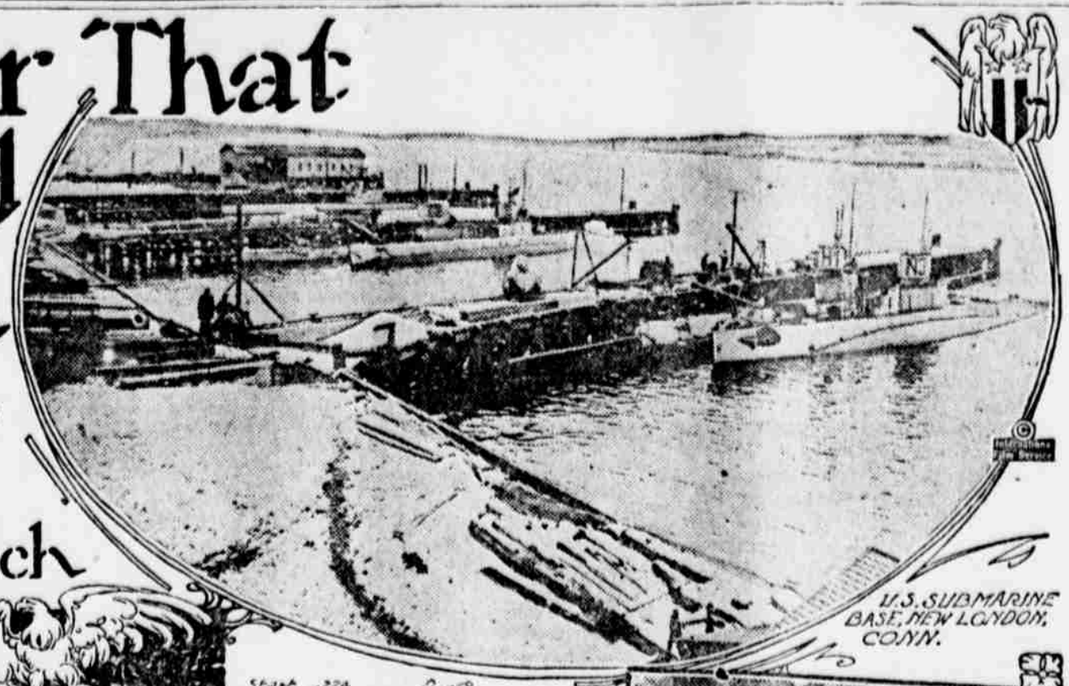
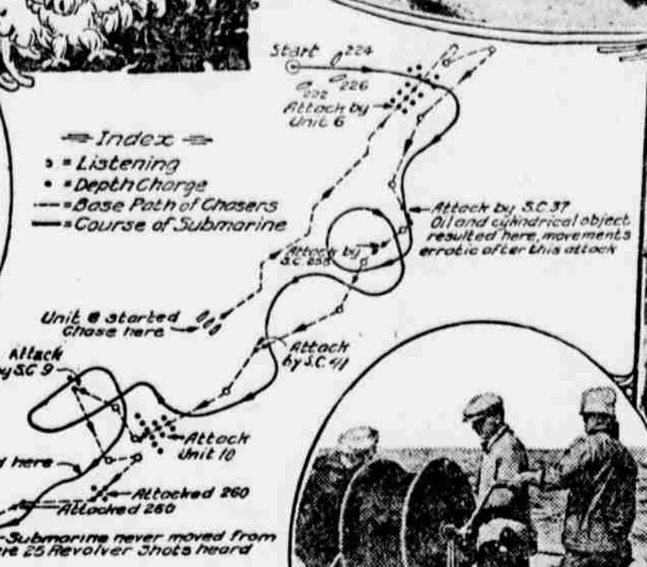
Detector That Doomed the Hun U-Boat

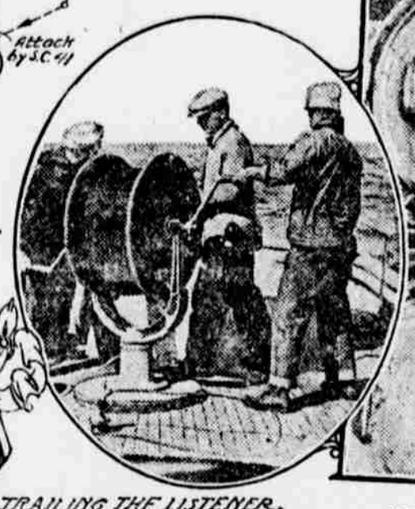
by Brewster S. Beach



U.S. SUBMARINE BASE, NEW LONDON, CONN.

CAPTAIN R.H. LEIGH, U.S.N.





TRAILING THE LISTENER.

LISTENING FOR U-BOAT

LISTENING DEVICE ON PROW OF SUBMARINE

WHATEVER plans Germany may be making for the "next war," if in truth she is or ever will be capable of carrying them out, it is certain that the submarine will play no part in her schemes.

The submarine is dead. The U-boat peril has vanished forever, never to be resurrected.

The collapse of submarine warfare during the closing months of the European conflict and the prediction that its resumption may never be seriously feared again, was the result of the invention in the United States of a wonderful listening device, or submarine detector, which came very close to driving the Hun submersible from the ocean, and would have done so, in the opinion of naval experts, had the war continued through another summer.

As soon as the United States entered the war the navy department formed a special board to develop ways and means for combating the U-boat peril, then growing to alarming proportions.

This board consisted largely of officers from the bureau of steam engineering, of which Rear Admiral R. S. Griffin is chief. It called to its assistance in an advisory capacity many noted engineers and scientists from industrial concerns, including the General Electric company, represented by Dr. W. R. Whitney, director of that company's research laboratories.

Commander C. S. McDowell, U. S. N., served as executive secretary of the board, while the other advisory members were Col. F. B. Jewett of the Western Electric company, and Prof. R. A. Millikan of the University of Chicago.

Development headquarters were established at New London, Conn. The General Electric company in conjunction with the Submarine Signal company of Boston started an experimental field station at Nahant, Mass., and were later joined by experts from the Western Electric company.

Out of the activities of these two groups of scientists there was developed the American listening device, an instrument which proved to be able successfully to detect submarines while submerged within range of anywhere between 3 and 12 miles.

Even with the signing of the peace treaty little can yet be known of the details of this device. It is, however, an instrument using the principle of sound-wave transmission through water in a new and startling way and it depends for its direction-getting qualities on the peculiar and little-understood faculty of the human ear to detect the direction of sound by the shifting of sound from one ear to the other as the instrument was revolved.

As soon as the device was considered practical the General Electric company undertook its manufacture on a large scale in Lynn, Mass., developing three kinds of listeners: One which was hung overboard from the deck of submarine chasers, another which could be trailed off the stern and a third which protruded through the hull of the vessel. American destroyers, chasers and submarines were at once equipped with the instrument.

When the submarine detector had been turned out in sufficient quantity, the navy department believed that the allies should get the benefit of the invention at once. A special service party, in charge of Capt. R. H. Leigh of the bureau of steam engineering, was formed to take samples of the apparatus abroad and test it under actual conditions before the British admiralty. The instrument was likewise demonstrated to the French and Italian navies. The party consisted, besides Captain Leigh, of Lieutenant Carter, U. S. N., Ensign Welch, U. S. N. R. F., six enlisted men, C. E. Eveleth, C. F. Scott, and T. P. Collins of the General Electric company, representing the Nahant group, and W. L. Nelson of the Western Electric company, who was connected with wireless development. They sailed November 22, 1917, and joined the British grand fleet at Scapa Flow in the Orkney islands during the first week of the following month.

The admiralty and the supreme war council shortly afterward adopted the American device and from that time on submarine patrol work was revolutionized.

Defensive tactics which had been employed since 1914 were now no longer the sole reliance. The war was carried into the enemy's territory. Fighting ships, instead of patrolling the steamship lanes looking for a stray "sub" to poke its periscope above the waves, were augmented by submarine chasers equipped with listening devices, and hunted the submarine in its underwater lair.

Up to this time the British had been frankly disappointed in results. It had been a rare thing for a submarine chaser to actually see a submarine. Days would go by without sight of one. Yet sinkings continued to multiply, tonnage decreased alarmingly and the rates of destruction and construction constantly approached the danger point. It was apparent that if an improvement in this situation could not be effected the allies faced privation, if not actual starvation, and any material help from America either in the form of men or supplies would be impossible.

The success of the device is well illustrated by the chart shown herewith which gives a vivid picture of the chase of an enemy U-boat in the English channel and demonstrated the ability of the listeners to keep hot on the trail of the submarine, doubling and crossing in an effort to escape.

This dramatic incident—one of many—is vividly described in the following report of the engagement in question:

"At 1:25 o'clock unit No. 6 'fixed' (located by triangulation) a submarine directly ahead at a distance of 100 yards; immediately carried out three-boat barrage attack, each boat letting go three stern charges and 'Y' gun. Pattern laid symmetrically, thoroughly covering any possible maneuver of the submarine. Stopped and listened. No hearing for about 20 minutes. Then got contact. Distinct sound of submarine making noise as if shafts were badly bent. Also giving out squeaking sound. Submarine sounded as if having great difficulty in keeping propeller going. She stopped frequently. We followed. . . . Heard submarine hammering, squeaking, straining, running intermittently, apparently with great difficulty and for short periods.

"The second depth charge of this attack threw into the air a 50-foot to 60-foot cylindrical black object about the size of a depth charge. . . . Another depth charge attack carried out. Submarine had gradually been making shorter turns for some time. . . . From this point on believe submarine bottomed and was never able to move except to start and scrape along the bottom a short distance. Noises indicated this."

Word was then sent to Penzance for additional depth charges and a radio dispatched to the base for a destroyer post haste.

"Subsequent events," continues the report, "show that submarine never moved from this spot. Noises indicated repair. Occasional unsuccessful attempts to start motor . . . sounds rapidly becoming less frequent."

When morning came the submarine chasers and the destroyer which had been sent to their assistance gathered near the spot where the crippled submarine was resting at the bottom. Sounds of feverish activity within the submarine's hull were distinctly heard.

Suddenly there was a dead silence. Then 25 revolver shots rang out—three first, followed by 22.

"Taking into consideration all circumstances and events," continues the account, "conclude submarine damaged externally, unable to start motor after repeated attempts. Unable to rise to surface and is on bottom in the vicinity. Reports of listeners substantiate this conclusion."

As a matter of fact, the British naval intelligence department learned later that the crew of a German submarine had been lost in the English channel about this very time. The report, as they obtained it, indicated that the Hun boat had been trapped on the bottom and so seriously damaged she was unable to rise.

C. S. Scott, engineer of the General Electric company and member of the special party sent abroad, contributes this incident which happened in the Adriatic sea:

"We had 36 chasers based in a little bay on the island of Corfu and the barrage of boats extended across the Straits of Otranto, a distance of about 40 miles. The chasers were operated in units of three, which on patrol kept about one mile apart. A distance of five miles was kept between units. Conditions in the Adriatic were ideal for hunting submarines. The water was very deep, ranging from 400 to 600 fathoms, which meant that the submarines when hard pressed could not seek shallow water as was their custom in the English channel and the North sea. Due to less shipping traffic in these waters there was practically no sound interference, which made for very good listening.

"Many successful attacks were made in these waters, one in particular being quite exciting.

"One of the ships in a unit heard what sounded like a submarine. In a few minutes all three listeners had picked him up and the bearing of his course was being plotted. The middle chaser, the flagship, was getting readings showing that the submarine was in a direct line astern and steaming toward her.

"The sound was very loud, as if the sub must be very close. Suddenly the water began to slap the bottom of the boat, so that everyone could feel it; and the next moment the observer reported that his bearing on the submarine had changed from 180 degrees, which was dead astern, to three degrees, which was on our bows. The submerged submarine had passed directly under the center boat. All three boats were immediately got under way and the attack was delivered. After all the depth charges had been dropped, the ships were stopped and observations again taken. A propeller was heard to start up and ran for about 30 seconds; and then a crunching noise was heard. It was quite evident that the sub, having been put out of control, sank to the bottom and had collapsed due to the tremendous pressure at these depths. We went back to the spot next morning and found an oil slick two miles long by 800 yards wide on the surface of the water."

The development of the submarine detector was the result of the foresighted vision of the navy department and the generous co-operation extended by private manufacturers who had placed their entire organizations at the disposal of the government for the period of the war.

Large electrical manufacturers with exceptional facilities for research and experimental work were able to render invaluable assistance in cracking the submarine "nut."

In fact, it may be said that "big business" in the commonly accepted meaning of the term, will be found to have contributed a very large share toward winning the war when the whole record of this war's inventions comes to be written.

You may have noticed that multitudes of friends come to visit those who live on Easy street.

Red Cross Ball Blue should be used in every home. It makes clothes white as snow and never injures the fabric. All good grocers, 5c.

True.

Examiner in Physics: "What happens when a light falls into water at an angle of 45 degrees?"

Student: "It goes out."

Those Happy Days.

"These are my salad days," remarked the green worm as it slowly approached the lettuce in the flourishing garden.

Accomplished.

"I never saw such a writer. He can take any theme you give him. I believe he could write poetry about gas bills."

"It has been done. Didn't you ever hear of 'The Charge of the Light Brigade?'"

Sounded Attractive.

Patience—Who's the man you just danced with?

Patrice—Oh, he's a Wall street broker.

"Is he a bear?"

"I believe so."

"Introduce me, will you? I want to try a dance with him. Bears have the reputation of being great huggers."—Yonkers Statesman.

Give and Take.

"The Germans say they want a just peace, a give and take peace, but their idea of justice and give and take is like the boy bully's."

The speaker was Representative Steagall of Ozark.

"In Tuscaloosa one day," he went on, "I came upon a big boy pummeling a smaller one. I took the big boy by the arm and said:

"'Here, my son, you mustn't quarrel. You musn't bully. Learn to give and take.'

"'That's just what I've been doin', boss,' the big boy whined. 'I give 'im a punch in the eye and took his cigaroot.'"

Kept Busy Explaining.

One of the ever-present difficulties of a married man is to account for his absence from home.

The Birds.

"Do you think men will ever fly as well as birds?"

"Better than birds in some respects. Lots of birds can't loop the loop or do a spiral."

Explained.

Yeast—I see the pro rata share of the money in circulation in this country is $54.66—nearly $5 more than it was a year ago.

Crimsonbeak—Well, I can account for that extra five circulating, I think.

"Yes?"

"I had $5 a year ago."

Ready Explainer.

"Tommy, your head is wet. You've been in swimming against my orders."

"No, pa; I was just standin' on the bank watchin' the other boys when that little Tompkins kid did a 'belly-buster' an' splashed me."

"Then, why wasn't your hat wet?"

"I had it in my hand, pa, fannin' myself."

"Umph! I guess I'll have to make a lawyer out of you, son."—Birmingham Age-Herald.

Honors Even.

"My boy was a first lieutenant in the army," remarked Mrs. Gadspur, with a slight air of superiority.

"Did he get to France?" asked Mrs. Clipping, while sparring for time.

"Er—no."

"Of course our son, Henry, was only a private, but he spent 18 months in France. Gold service stripes match the olive-green shade of army uniforms much better than silver stripes. Don't you really think so?"—Birmingham Age-Herald.