

Yesterday's Wings

# The First Amphibian

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■ ■ The great Glenn H. Curtiss of Hammondsport, N.Y., is credited with developing, among many aeronautical inventions, the world's first successful seaplane.

The key word here is "successful." A Frenchman, Henry Fabre, had gotten off the water with a very marginal canard pusher airplane in March 1910, but did not land successfully and did not repeat his performance. Others also claimed successful "first seaplane" flights prior to Curtiss but presented no valid confirmation and did not repeat.

Curtiss had tried to fly from water late in 1908, when he was still a member of Alexander Graham Bell's Aerial Experiment Association. A set of canoe-



Glenn Curtiss taxis the original Triad amphibian ashore at North Island, San Diego, early in 1911. Note the fixed nosewheel under the bow of the float, and the forward elevator supported by bamboo booms anchored to the wing roots.



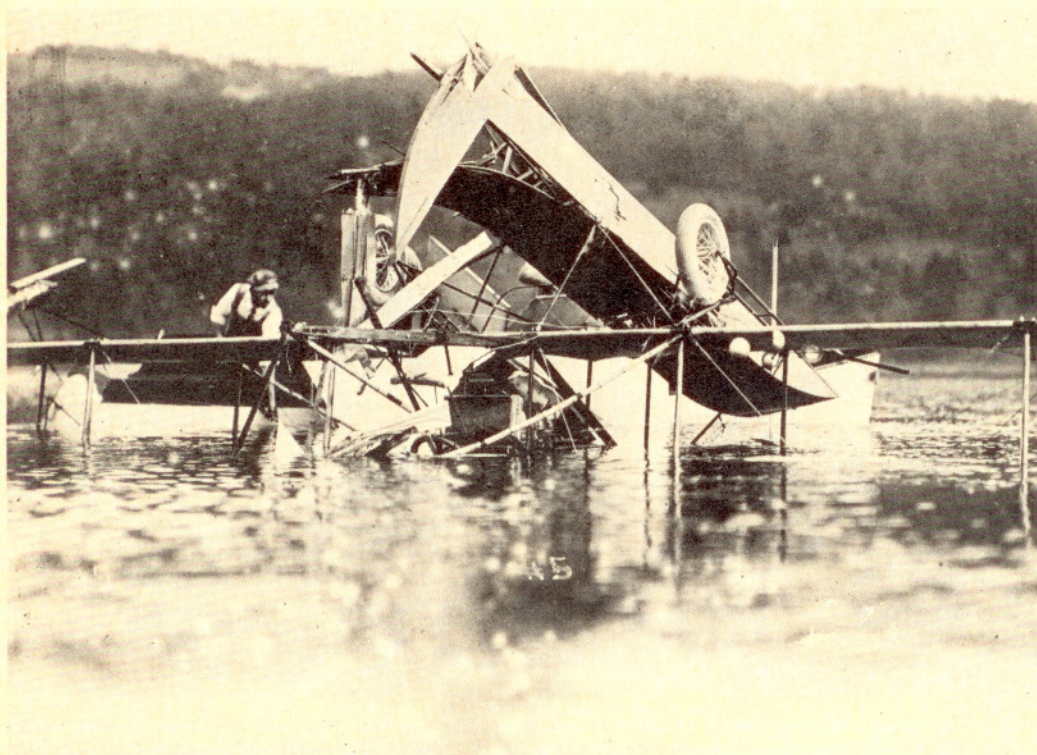
## CURTISS TRIAD

### Specifications and Performance

Span	37 ft
Length	28 ft 7 in
Wing area	286 sq ft
Powerplant	Curtiss O, 75 hp
Empty weight	925 lb
Gross weight	1,575 lb
High speed	60 mph



A slightly later Triad on its wheels in shallow water at Hammondsport. Weight has been saved by eliminating the forward booms and attaching the front elevator to the float. Still later Triads and other Curtiss pushers got rid of the forward elevator altogether and were referred to as "headless" pushers.



Glenn Curtiss did NOT initiate the amphibian pilot's classic goof: landing with the wheels in the wrong position. This wreck, in which the bow of the flat wooden float absorbed most of the impact, was the result of an uncontrollable dive out of an overwater approach to a dry landing.





*FIRST AMPHIBIAN continued*

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like twin floats was installed under the association's highly successful "White Wing," a pusher biplane that had won the Scientific American Trophy earlier in the year. But the hydrodynamic drag of the round-bottom floats was too high for "White Wing" (renamed "Loon" in its aquatic configuration) to reach take-off speed. Curtiss was not aware at the time that another Frenchman, Gabriel Voisin, had successfully flown a towed glider off water in 1905, using flat-bottom floats.

Failing in the takeoff mode, Curtiss succeeded nearly two years later in safely landing one of his standard Model D landplanes on Lake Keuka, after installing a standard canoe under it as a float. Lateral stability on the water was provided by small floats under the wingtips, and the basic configuration of the successful single-float seaplane and the derivative flying boat was established.

Further experimentation did not get under way until late 1910, when Curtiss

was operating his winter flying school at North Island, in San Diego Bay. After several weeks of trying different float shapes and arrangements, Curtiss made his first water-to-water flight on Jan. 26, 1911. To prove that this was no fluke, he repeated the performance several times the same day and then quickly equipped other planes for water flying.

The next step was obvious, and Curtiss got right at it. Making the airplane capable of landing on the ground as well as on the water proved to be relatively simple once the big hydrodynamic problem had been licked. Two retractable wheels were installed under the wing in the normal landplane location. There was no need to make the nose-wheel retract, since the trim angle of the plane at takeoff and landing speeds kept it out of the water.

Success was achieved on February 26, 1911, with a takeoff from water, a landing on the beach, and a return flight to water. The successful operation of the machine in three elements led to its being officially named "Triad."

Curtiss returned to Hammondsport after the spring thaw, and Triads were added to the output of the small Curtiss factory. The U.S. Navy chose one as its first airplane and took delivery in July 1911.

Like all amphibians to this day, the Triad presented its pilot with the double-barreled problem of remembering when to land with the wheels up and when to land with them down. Contemporary photos would seem to imply that Glenn Curtiss, among his other firsts, was also the first to put an amphibian on the water with the wheels down. While he actually did hit the water with extended wheels, there were extenuating circumstances.

The main floats of the early seaplanes and Triads were not compartmented. The consequences of significant amounts of water sloshing the length of the float were hardly a problem: If appreciable water leaked into the float before takeoff, the marginal airplane of the time could not get into the air. Curtiss learned the effects of slosh the hard way.

He got a Triad off the water at Hammondsport with considerably more water than usual in the main float, and then made a wheels-down approach to the tiny landing strip from over the lake. As he nosed down, the water in the float ran to the bow and made the plane so nose-heavy that it went into a shallow dive. Curtiss recognized the cause of the trouble immediately but couldn't correct the airplane attitude with the controls and had to ride the Triad in. Fortunately, the crash was in the water and not on land.

Curtiss was unhurt and immediately came up with a fix for the slosh problem. Unfortunately, neither he nor any other inventor in the past 63 years has produced the fool-proof amphibian landing gear warning system. □