

A Few Pioneers

1898–1916

The United States Navy’s official interest in airplanes emerged as early as 1898. That year the Navy assigned officers to sit on an interservice board to investigate the military possibilities of Samuel P. Langley’s flying machine. In subsequent years naval observers attended air meets in the United States and abroad, and public demonstrations staged by Orville and Wilbur Wright in 1908 and 1909. These men became enthusiastic about the potential of airplanes as fleet scouts, and by 1909, many naval officers, including a bureau chief, urged the purchase of aircraft.

The next year the Navy made a place for aviation in its organizational structure when Capt. Washington I. Chambers was designated as the officer to whom all aviation matters were to be referred. Although holding no special title, he pulled together existing threads of aviation interest within the Navy and gave official recognition to the proposals of inventors and builders. Before the Navy had either planes or pilots, he arranged a series of tests in which civilian aircraft designer and entrepreneur Glenn H. Curtiss and Eugene B. Ely, a pilot who worked for Curtiss, dramatized the airplane’s capability for shipboard operations and showed the world and a skeptical fleet that aviation could go to sea.

Early in 1911 the first naval officer reported for flight training. By mid-year the Navy appropriated the first money, purchased the first aircraft, qualified the initial pilot, and selected the site of the first aviation camp. The idea of a seagoing aviation force began to take form as plans and enthusiasms transformed into realities. By the end of the year a humble beginning had been made.

Recognizing the need for more science and less rule of thumb, Capt. Chambers collected the writings and scientific papers of leaders in the new field, pushed for a national aerodynamics laboratory, and encouraged naval constructors to work on aerodynamic and hydrodynamic

problems. The Navy built a wind tunnel, and the nation established the National Advisory Committee for Aeronautics. A board under Chambers’ leadership conducted the first real study of what was needed in aviation and included in its recommendations the establishment of a ground and flight training center at Pensacola, Fla., the expansion of research, and the assignment of an airplane to every major combatant ship of the Navy.

Naval aviation’s progress in these early years included setting an endurance record of six hours in the air; the first successful catapult launch of an airplane from a ship; exercises with the fleet during winter maneuvers at Naval Station Guantánamo Bay, Cuba; and combat sorties at Vera Cruz, Mexico. These were but some of the accomplishments of pioneer pilots, whose activities furthered the importance of aviation to the Navy. In 1914 Secretary of the Navy Josephus Daniels announced that the Navy had reached the point “where aircraft must form a large part of our naval forces for offensive and defensive operations.”

1898

25 MARCH • Assistant Secretary of the Navy Theodore Roosevelt recommended to Secretary of the Navy John D. Long that he appoint two officers “of scientific attainments and practical ability” who, with representatives from the War Department, would examine Professor Samuel P. Langley’s flying machine and report upon its practicability and its potential for use in war.

29 APRIL • The first joint Army-Navy board on aeronautics submitted the report of its investigation of the Langley flying machine. Since the machine was a model with a 12-foot wing span, its value for military purposes was largely theoretical, but the report expressed a general sentiment in favor of supporting Professor Samuel P. Langley in further experimentation.

1908

17 SEPTEMBER • Lt. George C. Sweet and Assistant Naval Constructor William McEntee served as Navy observers at the first Army demonstration trials of the Wright flying machine at Fort Myer, Va.

2 DECEMBER • Rear Adm. William S. Cowles, Chief of the Bureau of Equipment, submitted a report on aviation prepared by Lt. George C. Sweet to Secretary of the Navy Truman H. Newberry. The report outlined the specifications of an airplane capable of operating from naval vessels on scouting and observation missions, discussed the tactical advantages of such capability for naval forces, and recommended that the service purchase a number of aircraft and place them “in the hands of the personnel of the Navy to further develop special features adapted to naval uses.”

1909

16 AUGUST • Acting Secretary of the Navy George von L. Meyer disapproved a request by the Bureau of Equipment for authority to advertise for the construction of “two heavier than air flying machines,” with the comment: “The Department does not consider that the development of an aeroplane has progressed sufficiently at this time for use in the Navy.”

1 SEPTEMBER • Cmdr. Frederick L. Chapin, the Naval Attaché at Paris, reported his observations at the Reims aviation meet. Chapin opined that “the airplane would have a present usefulness in naval warfare, and that the limits of the field will be extended in the near future.” He also noted two means by which aircraft were to be operated from naval vessels—the use of the Wright launching device (a catapult) to launch planes from the cleared quarterdeck of battleships, and the construction of a floor (flight deck) over the deck houses of auxiliary ships to provide the clear space required for takeoff runs and landings.

3 NOVEMBER • Lt. Frank P. Lahm, USA, piloted the first Army Wright plane during its initial flight at College Park, Md. Navy Lt. George C. Sweet accompanied Lahm as a passenger and is credited as the first Navy officer to fly in an airplane.

1910

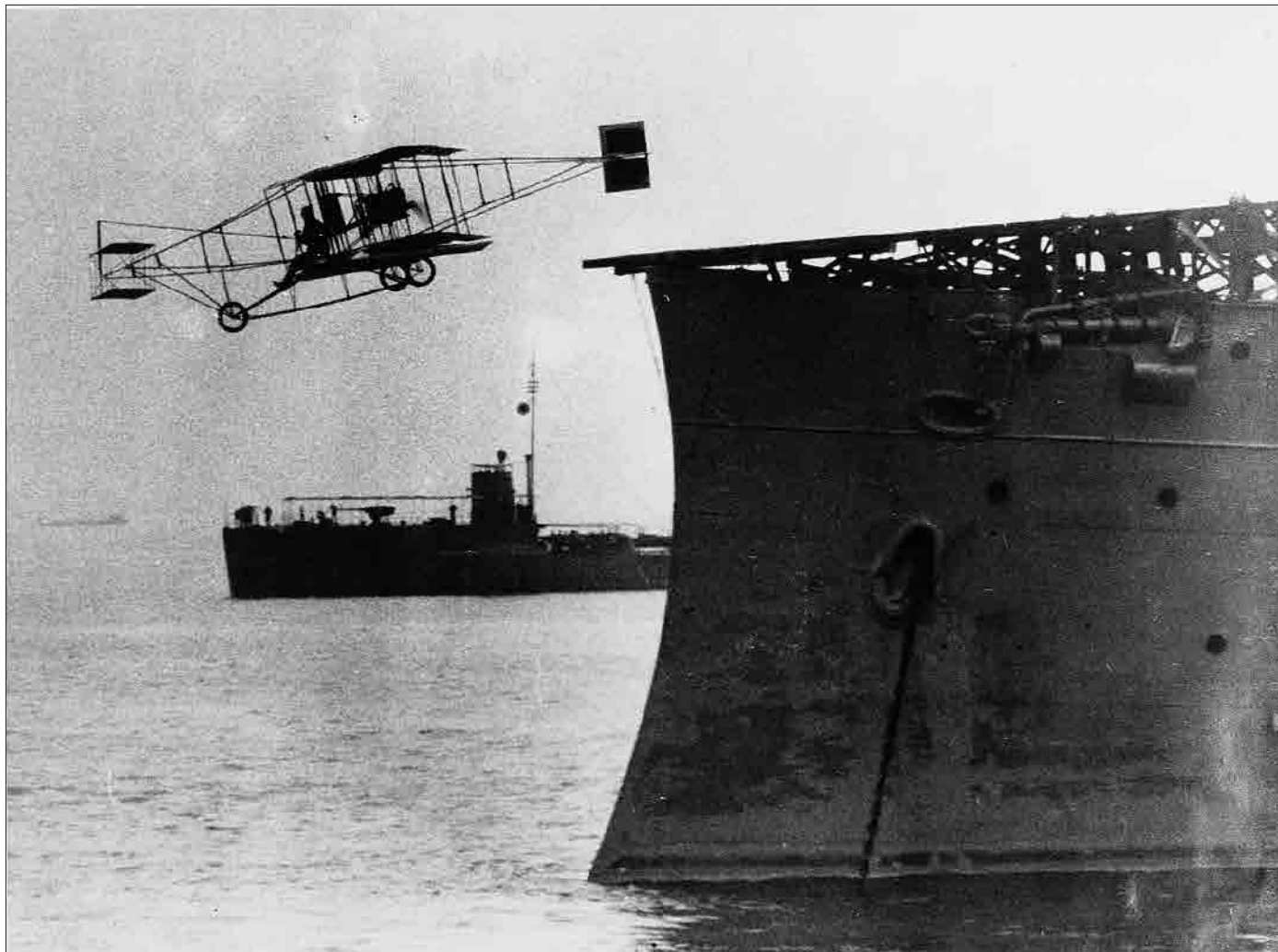
26 SEPTEMBER • The Secretary of the Navy informed the Aeronautical Reserve (an organization of private citizens formed to advance aeronautical science as a means of supplementing the national defense) that Capt. Washington I. Chambers, Assistant to the Aid for Material, had been designated as the officer to whom all correspondence on aviation was to be referred. This is the first recorded reference to a provision for aviation in the Navy Department organization.

1 OCTOBER • The General Board, of which Admiral of the Navy George Dewey was president, recommended to Secretary of the Navy George von L. Meyer that, in recognition of “the great advances which have been made in the science of aviation and the advantages which may accrue from its use in this class of vessel,” the problem of providing space for airplanes or dirigibles was to be considered in all new designs for scouting vessels.

7 OCTOBER • Chief of the Bureau of Steam Engineering Capt. Hutch I. Cone wrote a letter to Secretary of the Navy George von L. Meyer that pointed to “the rapid improvement in the design and manipulation of airplanes and the important role they would probably play” and requested authority to requisition an airplane for *Chester* (Cruiser No. 1) and the services of an instructor to teach one or more officers to fly the machine.

13 OCTOBER • Secretary of the Navy George von L. Meyer approved the recommendation of the Chief Constructor that an officer from the Bureau of Construction and Repair and another from the Bureau of Steam Engineering were to be appointed to investigate the subject of aviation and gain technical knowledge of airplanes. Meyer also directed that these officers keep Assistant to the Aid for Material Capt. Washington I. Chambers, previously designated to serve in a similar capacity in the secretary’s office, fully informed of the work contemplated and the results of all experiments.

22 OCTOBER • The International Aviation Tournament opened at Belmont Park, N.Y. Assistant to the Aid for Material Capt. Washington I. Chambers, Assistant Naval Constructor William McEntee, and Lt. Nathaniel H. Wright,



Eugene B. Ely flies a Curtiss pusher from *Birmingham* (Cruiser No. 2) at Hampton Roads, Va., in the first takeoff from a ship, 14 November 1910.

the three men recently named to investigate aviation, attended as official Navy observers.

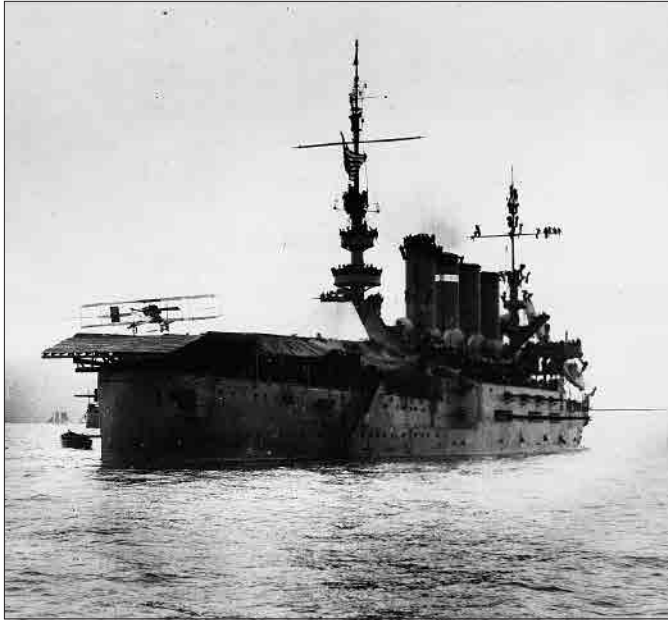
31 OCTOBER • The Chief of the Bureau of Construction and Repair suggested to Secretary of the Navy George von L. Meyer that the Navy take steps to obtain one or more aeroplanes to develop their use for naval purposes, and recommended that in the absence of specific funds for their purchase, the specifications for *Texas* (Battleship No. 35) be modified so as to require contractors to supply one or more aircraft as a part of their obligation.

14 NOVEMBER • Flying a 50 hp Curtiss plane, civilian exhibition stunt pilot Eugene B. Ely made the first takeoff from a ship. Ely flew from an 83-foot slanted wooden platform built onto the bow of *Birmingham* (Cruiser No. 2) at anchor

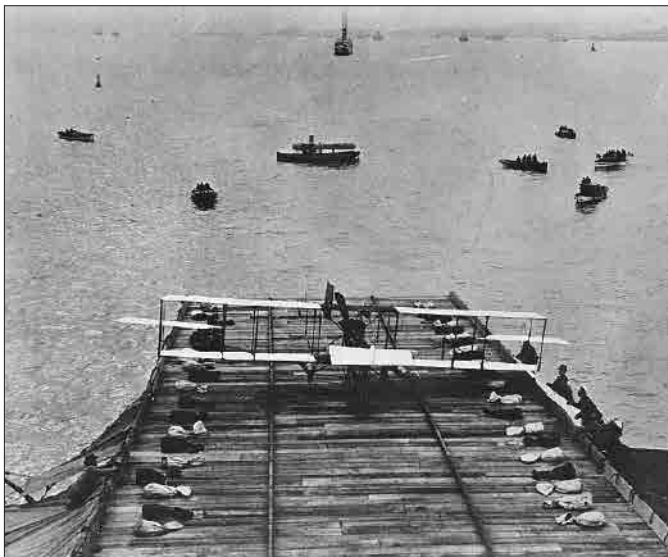
off Old Point Comfort, Hampton Roads, Va. Despite light rain and fog, the pilot elected to continue with the flight. As he left the platform, the plane settled slowly and touched the water, but rose again and landed about 2½ miles away on Willoughby Spit. The aircraft sustained slight splinter damage to the propeller tips.

29 NOVEMBER • Aircraft designer and entrepreneur Glenn H. Curtiss wrote to Secretary of the Navy George von L. Meyer offering flight instruction without charge for one naval officer as a means of assisting “in developing the adaptability of the aeroplane to military purposes.”

23 DECEMBER • Lt. Theodore G. Ellyson, the first naval officer to undergo flight training, received orders to report to the Curtiss aviation camp at North Island, San Diego, Calif.



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Eugene B. Ely, flying a Curtiss pusher, approaches a platform built over the stern of *Pennsylvania* (Armored Cruiser No. 4) in the first shipboard landing of an aircraft, 18 January 1911 (top). The plane was arrested by hooks attached to the plane's landing gear, which engaged a series of ropes, with sandbags at each end, stretched across the temporary deck and held above it by boards laid along its length (bottom).

1911

18 JANUARY • At 1048 civilian exhibition stunt pilot Eugene B. Ely flew the same Curtiss pusher that he had used during his launch from *Birmingham* (Cruiser No. 2) on 14 November 1910 and took off from Selfridge Field south of San Francisco, Calif., and at 1101 landed on board *Pennsylvania* (Armored Cruiser No. 4) at anchor off Hunters

Point in San Francisco Bay. The plane made a smooth landing from astern onto a specially built 130-foot long by 32-foot wide platform. At 1158 Ely took off and returned to Selfridge Field, completing the earliest demonstration of the adaptability of aircraft to shipboard operations.

26 JANUARY • Glenn H. Curtiss piloted a hydroaeroplane during the first successful flight of that type of plane at North Island, San Diego, Calif. Lt. Theodore G. Ellyson, who had assisted in preparing for the test, witnessed this important step in adapting aircraft to naval needs.

1 FEBRUARY • Glenn H. Curtiss made two successful flights from the water in a standard biplane at San Diego, Calif., using a single main float in place of the tandem triple float used in earlier tests. These takeoffs demonstrated the superior efficiency of the sled profile float that the Navy would use on hydroaeroplanes up to WWI.

10 FEBRUARY • Acting Secretary of the Navy Beekman Winthrop directed the Point Loma, Calif., Wireless Station to cooperate with Capt. Harry S. Harkness of the Aeronautical Reserve in experiments with the use of wireless from aeroplanes.

17 FEBRUARY • In another early demonstration of the adaptability of aircraft to naval uses, Glenn H. Curtiss taxied in a hydroaeroplane alongside *Pennsylvania* (Armored Cruiser No. 4) at anchor in San Diego Harbor, Calif. Curtiss arrived alongside the ship at 0845 and sailors manned the cruiser's crane to hoist the machine on board. At 0905 *Pennsylvania* hoisted the aircraft out and Curtiss taxied the plane to his hangar on North Island.

4 MARCH • The first funds appropriated for naval aviation provided \$25,000 to the Bureau of Navigation for "experimental work in the development of aviation for naval purposes."

9 MARCH • The Wright Co. made a formal offer to train one pilot for the Navy, contingent on the purchase of one airplane for the sum of \$5,000. Naval officials expressed their displeasure at the contingency, and Assistant to the Aid for Material Capt. Washington I. Chambers could not immediately arrange for the order of the aircraft, so the company repeated the offer without the contingency on 13 March.



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Capt. Washington I. Chambers.

17 MARCH • Lt. John Rodgers, who became Naval Aviator No. 2, reported to the Wright Co. at Dayton, Ohio, for instruction in flying. Despite rough weather and lack of equipment, he completed training at the encampment by making his first solo flight on 18 April.

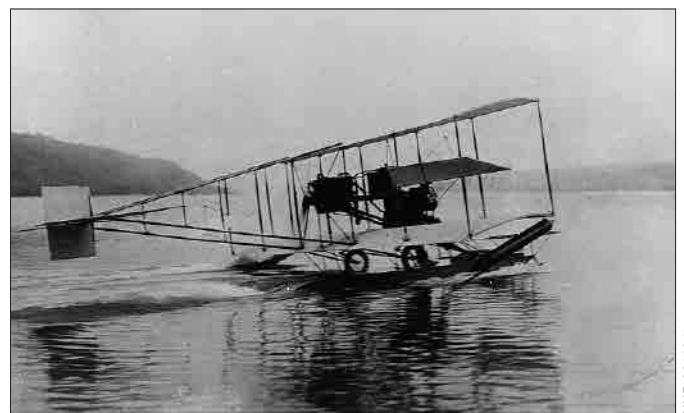
1 APRIL • Assistant to the Aid for Material Capt. Washington I. Chambers reported for duty with the General Board, a move suggested by board president Admiral of the Navy George Dewey because of a lack of space for aviation in the office of the Aid for Operations and to enable Chambers to have a stronger voice to impact policy.

14 APRIL • With Congress' allocation of a \$25,000 appropriation for aviation within the Bureau of Navigation budget, the fledgling office of naval aviation transferred from the General Board and was established in BUNAV.

8 MAY • Capt. Washington I. Chambers of the Bureau of Navigation prepared requisitions for two Curtiss biplanes. One, the Triad, was to be equipped for arising from or alighting on land or water; with a metal-tipped propeller designed for a speed of at least 45 miles per hour; provisions for carrying a passenger alongside the pilot; and controls that either the pilot or passenger could operate. The machine described became the Navy's first airplane, the Curtiss hydroaeroplane A-1 (later AH-1). Although these requisitions lacked the signature of the Chief of BUNAV—necessary to direct the General Storekeeper to enter into a contract with the Curtiss Co.—they indicated Chambers' decision as to which airplanes the Navy should purchase. The Navy thus considers 8 May 1911 the date upon which the service ordered its first airplane, and the official birthday of naval aviation.

27 JUNE • Lt. j.g. John H. Towers, who was to become Naval Aviator No. 3, reported for duty and instruction in flying at the Curtiss School at Hammondsport, N.Y.

1 JULY • At 1850 Glenn H. Curtiss demonstrated A-1 (later AH-1), the first aircraft built for the Navy. The plane took off from and alighted on Keuka Lake at Hammondsport, N.Y. The five-minute flight reached an altitude of 25 feet. The aircraft completed three other flights the same evening, one by Curtiss with Lt. Theodore G. Ellyson as a passenger, and two by Ellyson alone. In the longest of these flights Ellyson was in the air for 15 minutes and achieved an altitude of 300 feet. However, a special motor that Curtiss had constructed for A-1 encountered mechanical difficulties and a standard Curtiss 50 hp motor was used in these flights.



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The first Navy plane A-1 taxiing on Keuka Lake, N.Y.

1911 continued

3 JULY • Lt. Theodore G. Ellyson completed the first night flight by a member of the naval service. Ellyson took Capt. Washington I. Chambers of the Bureau of Navigation in A-1 (later AH-1) from Hammondsport, N.Y., to Penn Yan, N.Y. Light winds kept the plane from climbing aloft, and Ellyson and Chambers taxied 22 miles with a brief stop at Keuka. At 2015 Ellyson lifted off to return alone. He stopped for oil at Keuka after dusk, but the distance to the water's surface appeared misleading in the darkness and the aircraft struck the water. The plane rose again and landed successfully on the water on the second attempt, without the aid of lights, at 2045. These were the 12th and 13th flights of A-1.

6 JULY • Capt. Washington I. Chambers of the Bureau of Navigation received orders for temporary duty at the Naval Academy, Annapolis, Md., in connection with the establishment of an aviation experimental station, the site for which had been previously selected on Greenbury Point near Annapolis. Although the aviators did not occupy the site until September, this became the first base for naval aviation.

10 JULY • The 24th flight of the Triad demonstrated the amphibious features of the Navy's first aircraft. Pilot Glenn H. Curtiss took off from land, lifted the plane's wheels while in the air, and landed the Triad in the water.

13 JULY • Glenn H. Curtiss made the first flight of the Navy's second aircraft, A-2 (later AH-2), at Hammondsport, N.Y. Lt. Theodore G. Ellyson accomplished the second flight. Each attempt lasted for several minutes and reached an altitude of 100 feet.

23 AUGUST • The officers on flight duty with the Curtiss Co., Hammondsport, N.Y., and Wright Co., Dayton, Ohio, were ordered to report for duty at the Engineering Experiment Station at the Naval Academy, "in connection with the test of gasoline motors and other experimental work

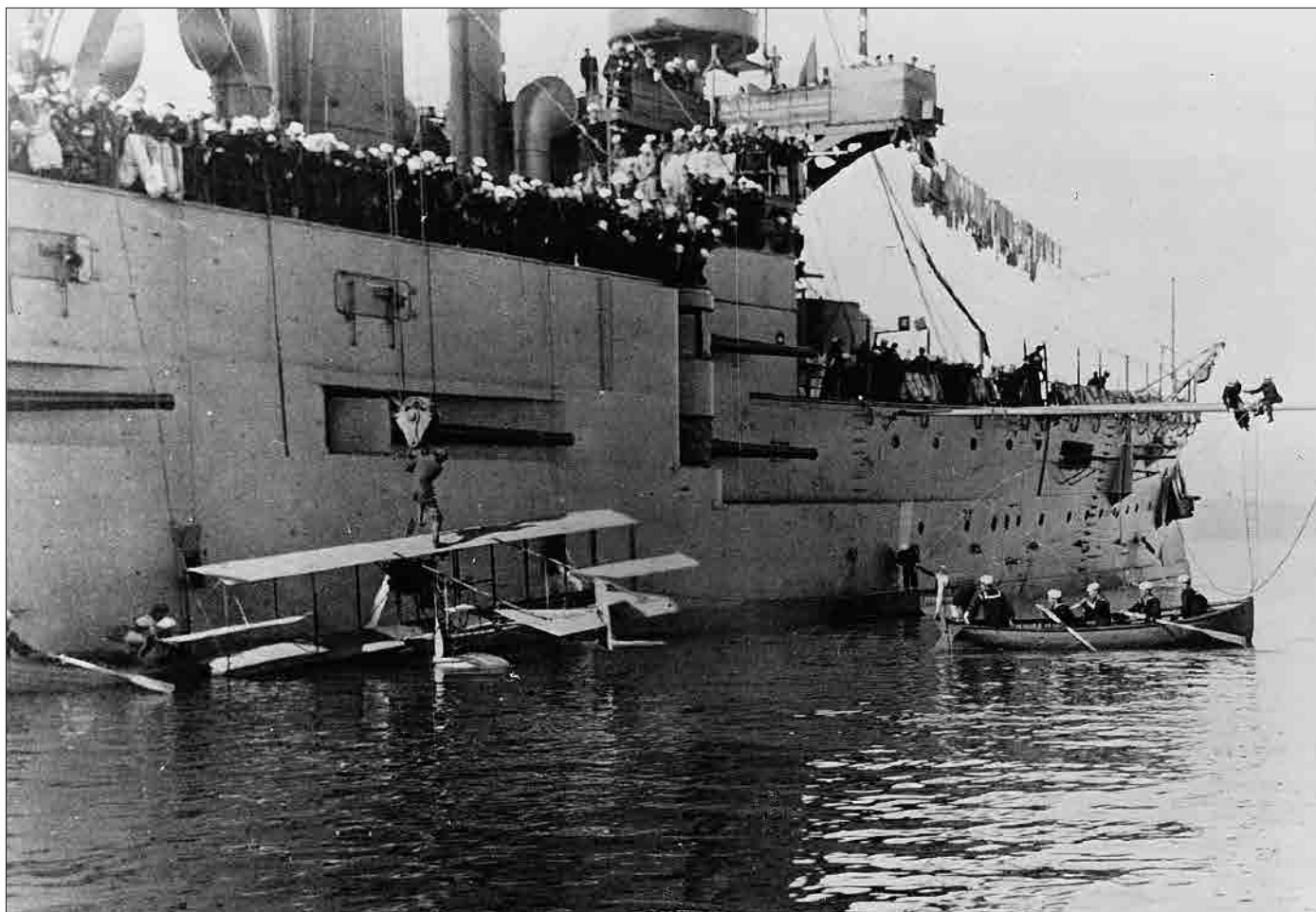


Capt. Washington I. Chambers, seated left, prepares for a flight with Lt. Theodore G. Ellyson in A-1 Triad at Hammondsport, N.Y.

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in the development of aviation, including instruction at the aviation school," which was being established on Greenbury Point, Md.

7 SEPTEMBER • A memorable experiment in the Navy's search for a shipboard launching device concluded at Hammondsport, N.Y., when Lt. Theodore G. Ellyson made a successful takeoff in a Curtiss plane from an inclined wire rigged from the beach down to the water. Capt. Charles F. Pond, who commanded *Pennsylvania* (Armored Cruiser No. 4), had suggested the technique, and Capt. Washington I. Chambers of the Bureau of Navigation and Glenn H. Curtiss had developed the method to the point of the test. Ellyson's report described the historic experiment, "The engine was started and run at full speed and then I gave the signal to release the machine. . . . I held the machine on the wire as long as possible as I wanted to be sure that I had enough headway to rise and not run the risk of the machine partly rising and then falling. . . . Everything happened so quickly and went off so smoothly that I hardly knew what happened except that I did have to use the ailerons, and that the machine was sensitive to their action."



Glenn H. Curtiss, standing atop the wing of his D-III tractor hydroaeroplane, attaches the hook of the ship's crane in preparation to being hoisted on board *Pennsylvania* on 17 February 1911.

16 SEPTEMBER • In a letter to the Navy Department, Lt. Theodore G. Ellyson described plans to purchase flight clothing in the hope of persuading the Navy to pay for them later. The Navy had outlined the requirements as a light helmet with detachable goggles, or a visor, with covering for the ears, yet with holes so the pilot could hear the engine; a leather coat lined with fur or wool; leather trousers; high rubber galoshes and gauntlets; and a life preserver of some description. Ellyson purchased some of this gear from Brooks Brothers clothiers using his own funds.

20 SEPTEMBER • The attempt to equip aircraft with navigational instruments was reflected in a Bureau of Navigation request to the Naval Observatory for temporary use of a boat compass in experimental work connected with the development of aviation.



Preparing A-1 for a launch from an inclined wire rigged from the beach down to the water at Hammondsport, N.Y.



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Lt. John H. Towers, left, and Lt. Theodore G. Ellyson.

10 OCTOBER • Assistant Naval Constructor Lt. Holden C. Richardson, CC, reported to the office of aviation at the Washington Navy Yard, D.C. Richardson became the Navy's first engineering and maintenance officer for aviation.

16 OCTOBER • Capt. Washington I. Chambers of the Bureau of Navigation described plans for a scientific test of hydroaeroplane floats at the Washington Navy Yard Model Basin, D.C., in a letter, in which he stated that a model of the pontoons with Forlanini planes (hydrovanes) was nearly ready for testing.

17 OCTOBER • Searching for improved powerplants, Capt. Washington I. Chambers of the Bureau of Navigation, in a letter to Glenn H. Curtiss, discussed heavy oil (or diesel) engines and turbine engines similar in principle to those that, some thirty years later, would make jet propulsion practical. Chambers wrote, "In my opinion, this turbine is the surest step of all, and the aeroplane manufacturer who gets in with it first is going to do wonders."

19 OCTOBER • Civilian exhibition pilot Eugene B. Ely lost control of an aircraft and crashed while landing before spectators during an exhibition at the state fair at Macon, Ga. Ely died from a broken neck when the plane struck the ground, throwing the pilot from the seat. On 16 February 1933 President Herbert C. Hoover presented the Distinguished Flying Cross as a posthumous award to the aviator's son, Col. Nathan D. Ely, USA (Ret.).

25 OCTOBER • Lt. Theodore G. Ellyson and Lt. John H. Towers flew A-1 (later AH-1) during an experiment to test the plane's durability on a cross-country flight from Annapolis, Md., to Fort Monroe, Va. A leaking radiator forced the aircraft down near Milford Haven, Va., after covering 112 miles in 122 minutes. This flight began a ten-day struggle to make the round trip.

8 NOVEMBER • Ens. Victor D. Herbster, later designated Naval Aviator No. 4, reported for flight instruction at the aviation camp at Greenbury Point, near Annapolis, Md.

14 NOVEMBER • The Navy's first major aircraft modification, the conversion of landplane B-1 (later AH-4) into a hydroaeroplane, began with a telegraphic order to the Burgess Co. and Curtis, Inc., Marblehead, Mass., for a suitable float.

20 DECEMBER • Lt. John H. Towers piloted A-1 (later AH-1) during experiments with airborne wireless transmission at Annapolis, Md. The plane made four flights, three with Ens. Charles H. Maddox and one with Assistant Naval Constructor Lt. Holden C. Richardson, CC. The men discovered that the trailing wire antenna reeled out after takeoff was too weak, and failed to obtain definite results.

26 DECEMBER • The search for a shipboard launching device continued when Capt. Washington I. Chambers of the Bureau of Navigation reported on interest by the Bureau of Ordnance concerning experimentation with a catapult for launching aeroplanes, somewhat after the manner of launching torpedoes. Chambers noted that the bureau decided to make a trial "with a device that gathers speed more gradually, something like the Curtiss air cylinder such as we use in ammunition hoists." These observations indicate the genesis of the Navy's compressed air catapult.

29 DECEMBER • The aviators at Greenbury Point, Md., received orders to transfer with their equipment to North Island, San Diego, Calif., to set up an aviation camp on land.

1912

9 MARCH • Assistant Naval Constructor Lt. Holden C. Richardson, CC, defined interest in steel and aluminum as aircraft structural materials in a letter to Capt. Washington I. Chambers of the Bureau of Navigation, stating, “From all I can gather, there is little doubt that much greater confidence would be felt if pontoons were constructed with a metal skin. . . . It would be unwise to make any requisition for such a construction until a practically standard design has been developed.”

11 MARCH • Secretary of the Navy George von L. Meyer authorized the expenditure of not more than \$50 for developing models of a helicopter design proposed by MMC F. E. Nelson of *West Virginia* (Armored Cruiser No. 5). Meyer did allow for the possibility of an expanded interest in the future, stating, “The Department recognizes the value of the helicopter principle in the design of naval aircraft and is following closely the efforts of others in this direction.”

23 MARCH • Chief Electrician Howard E. Morin conducted experiments with wireless communications at Mare Island Navy Yard near San Francisco, Calif., in which he made transmissions from a dummy airplane fuselage hoisted to a height of 85 feet. An operator at a station at Point Richmond, 20 miles distant, received the signals “distinctly.”

22 MAY • 1st Lt. Alfred A. Cunningham, USMC, the first Marine Corps officer assigned to flight instruction and



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Lt. Holden C. Richardson, CC.

afterward designated Naval Aviator No. 5, reported to the Superintendent of the Naval Academy for “duty in connection with aviation.” Cunningham subsequently detached to the Burgess Co., at Marblehead, Mass., for flight instruction. This date is recognized as the birthday of Marine Corps aviation.

21 JUNE • Lt. Theodore G. Ellyson ascended to 900 feet in A-1 (later AH-1) over Annapolis, Md., in 3 minutes 30 seconds.

20 JULY • The men of the aviation camp at Greenbury Point, Md., conducted comparative tests of Wright steel wire and Monel wire at Engineering Experiment Station, Annapolis, Md. These, the earliest recorded naval tests of aircraft structural materials, showed the Monel wire to be both free of corrosion and 50 percent stronger than the steel wire.

25 JULY • On the basis of the Navy’s experience with its first airplanes, Secretary of the Navy George von L. Meyer published *Requirements for Hydroaeroplanes*, the first general specifications for naval aircraft. The Secretary’s expressed purpose was “to assist manufacturers in maintaining the highest degree of efficiency, while improving the factors which govern safety in aviation, without demanding anything that may not be accomplished under the limitations of the present state of the art and without confining purchases to the products of a single factory.”

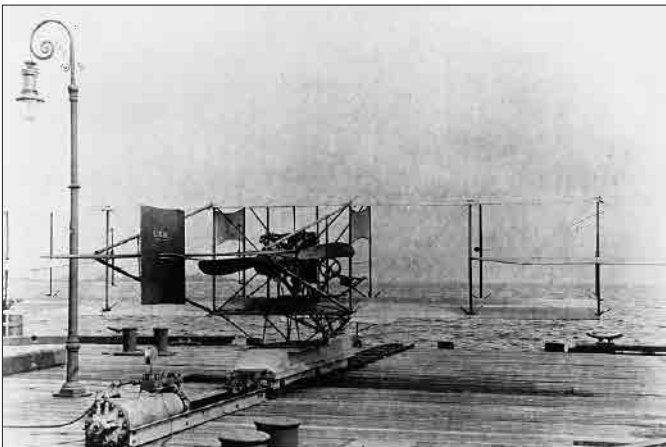
26 JULY • Lt. John Rodgers continued airborne wireless communications tests in hydroaeroplane B-1 at Annapolis, Md. On one flight, Ens. Charles H. Maddox sent messages to *Stringham* (Torpedo Boat No. 19) at a distance of about 1½ miles. Subsequent tests over the following days included transmissions at short intervals and while the plane ran on the water. Maddox later received a letter of commendation noting his “valuable work” in the development of aviation radio equipment, including his personal manufacture and installation of the first radio transmitter used by the Navy in airplane communications.

31 JULY • Lt. Theodore G. Ellyson piloted A-1 (later AH-1) during the Navy’s first attempt to launch an airplane by catapult, at the dock of the Naval Academy, Annapolis, Md. The aircraft, which was not secured to the catapult, reared at about mid-stroke; a crosswind caught it and the machine plunged into the water, although the pilot escaped without



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Ens. Godfrey deC. Chevalier.



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A-1 poised to launch during the Navy's first attempt to launch a plane from a catapult at Annapolis, Md., July 1912.

serious injuries. This catapult, powered by compressed air, was constructed at the Naval Gun Factory at the Washington Navy Yard, D.C., from a plan proposed by Capt. Washington I. Chambers of the Bureau of Navigation.

18 SEPTEMBER • 1st Lt. Bernard L. Smith, USMC, the second Marine officer assigned to flight training and later designated Naval Aviator No. 6, reported for instruction at the aviation camp at the Naval Academy, Annapolis, Md.

3 OCTOBER • The Davis recoilless gun underwent initial tests at Naval Proving Ground, Indian Head, Md. Cmdr. Cleland Davis designed the gun to fire from an aircraft a caliber shell large enough to damage submarines, but with a recoil slight enough to be absorbed by the aircraft. Davis tested the gun again in early December; however, the results of the two series of experiments demonstrated that although the gun was recoilless, the blast from the muzzle would pose problems should they install the weapon on board aircraft.

6 OCTOBER • Lt. John H. Towers took off in A-2 (later AH-2) from the water at Greenbury Point, Md., at 0650 and remained in the air 6 hours 10 minutes 35 seconds, setting a new American endurance record for planes of any type.

8 OCTOBER • Tests of a Gyro 50 hp rotary motor were completed at the Engineering Experiment Station, Annapolis, Md. The motor underwent three brief dynamometer tests, followed by ground runs and flight tests, marking the Navy's first recorded attempt to use laboratory equipment and methods to evaluate an aircraft engine.

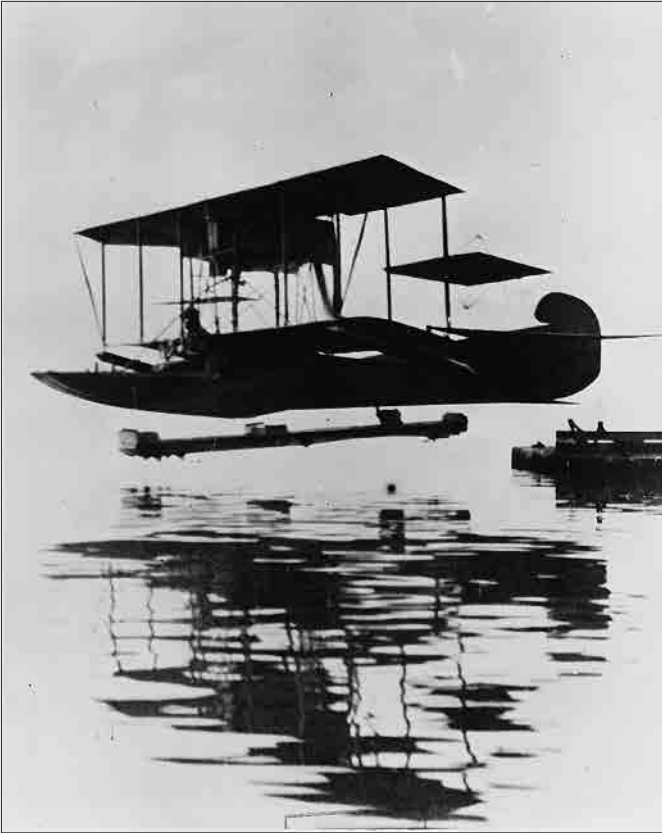
8 OCTOBER • The Navy first defined physical requirements for prospective naval aviators in Bureau of Medicine and Surgery Circular Letter 125221. Standards concerned equilibrium, hearing, vision, and organs of the circulatory and respiratory systems.

25 OCTOBER • Ens. Godfrey deC. Chevalier, later designated Naval Aviator No. 7, reported for flight training at the aviation camp at Annapolis, Md.

12 NOVEMBER • Lt. Theodore G. Ellyson accomplished the Navy's first successful launching of an airplane by catapult, in A-3 (later AH-3) at the Washington Navy Yard, D.C. The following month a flying boat successfully launched from this catapult.

26 NOVEMBER • Lt. j.g. Patrick N. L. Bellinger, later Naval Aviator No. 8, reported for flight instruction at the aviation camp at Greenbury Point, Md.

30 NOVEMBER • Lt. Theodore G. Ellyson tested C-1 (later AB-1), the Navy's first flying boat, at Hammondsport, N.Y. The pilot described its performance as "Circular climb, only one complete circle, 1,575 feet in 14 minutes 30 seconds



Lt. Theodore G. Ellyson accomplishes the Navy's first successful catapult launch, flying in A-3 at the Washington Navy Yard, D.C., 12 November 1912.

fully loaded. On glide approximately 5.3 to 1. Speed, eight runs over measured mile, 59.4 miles per hour fully loaded. The endurance test was not made, owing to the fact that the weather has not been favorable, and I did not like to delay any longer."

2 DECEMBER • Ens. William D. Billingsley, later Naval Aviator No. 9, reported for duty at the aviation camp at Greenbury Point, Md. Billingsley subsequently began his assignment with instruction in hydroaeroplane B-2 (later AH-5).

18 DECEMBER • Lt. John H. Towers reported completion of a series of tests begun on 26 October to determine the ability to spot submarines from aircraft. Towers concluded that the best altitude for observation was about 800 feet, and that aircraft could detect submarines running a few feet below the surface. Noting that the waters of Chesapeake Bay were too muddy for a fair test, he suggested that additional trials be held at NS Guantánamo Bay, Cuba.

19 DECEMBER • President William H. Taft, acting on a recommendation made by Secretary of the Navy George von L. Meyer, created a "Commission on Aerodynamical Laboratory" to determine the need for and a method of establishing such a laboratory. Capt. Washington I. Chambers of the Bureau of Navigation and Naval Constructor David W. Taylor represented the Navy on the commission.

1913

6 JANUARY • The Navy's entire aviation element arrived at NS Guantánamo Bay, Cuba, and set up an encampment on Fisherman's Point for initial operations with the fleet. The assignment, which included scouting missions and exercises in spotting mines and submerged submarines as part of the fleet maneuvers, served both to demonstrate operational capabilities of the aircraft and to stimulate interest in aviation among sailors and Marines, more than a hundred of whom were taken up for flights during the aviation element's eight-week stay.

8 FEBRUARY • Lt. John H. Towers reported on experimental aviation work underway at NS Guantánamo Bay, Cuba, including bombing, aerial photography, and wireless radio transmission, stating in part: "We have become fairly accurate at dropping missiles, using a fairly simple device gotten up by one of the men. Have obtained some good photographs from the boats at heights up to 1,000 feet. I believe we will get some results with wireless this winter."

26 FEBRUARY • The Chief Constructor of the Navy formally approved action to provide the service with a wind tunnel, a basic tool in aeronautical research and development. The resulting tunnel was built at the Washington Navy Yard, D.C.

4 MARCH • The Navy Appropriations Act for fiscal year 1914 provided an increase of 35 percent in pay and allowances for officers detailed to duty as flyers of heavier-than-air craft, limited to 30 the number of officers that could be so assigned, and further provided that no naval officer above the rank of lieutenant commander in the Navy or major in the Marine Corps was to be detailed to duty involving flying.



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The base for the first aviation detachment to operate with the Fleet at Guantánamo Bay, Cuba, January 1913.



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Men of the aviation detachment at Guantánamo Bay, Cuba: 1st Lt. Bernard L. Smith, USMC, Lt. j.g. Patrick N. L. Bellinger, 1st Lt. Alfred A. Cunningham, USMC, Ens. William D. Billingsley (standing), Ens. Victor D. Herbster, and Ens. Godfrey deC. Chevalier (seated).

5 MARCH • Reporting on tests held at NS Guantánamo Bay, Cuba, from 3 to 5 March, Lt. John H. Towers stated that aircraft had spotted submarines from the air at a variety of depths. They discerned a submarine painted slate grey at depths up to 45 feet; a light blue boat at a depth of 40 feet; and a “dark greenish blue” boat at 30 feet.

13 MARCH • Capt. Washington I. Chambers of the Bureau of Navigation received the medal of the Aeronautical Society

for 1912, and was cited for “his unusual achievements in being the first to demonstrate the usefulness of the aeroplane in navies, in developing a practical catapult for the launching of aeroplanes from ships, in assisting in the practical solution of the hydroaeroplane by the production in association with others of the flying boat, in having been instrumental in the introduction into our halls of Congress of bills for a National Aerodynamic Laboratory, and a Competitive Test, and through his perseverance and able efforts in advancing the progress of Aeronautics in many other channels.”

31 MARCH • A list of aircraft instruments and allied equipment planned for installation in flying boat D-1 (later AB-6) included a compass, altimeter, inclinometer, speed indicator, chart board, radio, and generator. Although mechanics had not installed the radio and generator by this date, the other equipment represents instrumentation installed on naval aircraft of the period.

10 APRIL • The Secretary of the Navy approved performance standards for qualification as a Navy Air Pilot and the issuance of a certificate to all officers meeting the requirements. Capt. Washington I. Chambers of the Bureau of Navigation described these requirements as being different from those of the “land pilot,” and more exacting than those of the international accrediting agency, the Federation Aeronautique Internationale.

28 APRIL • Rear Adm. Victor Blue, Chief of the Bureau of Navigation, approved a proposal that the Navy, Glenn H. Curtiss, and the Sperry Co. cooperate in testing the gyroscopic stabilizer on a new naval aeroplane.

9 MAY • President Woodrow Wilson approved the designation of representatives from governmental departments to serve on an advisory committee for the Langley Aerodynamical Laboratory, which the Smithsonian Institution had closed after the death of laboratory director Samuel P. Langley and reopened on 1 May to study questions relating to aerodynamics. Navy members of the advisory committee were Capt. Washington I. Chambers of the Bureau of Navigation and Assistant Naval Constructor Lt. Holden C. Richardson, CC.

12 JUNE • Secretary of the Navy Josephus Daniels approved detailing Lt. Jerome C. Hunsaker, CC, to the Massachusetts Institute of Technology to develop “a course of lectures and experiments on the design of aeroplanes and dirigibles, and to undertake research in that field.” After making a tour of aeronautical research facilities in Europe, Hunsaker participated in establishing a course of aeronautical engineering in MIT’s Department of Naval Architecture.

13 JUNE • Lt. j.g. Patrick N. L. Bellinger set an American altitude record for seaplanes when he reached 6,200 feet in A-3 (later AH-3) over Annapolis, Md.

20 JUNE • Ens. William D. Billingsley suffered an accident while flying B-2 (later AH-5) at 1,600 feet over the water near Annapolis, Md. Billingsley was thrown from the plane and fell to his death, becoming the first fatality in naval aviation. The mishap also unseated passenger Lt. John H. Towers, who clung to a piece of B-2 but fell with the plane’s wreckage into the water and received serious injuries. Destroyer *Billingsley* (DD 293) was later named in honor of the fallen pilot.

23 JUNE • General Order No. 41 fixed the cognizance of various bureaus in aviation in a manner paralleling the division of responsibility for naval vessels.

30 AUGUST • A Sperry gyroscopic stabilizer (automatic pilot) was flight tested in flying boat C-2 (later AB-2) by Lt. j.g. Patrick N. L. Bellinger at Hammondsport, N.Y.

30 AUGUST • In a report to Secretary of the Navy Josephus Daniels, the General Board expressed its opinion that “the organization of an efficient naval air service should be immediately taken in hand and pushed to fulfillment.”

5 OCTOBER • The Navy’s first amphibian flying boat, the Over-Water-Land type, completed its initial trials at Hammondsport, N.Y., under the supervision of Assistant Naval Constructor Lt. Holden C. Richardson, CC. The aircraft, which was subsequently redesignated E-1, was hydroaeroplane A-2 (later AH-2), in which a flying boat hull containing a three-wheel landing gear replaced the pontoon.

7 OCTOBER • Secretary of the Navy Josephus Daniels appointed a board—dubbed the Chambers Board, after senior member Capt. Washington I. Chambers—to draw up “a comprehensive plan for the organization of a Naval Aeronautic Service.” The board’s members also included Cmdr. Carlo B. Brittain, Cmdr. Samuel S. Robison, Lt. Manley H. Simons, Lt. John H. Towers, Assistant Naval Constructor Lt. Holden C. Richardson, CC, and 1st Lt. Alfred A. Cunningham, USMC. Following 12 days of deliberation the board submitted a report emphasizing the need for expansion and for the integration of aviation within the fleet. This was the first comprehensive program for an orderly development of naval aviation. The board’s recommendations included establishing an aeronautic center at Pensacola, Fla., for flight and ground training and for the study of advanced aeronautical engineering; creating a central aviation office under the secretary to coordinate the aviation work of the bureaus; assigning a ship for training in operations at sea and to make practical tests of equipment necessary for such operations; and assigning one aircraft to every major combatant ship. The board requested \$1,297,700 to implement the program.

17 DECEMBER • Capt. Mark L. Bristol reported to the Navy Department for special duty as officer in charge of aviation, and relieved Capt. Washington I. Chambers of that duty.



Flying boats, hydroaeroplanes, and tent hangars at Naval Aeronautic Station Pensacola, Fla., c. 1914.



Lt. Cmdr. Henry C. Mustin.

1914

6 JANUARY • The Marine Corps element of the aviation camp at Greenbury Point, Md., 1st Lt. Bernard L. Smith, USMC, commanding, equipped with a flying boat, an amphibian, spare parts, and hangar tents, received orders to deploy to Culebra Island, Puerto Rico, for exercises with the Advance Base Unit to experiment with aircraft operations during fleet maneuvers.

7 JANUARY • The Office of Aeronautics, with Capt. Mark L. Bristol in charge, transferred from the Bureau of Navigation to the Division of Operations in the Office of the Secretary of the Navy.

10 JANUARY • Secretary of the Navy Josephus Daniels announced that “the science of aerial navigation has reached that point where aircraft must form a large part of our naval force for offensive and defensive operations.”

20 JANUARY • The aviation unit from Annapolis, Md., consisting of 9 officers, 23 enlisted men, 7 aircraft, portable hangars, and other gear, under Lt. John H. Towers, arrived at the former Navy yard at Pensacola, Fla., on board the aeronautic training ship *Mississippi* (Battleship No. 23) and *Orion* (Fuel Ship No. 11) to set up a flying school. Lt. Cmdr. Henry C. Mustin, in command of *Mississippi*, also commanded the aeronautic station.

16 FEBRUARY • Lt. j.g. James M. Murray, Naval Aviator No. 10, died when he crashed into the water from 200 feet while on a flight in flying boat D-1 (later AB-6) at Pensacola, Fla.

20 FEBRUARY • The beginnings of aviation medicine were apparent in a letter from the Office of Aeronautics to the commanding officer of the aeronautic station at Pensacola, Fla., on the subject of physical requirements for aviator candidates, which expressed the opinion that useful information was to be obtained by observing pilots during flight and by physical examination before and after flight. The letter further directed that a program should be developed that would permit incorporation of such practice in the work of the flight training school.

9 MARCH • The construction of the wind tunnel at the Washington Navy Yard, D.C., was completed and the tunnel turned over its fan for the first time. Calibration required about three months, and the Navy first used the tunnel in July to test a ship’s ventilator cowling. The wind tunnel remained in operation throughout WWII.

27 MARCH • General Order No. 88 changed the designations of aircraft to two letters and a number, with the first letter denoting class, the second letter the type, and the number the order in which aircraft within class were acquired. Four classes were set up: A for all heavier-than-air craft; B for balloons; D for airships or dirigibles; and K for kites. Within the A class, the types of aircraft were B for



An aircraft flies over Vera Cruz, Mexico, as the pilot searches for enemy snipers.

flying boats, C for convertibles, H for hydroaeroplanes, L for land planes, and X for combination land and water machines. For example, the third hydroaeroplane, formerly designated A-3, became AH-3, and the first flying boat, formerly designated C-1, became AB-1.

20 APRIL • The First Section, an aviation detachment from Pensacola, Fla., embarked *Birmingham* (Cruiser No. 2), which sailed to join the ships of the Atlantic Fleet operating off Tampico and Vera Cruz during a crisis in Mexican waters. The detachment comprised three aircraft—hydroaeroplane AH-2, carrying spare parts including most of AX-1, and flying boats AB-4 and AB-5—with pilot Lt. John H. Towers in command, pilots 1st Lt. Bernard L. Smith, USMC, and Ens. Godfrey deC. Chevalier, and 12 enlisted men. This operation signified naval aviation's first call to action.

20 APRIL • Albert B. Lambert, an entrepreneur from St. Louis, Mo., who had organized the "U.S. Aviation Reserve Corps" the year before, informed Secretary of the Navy Josephus Daniels that he would make the corps' services available for use in the Mexican crisis. Lambert listed the names of 44 members—not all of naval origins—20 of whom could furnish their own aircraft; however, the Navy declined his offer.

21 APRIL • The Second Section, an aviation detachment from Pensacola, Fla., embarked the aeronautic training ship

Mississippi (Battleship No. 23) and sailed for Mexico to assist in operations at Vera Cruz. The detachment consisted of two aircraft—hydroaeroplane AH-3 and flying boat AB-3—with pilot Lt. j.g. Patrick N. L. Bellinger in command and student pilots Lt. j.g. Richard C. Saufley, Ens. Melvin L. Stolz, and Ens. Walter D. LaMont.

22 APRIL • The Bureau of Navigation approved formal courses of instruction for student aviators and student mechanics at the Pensacola, Fla. aeronautic station flying school.

25 APRIL • Lt. j.g. Patrick N. L. Bellinger piloted flying boat AB-3 on the Second Section's first flight at Vera Cruz, Mexico, during a preliminary search for a purported mine in the harbor. The plane nearly failed to take off through the heavy swells but rose to a height of about 3,000 feet for a 28-minute flight around the harbor. Bellinger returned and picked up Ens. Melvin L. Stolz, but the weather forced him to go inside the breakwater to find smooth water, and the crew failed to spot the mine.

28 APRIL • Lt. j.g. Patrick N. L. Bellinger and Ens. Walter D. LaMont took the Navy's first recorded aerial photographs during wartime from flying boat AB-3 at an average altitude of barely 200 feet over Vera Cruz, Mexico. The flight was cut short, however, when the crew reported that the engine "worked poorly."

2 MAY • Lt. j.g. Patrick N. L. Bellinger and Ens. Walter D. LaMont completed naval aviation's first mission in direct support of ground troops while flying hydroaeroplane AH-3. Marines encamped near Tejar, Mexico, had reported receiving fire from Mexican troops during the forenoon watch and requested that the aviation detachment at Vera Cruz locate the attackers.

6 MAY • Orders directed the Second Section to investigate a company of about 100 Mexican soldiers encamped near Punta Gorda, around one mile north of Vera Cruz. Lt. j.g. Patrick N. L. Bellinger, pilot, with Lt. j.g. Richard C. Saufley, observer, responded in hydroaeroplane AH-3. As the plane followed the coast north toward Boca del Rio Antigua at an average altitude of 3,200 feet, it flew low over a group of Mexican stragglers who opened fire with rifles, hitting the frail craft. Bellinger immediately pulled up and although he



On 28 April 1914, Lt. j.g. Patrick N. L. Bellinger and Ens. Walter D. LaMont take the Navy's first documented aerial photographs during wartime from AB-3 over the fortress of San Juan de Ulua and the harbor of Vera Cruz, Mexico.

and Saufley escaped unhurt, AH-3 bore the first marks of battle on a Navy plane.

19 MAY • As the need for scouting services diminished at Vera Cruz, Mexico, the Second Section resumed routine flight instruction at that city while awaiting orders to return to Pensacola, Fla.

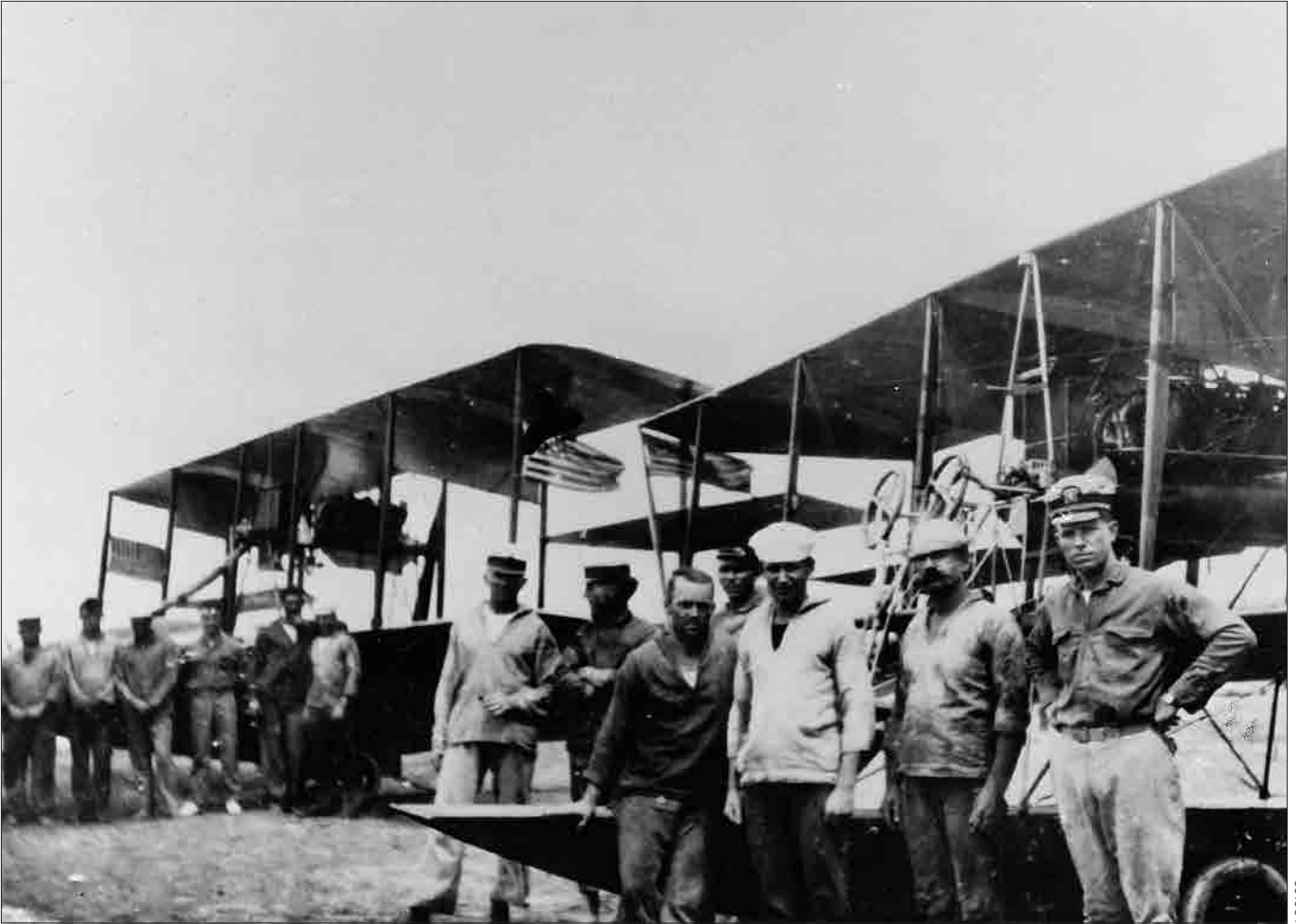
24 MAY • The First Section—the aeronautic detachment on board *Birmingham* (Cruiser No. 2)—arrived at Vera Cruz, Mexico, following a brief deployment to Tampico, to join the Second Section in the school routine of flight instruction.

26 MAY • On the basis of flight tests, Assistant Naval Constructor Lt. Holden C. Richardson, CC, recommended that the Navy purchase two swept-wing Burgess-Dunne hydroaeroplanes “so that the advantages and limitations can be thoroughly determined . . . as it appears to be only the beginning of an important development in aeronautical design.” The service subsequently designated the aircraft obtained as AH-7 and AH-10.

1 JULY • The Navy formally recognized aviation by establishing the Office of Naval Aeronautics in the Division of Operations under the Secretary of the Navy. Secretary of the Navy Josephus Daniels had recommended the establishment on 26 March, which President Woodrow Wilson approved.

28 JULY • Lt. j.g. Victor D. Herbster reported on bombing tests that he and 1st Lt. Bernard L. Smith, USMC, carried out at Indian Head Proving Grounds, Md. They dropped both dummy and live bombs over the side of the aircraft from about 1,000 feet against land and water targets. Herbster reported his bombing would have been more accurate “if I had been able to disengage my fingers from the wind-wheel sooner.”

21 AUGUST • Lt. Cmdr. Henry C. Mustin, Lt.j.g. Patrick N. L. Bellinger, and 1st Lt. Bernard L. Smith, USMC, arrived in Paris, France, from a voyage on board *North Carolina* (Armored Cruiser No. 12) for a two-day tour of aircraft factories and aerodromes in the immediate area. This temporary assignment marked the first use of naval aviators



Lt. j.g. Patrick N. L. Bellinger, far right, and some of the other men of the aviation camp at Vera Cruz, Mexico, stand before hydroaeroplane AH-3, the Navy's first plane struck by enemy gunfire.

as observers in foreign lands, and established a precedent for the assignment of aviation assistants to naval attachés, which began the same month when Lt. John H. Towers was dispatched to London, England, "for special duty in connection with the study of aviation." The following month Lt. j.g. Victor D. Herbster and 1st Lt. Smith reported to Berlin, Germany, and to Paris, respectively.

16 NOVEMBER • An administrative reorganization at Pensacola, Fla., shifted overall command of the flying school from the station ship to headquarters ashore, and the station was officially designated Naval Aeronautic Station, Pensacola.

23 NOVEMBER • The Navy established the title Director of Naval Aeronautics to designate the officer in charge of

naval aviation. Capt. Mark L. Bristol, already serving in that capacity, was ordered to report to Secretary of the Navy Josephus Daniels under the new title.

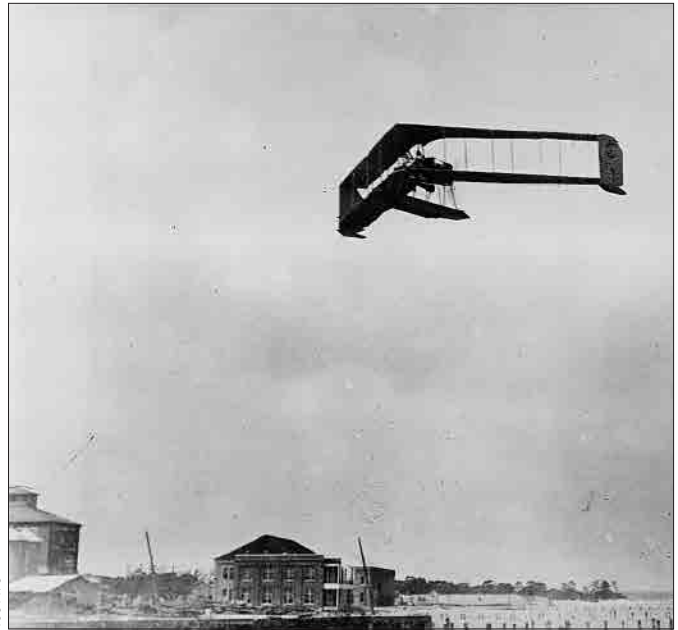
25 NOVEMBER • Director of Naval Aeronautics Capt. Mark L. Bristol established requirements for special meteorological equipment to measure and record velocity and direction of winds, gusts, and squalls, for installation at the two ends of the speed course at Pensacola, Fla.

1915

1 FEBRUARY • The Division of Naval Militia Affairs in the Bureau of Navigation directed that an aeronautic corps was to be organized in each state's Naval Militia.



Lt. Cmdr. Patrick N. L. Bellinger served at Vera Cruz, Mexico, as a lieutenant, junior grade.



The AH-7 flies over Pensacola, Fla.

3 MARCH • A rider to the Naval Appropriations Act of 1915 created the National Advisory Committee for Aeronautics. Navy members in the original organization were Director of Naval Aeronautics Capt. Mark L. Bristol and Assistant Naval Constructor Lt. Holden C. Richardson, CC. Furthermore, the Act added enlisted men and student aviators to those eligible for increased pay and allowances while flying on duty, increased the amount previously provided for qualified aviators, and provided for the payment of one year's pay to the next of kin of officers and men killed in aircraft accidents. The same act also raised the limits on sailors assigned to aviation to a yearly average of not more than 48 officers and 96 enlisted men for the Navy, and 12 officers and 24 enlisted men for the Marine Corps.

22 MARCH • The title Naval Aviator began to replace the former Navy Air Pilot designation for naval officers who had qualified as aviators.

16 APRIL • Lt.j.g. Patrick N. L. Bellinger successfully catapulted from a coal barge in flying boat AB-2 at Pensacola, Fla. Assistant Naval Constructor Lt. Holden C. Richardson, CC, had designed and fabricated the device at the Washington Navy Yard, D.C., in 1913. The success of this and subsequent launches by Lt. Kenneth Whiting, Lt. j.g. Richard C. Saufley, and Ens. Clarence K. Bronson led to the installation of catapults on board ships.

23 APRIL • Lt.j.g. Patrick N. L. Bellinger established a U.S. altitude record for seaplanes by ascending to 10,000 feet in AH-10 on a flight of 1 hour 19 minutes, over Pensacola, Fla.

8 MAY • Student aviator Lt. j.g. Melvin L. Stolz died when his Curtiss hydroaeroplane crashed at Pensacola, Fla. Although Stolz had not been designated a naval aviator, he had qualified for Aero Club Hydroaeroplane Certification No. 19.

28 MAY • The Naval Militia was informed that refresher flight training at Pensacola, Fla., had become available for a limited number of its aviators.

1 JUNE • The Navy let its first contract for a lighter-than-air craft when it ordered a non-rigid airship from the Connecticut Aircraft Co. of New Haven. The craft, later designated DN-1, arrived at Pensacola, Fla., in December 1916. However, men had to remove one of the engines to lighten the ship enough to lift into the air, so DN-1 did not make its first flight until Lt. Cmdr. Frank R. McCrary piloted the ship aloft on 20 April 1917, the month that the U.S. entered WWI. The airship completed two additional flights but later received severe damage while being towed over water. Because of its poor performance the Navy removed DN-1 from inventory and broke up the airship. The Navy had developed its first and only floating hangar to accommodate DN-1, and afterward used the structure for the operation of B-class airships during WWI.

7 JULY • Secretary of the Navy Josephus Daniels attempted to mobilize scientific achievement to the modernization of the fleet by writing inventor Thomas A. Edison, stating in part: "One of the imperative needs of the Navy, in my judgment, is machinery and facilities for utilizing the natural inventive genius of Americans to meet the new conditions of warfare." This letter led to the establishment of the Naval

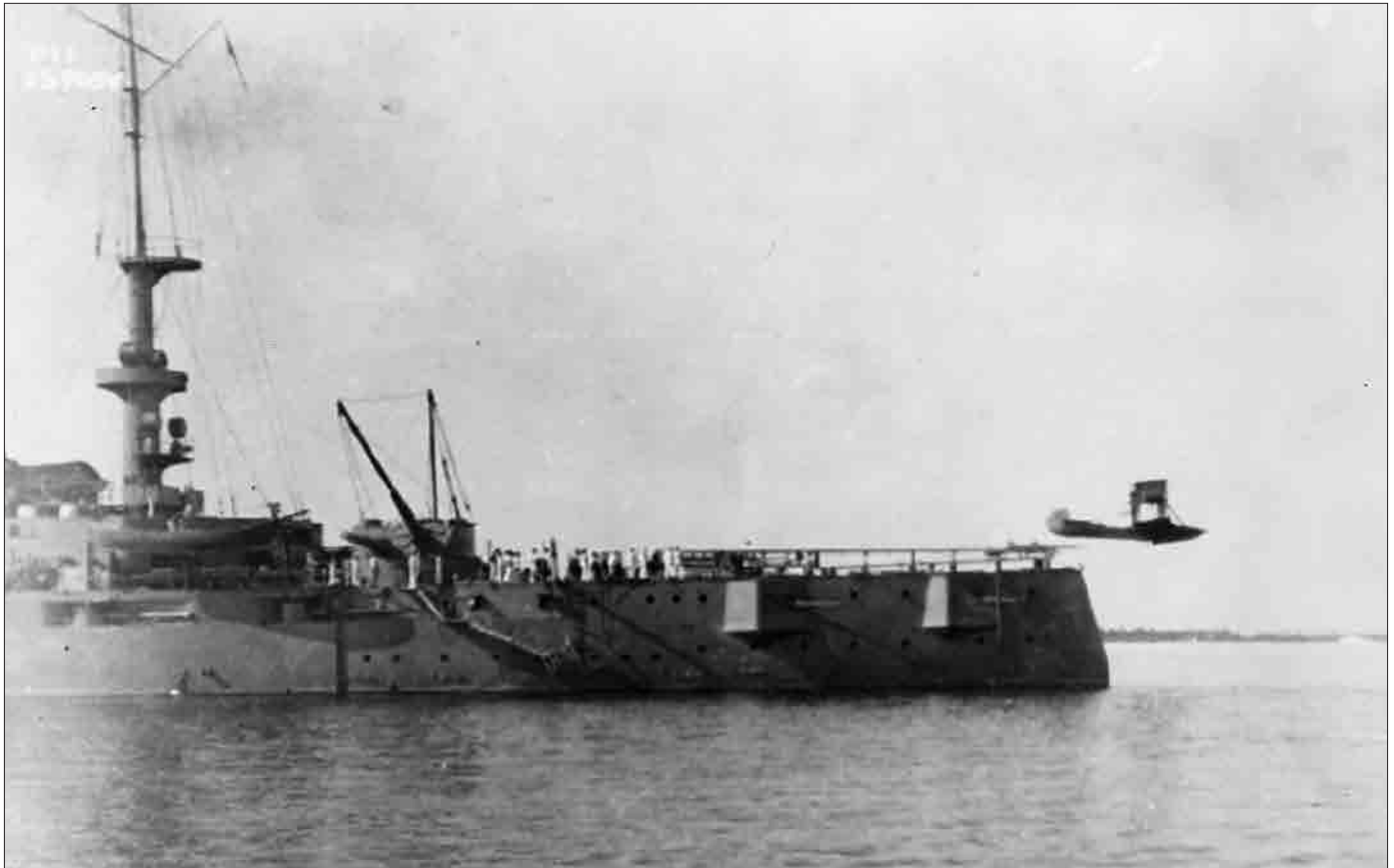


Lt. Kenneth Whiting, at the controls of a Wright aircraft, later became instrumental in the formation of naval carrier aviation.

Consulting Board, a group of civilian advisors that functioned during the WWI period and included in its organization a "Committee on Aeronautics, including Aero Motors."

10 JULY • Secretary of the Navy Josephus Daniels issued the authorization to outfit a building at Washington Navy Yard, D.C., for testing aeronautic machinery. This marked the beginning of the Aeronautical Engine Laboratory.

10 JULY • After a test of a sextant equipped with a pendulum-type artificial horizon, Lt. Cmdr. Henry C. Mustin, the



Lt. Cmdr. Henry C. Mustin makes the first catapult launch from a ship, flying AB-2 from *North Carolina* (Armored Cruiser No. 12) at Pensacola, Fla., 5 November 1915.

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commanding officer of Naval Aeronautic Station Pensacola, Fla., reported that while the pendulum principle was basically unsatisfactory for aircraft use, a sextant incorporating a gyroscopically stabilized artificial horizon might be acceptable.

10 JULY • A standard organization prescribed by General Order No. 153 became the first to provide for an aeronautic force within the Naval Militia. Its composition, paralleling that of other forces established at the same time, consisted of sections not to exceed 6 officers and 28 enlisted men, with two sections forming a division. Officers served in the “aeronautics duty only” category, with the highest rank provided as lieutenant commander at the division level. The enlisted structure provided that men taken in under regular rates of machinist mates and electricians were to perform duties as aeronautic machinists; carpenter mates were to perform duties as aeronautic mechanics; and landsmen (equivalent to later strikers) were to perform special duties.

22 JULY • Based on recommendations received from the

Naval Aeronautic Station, Pensacola, Fla., the Director of Naval Aeronautics established requirements for 13 instruments to be installed in service aeroplanes: air speed meter, altitude barometer, binoculars, clock, compass, course and distance indicator, fuel gauge, incidence indicator, magazine camera, oil gauge, sextant, skidding and sideslip indicator, and tachometer. All except the binoculars, camera, clock, and navigational instruments were also required for school aeroplanes.

5 AUGUST • Lt.j.g. Patrick N. L. Bellinger flew AH-10 while spotting mortar fire for Army shore batteries at Fort Monroe, Va. Bellinger signaled his spots with Very pistol flares.

11 AUGUST • The Naval Observatory requested the Eastman Kodak Co. to develop an aerial camera with high-speed lens, suitable for photography at 1,000 to 2,000 yards altitude, and so constructed that the pressure of the air during flight would not distort the focus.



Ens. Wadleigh Capehart holds a sample bomb from the cockpit of a Burgess-Dunne plane.

12 OCTOBER • A directive was issued establishing an Officer in Charge of Naval Aeronautics under the Chief of Naval Operations and giving authority for aviation programs in the Navy to CNO and to the bureaus. Although this had the effect of abolishing the Office of the Director of Naval Aeronautics, that office continued to exist until the incumbent director detached on 4 March 1916.

15 OCTOBER • Secretary of the Navy Josephus Daniels referred to the General Board a proposal, made by Director of Naval Aeronautics Capt. Mark L. Bristol, to convert a merchant ship to operate aircraft. Daniels commented that the fleet had a more immediate need to determine how they could operate *North Carolina* (Armored Cruiser No. 12), which had already been fitted to carry aeroplanes.

5 NOVEMBER • Lt. Cmdr. Henry C. Mustin made the first catapult launch from a commissioned warship, launching in flying boat AB-2 from the stern of *North Carolina* (Armored Cruiser No. 12) at 1158 in Pensacola

Bay, Fla. Sailors had originally removed the catapult from a coal barge, and on 28 October installed the device onto the cruiser's stern. Assistant Naval Constructor Lt. Holden C. Richardson, CC, and Lt.j.g. Patrick N. L. Bellinger completed an additional takeoff on 6 November, and 1st Lt. Alfred A. Cunningham, USMC, completed the first Marine Corps launch on 8 November.

3 DECEMBER • Lt. j.g. Richard C. Saufley set a U.S. altitude record for hydroaeroplanes in AH-14 at 11,975 feet over Pensacola, Fla., surpassing the pilot's own record of 11,056 feet, which he had set only three days before. The Aero Club of America awarded Saufley its Medal of Merit for "twice breaking the American Hydroaeroplane altitude record in one year."

1916

6 JANUARY • Instruction commenced at Pensacola, Fla., for the first group of enlisted men to receive flight training.

11 JANUARY • The Naval Observatory forwarded two magnetic compasses to Pensacola, Fla., for tests under all conditions. These compasses, modified from the British Creigh-Osborne design on the basis of recommendations by naval aviators, provided a model for the compasses widely used in naval aircraft during WWI.

21 JANUARY • In a step that led to the establishment of an aviation radio laboratory at Pensacola, Fla., the Officer in Charge of Naval Aeronautics requested the Superintendent, Radio Service authorize the radio operators at the Pensacola Radio Station to experiment with aircraft radio. Simultaneously, men at Pensacola received four sets of radio apparatus for aeroplanes. Although initiation of developmental work did not begin immediately, by late July an officer and a civilian radio expert had been detailed to aircraft radio experimentation at Pensacola, and the Bureau of Steam Engineering had ordered approximately 50 aircraft radio sets.

10 FEBRUARY • The Bureau of Construction and Repair implemented a Navy Department decision, directing that designation numbers were to be assigned to all aircraft under construction, and that these numbers were to be used for identification purposes until the aircraft were tested or placed in service, at which time standard designations provided by the order of 27 March 1914 were to be used. The service simultaneously assigned numbers to 33 aircraft, beginning with 51-A, introducing the system of serial numbers hereafter assigned to all aircraft.

4 MARCH • Capt. Mark L. Bristol detached as Director of Naval Aeronautics and both the title and the office ceased to exist. Bristol received orders to command *North Carolina* (Armored Cruiser No. 12) and, under a new title of Commander of the Air Service, assumed operational supervision over all aircraft and aeronautic stations, as well as the further development of aviation in the Navy. Lt. Clarence K. Bronson assumed the remaining aviation duties in the Office of Chief of Naval Operations.

7 MARCH • During an exhibition flight at Mobile, Ala., a wind gust struck the hydroaeroplane AH-10 at an altitude of 75 feet, causing it to crash into the schooner *Melba*, at anchor in the Mobile River. The pilot, Lt. Edward O. McDonnell, survived because the vessel's rigging checked his fall. AH-10 was demolished and *Melba* sustained damage to her rigging and stays, but the plane was subsequently rebuilt.

25 MARCH • General Order No. 198 defined qualifications for officers and enlisted men in the Aeronautic Force of the Naval Militia in addition to those prescribed for the same ranks and ratings of the Naval Militia. These extras were cumulative for ranks in ascending order. Ensigns were required to have knowledge of navigation (except nautical astronomy) and scouting problems, practical and theoretical knowledge of airplanes and motors, and ability to fly at least one type of aircraft. Lieutenants (junior grade) were to have some knowledge of nautical astronomy and principles of airplane design, and to qualify for a Navy pilot certificate. Additional requirements for lieutenants called for a greater knowledge of nautical astronomy and ability to fly at least two types of naval aircraft, while those for lieutenant commanders, the highest rank provided for the force, included knowledge of Navy business methods used in aeronautics. Enlisted aviation mechanics were to have knowledge of aircraft maintenance; aviation machinists, a similar knowledge of motors.

29 MARCH • Lt. Richard C. Saufley bettered his own U.S. altitude record, piloting a Curtiss hydroaeroplane to 16,010 feet at Pensacola, Fla. On 2 April Saufley again extended the record by attaining a mark of 16,072 feet.

30 MARCH • Secretary of the Treasury William G. McAdoo informed Secretary of the Navy Josephus Daniels that Coast Guard officers 2d Lt. Charles E. Sugden and 3rd Lt. Elmer F. Stone had been assigned to flight instruction at Pensacola, Fla., in accordance with an agreement between the two departments.

15 APRIL • A Bureau of Construction and Repair drawing prescribed an anchor and a two-digit numeral, both in dark blue on a white background, as "Distinguishing Marks for Naval Aeroplanes." The anchor and numeral were painted outboard on the upper and lower wing surfaces; the anchor was generally placed on the vertical tail surfaces; and the numeral, fore and aft on both sides of the fuselage.

13 MAY • Chief of Naval Operations Adm. William S. Benson requested appropriate bureaus to undertake development of gyroscopic attachments for instruments and equipment, including base lines, bombsights (forerunners of turn and bank indicators), and compasses.

20 MAY • The Navy initiated development of a gyroscopically operated bomb-dropping sight and allocated \$750 to the Bureau of Ordnance, for use in placing an order with the Sperry Gyroscope Co.

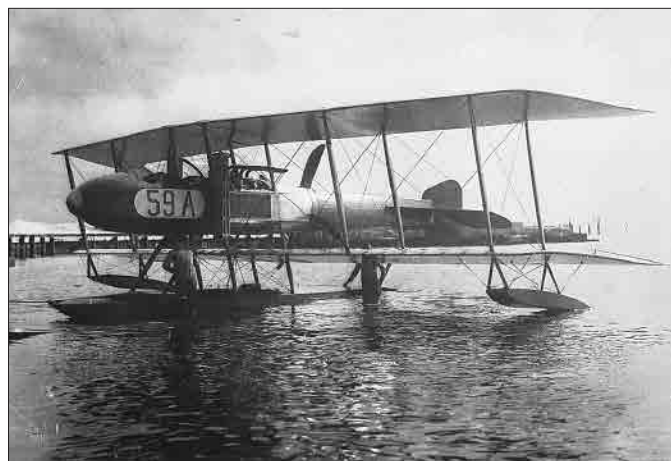
22 MAY • The Naval Observatory sent a color camera, made by the Hess-Ives Corp., to Naval Aeronautic Station Pensacola, Fla., to determine if color photography would be of value in aeronautic work.

3 JUNE • Formal instruction in free and captive balloons began at Pensacola, Fla., when Secretary of the Navy Josephus Daniels approved a course proposed by Lt. Cmdr. Frank R. McCrary, and directed that the curriculum was to be added to the Bureau of Navigation Circular “Courses of Instruction and Required Qualifications of Personnel for the Air Service of the Navy.”

9 JUNE • During an endurance flight over Santa Rosa Island off Pensacola, Fla., Lt. Richard C. Saufley crashed in AH-9 from a height of about 700 feet, killing him. The aircraft had been in the air for 8 hours 52 minutes. Investigators attributed the loss to a structural defect in the plane’s tail surfaces. The destroyer *Saufley* (DD 465) and Saufley Field at NAS Pensacola were named in his honor.

20 JUNE • The issuance of General Order No. 222, superseding that of 23 June 1913, defined the cognizance for aeronautics in the Navy Department. In addition to extending the subject from “Naval Aeroplanes” to “Aeronautics,” this order embraced lighter-than-air and certain heavier-than-air components that had not been provided for in the earlier order.

12 JULY • Lt. Godfrey deC. Chevalier was catapulted from *North Carolina* (Armored Cruiser No. 12) in flying boat AB-3 in Pensacola Bay, Fla. The launch completed calibration of the first catapult designed for shipboard use. *North Carolina* became the first U.S. Navy ship equipped to carry and operate aircraft.



The novel Gallaudet 59-A; note the propeller mounted in the fuselage aft of the wings.

17 JULY • Civilian pilot David H. McCulloch made the first flight of the Gallaudet 59-A, a novel airplane with the propeller mounted in the fuselage aft of the wings, at Norwich, Conn. Navy Inspector Lt. j.g. George D. Murray witnessed the event. On 11 September Commander of the Air Service Capt. Mark L. Bristol, in command of *North Carolina* (Armored Cruiser No. 12), requested that 59-A be assigned to the cruiser. Despite substantial tests which showed the aircraft failed to meet contract requirements, a trial board recommended on 29 January 1917 that the Navy accept it into inventory. The service struck the machine on 21 July 1919.

18 JULY • Secretary of the Navy Josephus Daniels established flight clothing allowances. Aviators were to be furnished helmets, goggles, and safety jackets. Enlisted men whose duties involved flying were also to receive wool head covers, suits, gauntlets, and boots.

22 JULY • Serious interest in the development of light metal alloys for aeronautical use led Chief Constructor Rear Adm. David W. Taylor to request that the Aluminum Company of America develop a suitable alloy for use in fabricating Zeppelin-type girders. German successes in operating Zeppelins with a hitherto unknown aluminum alloy (later revealed as duralumin) prompted the Navy’s interest.

8 AUGUST • The Secretary of the Navy clarified the place of aviation in the departmental organization by redefining the responsibilities of bureaus and offices for specific elements of the naval aviation program. While the new directive

followed the division of cognizance over material established by a general order on 20 June 1916, it went further in that it assigned the General Board responsibility for advising as to the numbers and general characteristics of aircraft, and in effect made the Bureau of Construction and Repair a lead bureau for aircraft development and procurement.

10 AUGUST • Negotiation for the first aircraft production contract began with a telegram to Glenn H. Curtiss requesting him to “call at the Bureau [of Construction and Repair] Monday with a proposition to supply at the earliest date practicable thirty school hydro aeroplanes.” Specified characteristics included two seats, loading of about 4 pounds per square foot, and power loading of about 20 pounds per horsepower. The telegram concluded, “Speed, climb and details of construction to be proposed by you. Rate of delivery is important and must be guaranteed.” The telegram resulted in a contract for 30 N-9 seaplanes, which the company delivered between November 1916 and February 1917. The N-9 became a popular training aircraft during WWI.

12 AUGUST • Secretary of the Navy Josephus Daniels agreed with Secretary of War Newton D. Baker that the Navy and War departments should adopt the straight Deperdussin system of controlling aircraft in flight as the standard system for use in all of their aircraft. The French aviation firm Société de Production Armand Deperdussin’s system—comprising a central control stick to manipulate aircraft elevators and ailerons, with pedals or a rudder bar to control the vertical rudder—had proven its reliability during testing.

17 AUGUST • The Secretary of the Navy approved a reorganization of the Naval Aeronautic Station, Pensacola, Fla., which reassigned the training of commissioned and enlisted sailors for aeronautic services with the fleet as a primary mission, and ordered the establishment of an aeronautics school and departments for experimental test and inspection, manufacturing, medical, public works, and supply.

29 AUGUST • The Naval Appropriation Act for fiscal year 1917 provided for the establishment of a Naval Flying Corps composed of 150 officers and 350 enlisted men in addition to those provided by law for other branches of the Navy. It also provided for the establishment of a Naval Reserve force of six classes, including a Naval Reserve Flying Corps composed of

officers and enlisted men transferring from the Naval Flying Corps, surplus graduates of aeronautics schools, and members of the Naval Reserve Force with experience in aviation.

9 SEPTEMBER • The Secretary of the Navy issued an order initiating formal flight testing as a basis for accepting new aircraft and establishing procedures to determine whether operational aircraft were safe to fly.

12 SEPTEMBER • Lt. Theodore S. Wilkinson of the Bureau of Ordnance witnessed a demonstration of a piloted hydroaeroplane equipped with automatic stabilization and direction gear developed by the Sperry Gyroscope Co. and electrical engineer Peter C. Hewitt at Amityville, Long Island, N.Y. Wilkinson reported: “The automatic control of the aeroplane is adequate and excellent. The machine left the water without difficulty, climbed to its desired height, maintained this altitude until the end of the run, when it dived sharply; and, unless controlled by the aviator, would have dived to the earth.” This is one of the first recorded instances of the Navy’s development of what became guided missiles.

20 SEPTEMBER • The Navy issued the earliest extant instruction regarding the color of naval aircraft. This instruction canceled the use of slate color and provided that the wings, body, and pontoon of Curtiss N-9 aircraft were to be finished with opaque yellow (or greenish-yellow) varnish.

11 OCTOBER • Secretary of War Newton D. Baker recommended to Secretary of the Navy Josephus Daniels that a joint Army-Navy board be appointed to consider the requirements for developing a lighter-than-air service in the Army or Navy or both. The secretary’s concurrence set the stage for the establishment of an agency for interservice cooperation in aeronautics, subsequently named the Aeronautical Board, which served until 1948.

24 OCTOBER • The Bureau of Steam Engineering requested that the Navy Yard in Philadelphia, Pa., was to undertake the development of a radio direction finder for use on aeroplanes, and specified that the apparatus was to be as light as possible and use wavelengths of 600 to 4,000 meters.

27 OCTOBER • Chief of Naval Operations Adm. William S. Benson directed that all aircraft loaned or donated to the Naval Militia by private individuals or organizations were to



Pioneer naval photographer W. L. Richardson, left, and pilot E. F. Johnson.

be designated NMAH and be given numbers in sequence beginning with one.

8 NOVEMBER • During an experimental bomb test flight at Naval Proving Ground, Indian Head, Md., a bomb exploded about three feet below an N-9 seaplane, killing pilot Lt. Clarence K. Bronson (Naval Aviator No. 15) and Lt. Luther Welsh. The explosion tore the tail off, and the seaplane plummeted into the Potomac River.

17 NOVEMBER • Efforts to develop high-speed seaplanes for catapulting from ships led Chief Constructor Rear

Adm. David W. Taylor to solicit suitable designs from manufacturers. The requirements included a speed range of 50 to 95 miles per hour, a 2½-hour endurance, and provisions for radio.

18 NOVEMBER • Lighter-than-air tests were completed on board *Nevada* (Battleship No. 36) and *Oklahoma* (Battleship No. 37) that demonstrated that kite balloons potentially provided an added advantage for battleships in gunfire spotting and scouting/reconnaissance. However, additional tests on board *Oklahoma* during succeeding days revealed problems, namely that balloons carrying hydrogen

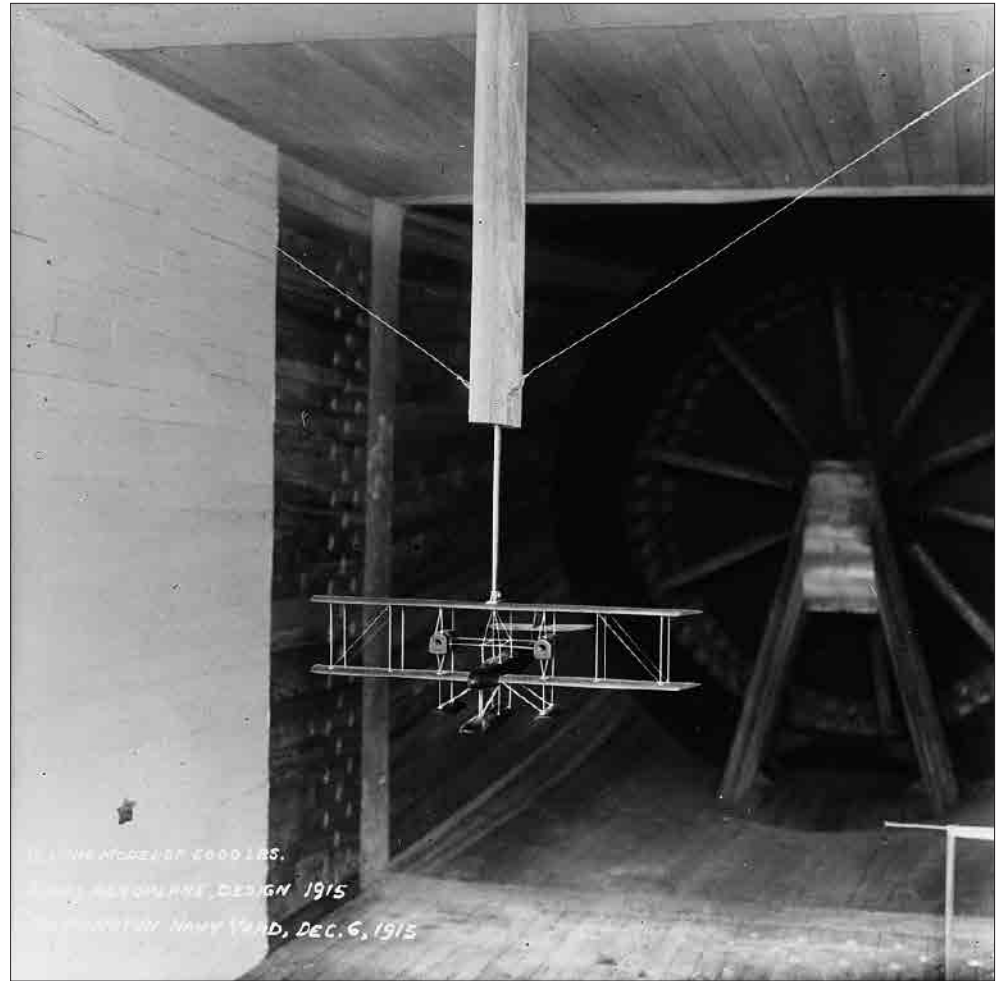
1916 continued

posed an increased hazard; it took time to inflate them, and they leaked; they became easy targets for anti-aircraft gunners at ranges under 12,000 yards; and if kept inflated and moored to ships, balloons restricted vessels' maneuverability. *Oklahoma's* commanding officer, Capt. Roger Welles, reported that if they were to correct these problems balloons would become valuable to battleship operations, but he neglected to note that whenever men raised balloons for scouting or spotting the fall of shot, the craft also revealed the surface ships' positions. Meanwhile, Lt. j.g. Robert R. Paunack (Naval Aviator No. 27) was also assigned to lighter-than-air training on board *Nevada* during this period, and was designated as the first lighter-than-air pilot the following November.

7 DECEMBER • Lt. Cmdr. Henry C. Mustin reported that an Eastman Aero camera, tested at altitudes of 600 to 5,100 feet over Naval Aeronautic Station Pensacola, Fla., was the best camera tested up to that time, and produced photographs satisfactory for military purposes.

12 DECEMBER • Capt. Mark L. Bristol detached as Commander of the Air Service, and the functions of the command but not the title were transferred to Rear Adm. Albert Gleaves, Commander Destroyer Force, Atlantic Fleet.

13 DECEMBER • The Navy modified specifications for a training dirigible—which Chief of Naval Operations Adm. William S. Benson had originally ordered in October 1916—to require a top speed of 45 miles per hour; a 12-hour endurance at 35 miles per hour; a crew of three; a radio range of 150 miles; and the capability of landing at sea and for being towed.



A model of 82-A, the first airplane designed and built by the Navy, undergoes a wind tunnel test.

30 DECEMBER • The Commission on Navy Yards and Naval Stations, which had been authorized by the Naval Act of 29 August 1916 to select new sites for the expansion of Navy yards and for submarine and air bases along the coastlines of the United States, submitted its preliminary report to Congress. For aviation the commission reported that “the present development of aeronautical machines . . . and the practical experience so far obtained in the utilization of such machines to meet the tactical and strategical requirements of the Fleet and the defense of the coast, is such as to preclude the determination at this time of any extensive system of aviation bases.” The commission—commonly referred to as the Helm Board after senior member Rear Adm. James M. Helm—recommended that a joint Army-Navy board decide upon locations for use by both services.