In May, the S-49 underwent a final set of tests. The results were reported to the Simon Lake Torpedo Boat Company in Bridgeport in an unusual and apparently anachronistic way – by carrier pigeon. Why use carrier pigeons when the S-49 had the latest model low-profile radio antenna? Because of what happened with the ill-fated S-48. When that submarine had flooded on its test cruise the crew were able to get her nose above the waves, but they were unable to send a radio message. They tried burning a mattress and using their flashlights to send Morse code "S.O.S." messages, but it was a long time before their distress calls were observed and correctly interpreted[i].

There was a real fear that, if the S-49 suffered a similar fate, the sub would not be recognized for what it was, and that searchers would have a hard time locating the submarine. In the case of the S-48 the batteries began separating the components of sea water by electrolysis, and chlorine gas began accumulating in the submarine. Being heavier than air, it would sink to the bottom, but as it accumulated the level would rise, so time was of the essence. One torpedo tube was above the water, and with the tube opened at each end air could come in and sailors could see out, but the 21 inch diameter of the tube prevented any but the slimmest crewmen to pass through.

Evidently the Lake Torpedo Boat works or the Navy felt that, if nothing else, they could pass a carrier pigeon through the tube. In any event, carrier pigeons that homed on Bridgeport were used during the test runs of the S-49 and the S-50. "The pigeons have brought messages of the results of the S-49 tests during the entire time it has been on the Sound," reported the Bridgeport *Times*. "A.E. Vincent of the Lake plant is jubilant over the success of the 'pigeonograms'"[ii].

It could have been much more problematical "Hitherto, the Lake company depended upon bottles containing messages hurled overboard for word of the tests that subs were undergoing. An auxiliary boat following the sub would pick up the messages if by chance they ran across them. This was a hit or miss plan. Now the pigeons fly directly to the Lake plant."

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[i] The Bridgeport CT s December 8, 1921 Pages 1 (main headline); The Philadelphia PA *Public Ledger* December 8, 1921 page 1 (also the banner headline)

[ii] Bridgeport CT *Times* May 27 1922 p 12; Bridgeport CT *Telegram* May 27 1922 p 16; "Two Submarines Added to U.S. Navy" *Popular Mechanics* Volume 38 #3 p. 357 September 1922. Online at https://www.google.com/books/edition/Popular_Mechanics_Magazine/lDZLAAAAMAAJ?hl=en&gbpv=1&dq=submarine+%22S-boat%22&pg=RA1-PA357&printsec=frontcover
Interestingly, the Navy had had a carrier pigeon service from 1888 to 1899, but phased it out after that with the advent of wireless radio communication. But during the first World War pigeons proved to be often more convenient and useful than radio, and so the pigeon messaging service was revived. The Navy even published a manual for training pigeons in 1918. Fortunately, the Navy retained this service until WWII, so pigeons were available to use aboard submarines under test. See https://www.history.navy.mil/browse-by-topic/exploration-and-innovation/navy-pigeons.html ; Evidently the use of carrier pigeons in connection with submarines was so common that they were used at commissioning ceremonies. According to the *Army and Navy Register* for July 8, 1922 (Volume 62, #2190, page 26 "Submarine S-51 Accepted", "Two crates of carrier pigeons were released after the flag had been broken out [at the acceptance ceremony]. The pigeons circled around for a very brief interval and then set out for their home in Stratford." Accessed April 6 2023 https://www.google.com/books/edition/Army_Navy_Air_Force_Register_and_Defense/AFE-AQAAMAAJ?hl=en&gbpv=1&dq=submarine+S-49&pg=PA26&printsec=frontcover