own minds were tormented with the problem. We knew the sea, we knew the submarine, we knew the tricks of salvage—there were many things that might have been done if only we could dive.

But, speaking with a careful consideration of all suggestions from any source, there was not one practical suggestion that might have made it possible for us to dive on Monday, December 19, or Tuesday, December 20. What the salvage art may be in the future I hesitate to predict, but on those two days off Provincetown nobody in this country had anything concrete which he could produce with the assurance of saying, "This will let you dive now." Instead we heard ideas which may, after years of experimenting and development, permit diving in deep water in a storm. They are not able to bring it about now.

A DIVER PREPARING TO GO TO THE RESCUE OF LIEUT. COMDR. ELLSBERG WHEN THE LATTER'S AIR LINE BECAME FOULED AROUND THE SUNKEN S-4.
Copyright by Underwood & Underwood.

On Tuesday at 6:20 a.m. the last message was acknowledged by the S-4 with three feeble raps, which meant "All's well." After that, silence in the boat. The 72 hours from the time the boat first dived expired at noon. It is certain that by then cold, exposure and lack of air had done their work. Lieut. Fitch and his five brave companions in the torpedo room had joined in the quiet sleep which held their shipmates in the other compartments of the S-4.

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THE rest of the story is briefly told. The sea, as it satisfied at having won its prey, calmed down enough on Wednesday to permit diving again. We found on steaming directly over the wreck that the buoy with the 4-inch manila line we had left tied to the conning tower rail was missing. We picked it up a short distance away, the line frayed and cut in half where the rolling sea had chafed it across the wreckage. The air hose which Carr had attached to the conning tower seemed to be in place, but it also was found to be cut off at the bottom as if with a sharp knife. We had no actual markers attached to the S-4.

Anchored as nearly in position as we could judge, we put divers down on one side of the Falcon, while spell boats dragged with grappling hooks on the other side. Because they could see only a few feet and walking in the soft mud was slow, the divers could find nothing. Chief Boatswain Hawes of the Falcon grappled something shortly after noon, and Diver Baird, going down on the line, found himself on the submarine. Carr followed and carried a descending line forward, and, going down on this, Elben and Wilson soon connected up air lines to the S-C tube and we started to pump air into the torpedo room. It was much too late, we knew.

The remainder of the history of the S-4 will be that of a salvage operation—dangerous, slow and arduous. Practically all conditions point to an easier job than that of raising the S-51—less depth of water, a slightly lighter boat to lift, less damage from collision, a little more sheltered position in which to work. The S-4 can be raised, and I have no doubt she will be.

Much can be learned from this accident and this experience which will help to avoid a repetition in the future.

The Navy did its best in this instance. It quickly mobilized its best men, all its available material and vessels, and gave carte blanche to Admiral Brumby to do and order what he pleased. There was no red tape, no delay in granting him what he asked.

I am no longer of the Navy and owe it nothing except a deep sense of obligation for an invaluable training and a chance to serve my country. But I know the men, both officers and divers, whom it sent to this task, and there does not exist in any walk of life in our country another group of men who have had the experience or who have equal ability with these men for the task confronting them. Nor was there available on December 12, 1927, anywhere in the United States material better suited to the job than that which the Navy sent to the scene. The Navy did its best. Its best was better than any one else could have done on this job, and the country may rest assured that its naval officers and men are neither bungling amateurs nor swallowed in a sea of red tape.

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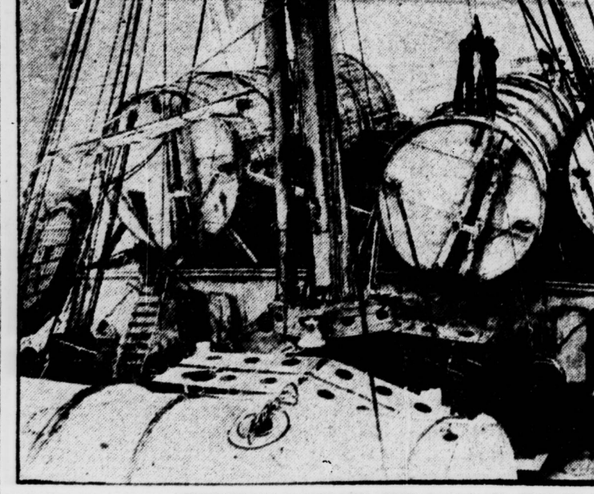
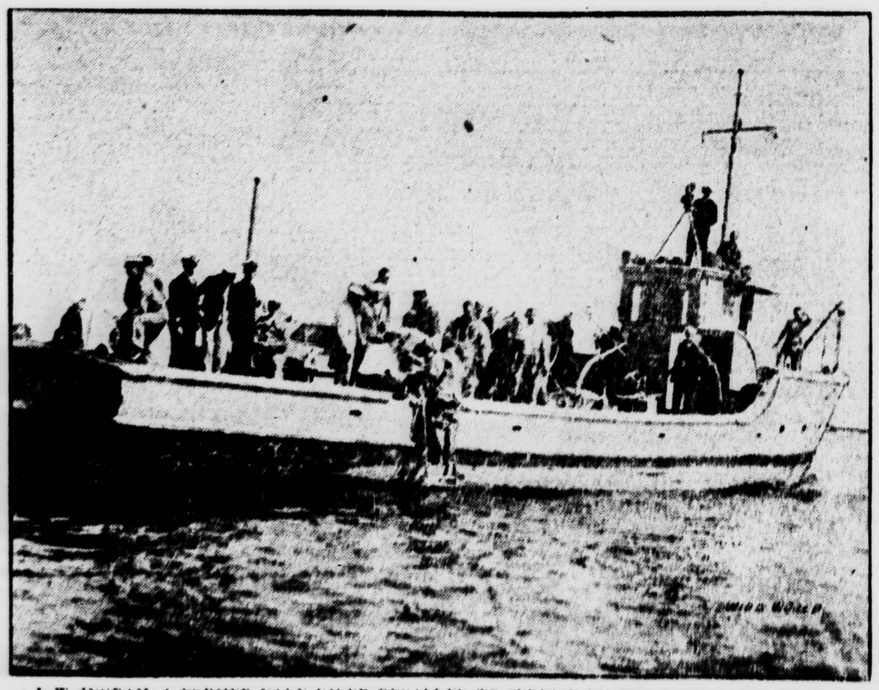
BUT it is ridiculous to say that the Navy cannot do better. As in the development of every other branch of industry which has profited by disasters, the Navy has learned through turret explosions to build better battleships, through boiler explosions to design better boilers, and it will learn from submarine disasters to build safer submarines and provide better means for saving their crews and salvaging them when necessary. In my mind, this will lead along the lines of providing separate salvage air connections to each compartment, special escape locks for the crew at each end of the boat as well as in the conning tower, the provision of small lifting eyes along each side of the submarine, so that pontoons may be quickly attached without the necessity of tunneling under the boat; the provision at central locations in each area of submarine operations of a complete set of pontoons and a salvage ship for handling them, the assignment of sufficient vessels like the Falcon, which shall be free from other duties to train and drill their crews for the rapid handling of pontoons and the prompt execution of rescue diving work and the re-establishment at Newport of the deep-sea diving school, so that there may be continuously available a large supply of divers for deep-water salvage jobs. Such men are rare in the commercial world; those the Navy now has are rapidly passing out of the service or are getting beyond the safe age limit.

The redesign of existing submarines to meet the new safety requirements is difficult, but I do not believe it beyond the abilities of the Navy to carry it out. Certain of the other safety measures require action by Congress to provide the necessary funds and authority to proceed, but with an enlightened public opinion and with the assistance that Congress is sure to give I believe that the Navy's best when next it is called to help a stricken submarine boat will be far better than its best in this case, and the brave crew of the S-4 will not have gone to their deaths wholly in vain.



PONTOONS USED BY THE NAVY IN RAISING SUBMARINES.



J. W. INGRAM, A FORMER NAVY DIVER RECALLED TO SERVICE BY THE S-4 DISASTER, PREPARING TO EXAMINE THE SUNKEN S-51, HE WAS THE FIRST DIVER TO VISIT THE S-51 AT THE TIME OF THAT DISASTER.
Wide World Photo.

A CLOSE-UP OF ONE OF THE DIVERS MAKING READY TO ENTER THE WATER.

Webster's Blue Suit.

DANIEL WEBSTER went to Dartmouth College in a homespun suit, of which probably every thread was carded, spun and woven by his mother's hands from the wool of their own sheep. It was a dyed-in-the-wool suit and the color was indigo blue.

In the South butternut was used, but though the Yankee dames knew all about the uses of butternut bark, and the slate color that lay in the sumach berries and bark of white maple, and were not unacquainted with the various dyes that could be made to yield through the agency of vitriol and alum and copperas to "set" them fast, the universal standby in New England was the dye pot, par excellence, that stood in the chimney corner of every kitchen in that region.

So Webster was fitted out in indigo blue from collar to ankle. Before reaching Hanover, there came on a drenching rain. The suit held its own, but it parted with enough dye to tinge Daniel blue from head to foot.

Webster had a liberal stratum of sentiment in his mental make-up and for some reason the color of his young manhood remained his favorite wear through life. He wore blue coats to his dying day. If any one ever saw him in one of a different color the fact has not been made of record.

Nativity of Corn.

CORN, generally believed to have originated in South America, has been found growing in China; but the Chinese corn is of a unique species and it is not a native of the Chinese region in which it was discovered. Researches show that it must have been brought to China long before the voyage of Columbus, for it could not have acquired its distinctive character in the comparatively short time that has elapsed since that period.

Chinese corn is a dwarf plant and its starch is quite different from that of American corn. The leaves grow on either side of the stalk so as to protect it from the hot, dry winds of the desert. They form a sort of horn for the accumulation of pollen.

Chinese corn is excellent for planting in hot countries where common corn does not flourish.