

# *A Few Pioneers*

1898–1916

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**T**he 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 investigating the military possibilities of Samuel P. Langley's flying machine. In subsequent years there were naval observers at air meets here and abroad and at the public demonstrations staged by Orville and Wilbur Wright in 1908 and 1909. All were enthusiastic about the potential of the airplane as a fleet scout. By 1909, naval officers, including a bureau chief, were urging the purchase of aircraft.

It was in 1910 that a place was made for aviation in the organizational structure of the Navy. That was the year Captain 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 Glenn Curtiss and Eugene Ely dramatized the airplane's capability for shipboard operations and showed the world and a skeptical Navy that aviation could go to sea.

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

The need for more science and less rule of thumb was apparent to Captain Chambers. He 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 National Advisory Committee for Aeronautics was established. The first real study of what was needed in aviation was conducted by a board under Chambers' leadership 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.

Progress in these early years was marked by 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 Guantanamo Bay, Cuba; and combat sorties at Veracruz, Mexico. These were but some of the accomplishments by pioneer pilots. Their activity furthered the importance of aviation to the Navy. In 1914, Secretary of the Navy Josephus Daniels announced that the point had been reached "where aircraft must form a large part of our naval forces for offensive and defensive operations."

## 1898

**25 March** Theodore Roosevelt, Assistant Secretary of the Navy, recommended to the Secretary 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 practicality and its potentiality 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 of 12-foot wing span, its value for military purposes was largely theoretical, but the report expressed a general sentiment in favor of supporting Professor Langley in further experimentation.

## 1908

**17 September** Lieutenant George C. Sweet and Naval Constructor William McEntee were official Navy observers at the first Army demonstration trials of the Wright flying machine at Fort Myer, Va.

**2 December** Rear Admiral William S. Cowles, Chief of the Bureau of Equipment, submitted a report on aviation prepared by Lieutenant George C. Sweet to the Secretary of the Navy. The report outlined the

1908—Continued

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 a number of aircraft be purchased and “placed in the hands of the personnel of the Navy to further develop special features adapted to naval uses.”

## 1909

**16 August** A Bureau of Equipment request for authority to advertise for the construction of “two heavier than air flying machines” was disapproved by the Acting Secretary of the Navy 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.”

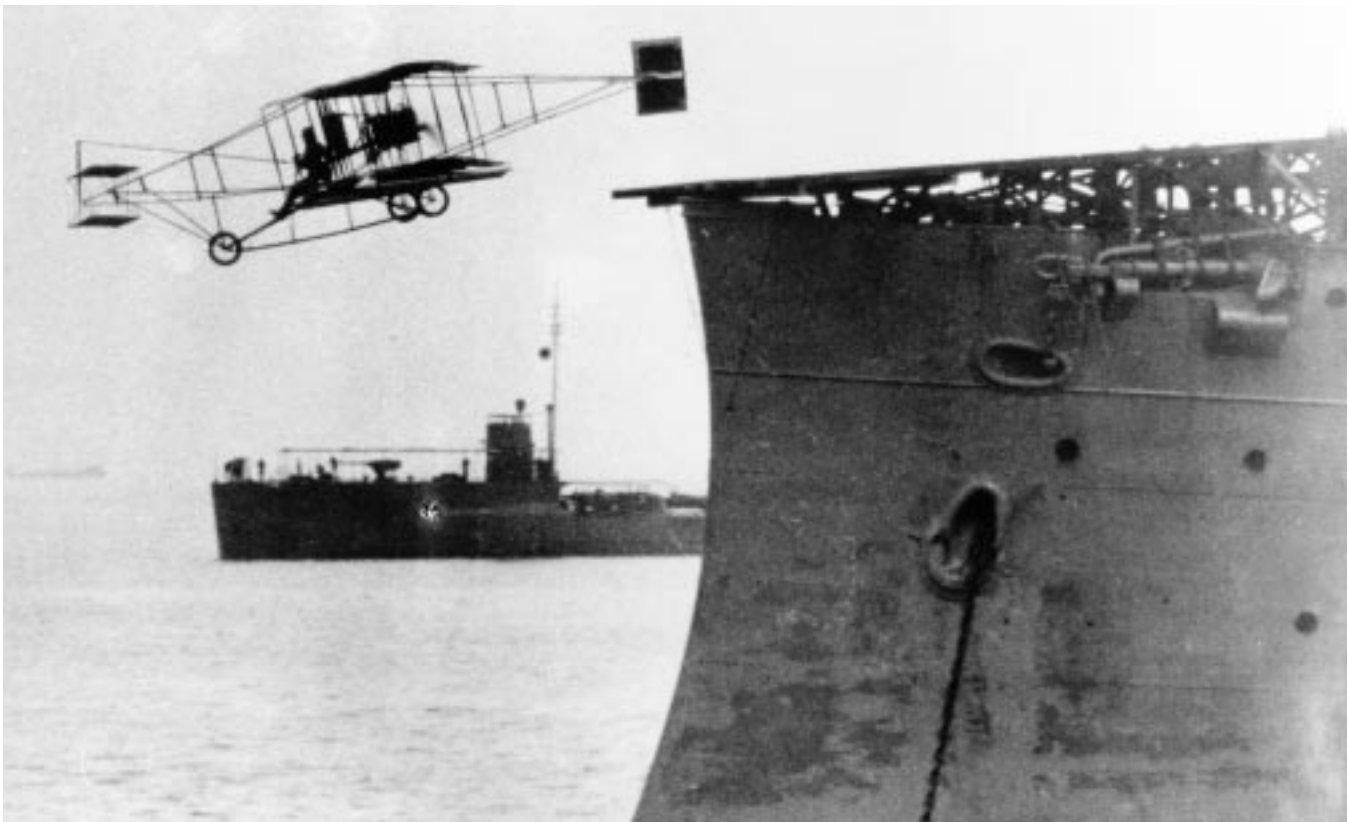
**1 September** Commander Frederick L. Chapin, U.S. Naval Attache at Paris, reported his observations at the Rheims Aviation Meet, expressing the opinion that “the airplane would have a present usefulness in naval warfare, and that the limits of the field will be extended in the near future,” and in elaborating upon that theme prophetically noted two means by which air-

craft could be operated from naval vessels. The first was the use of the Wright launching device (a catapult) to launch planes from the cleared quarterdeck of battleships, and the second was the construction of a floor (a flight deck) over the deck houses of auxiliary ships to provide the clear space required for take-off runs and landing aboard.

**3 November** Lieutenant George C. Sweet was taken up as a passenger in the first Army Wright by Lieutenant Frank P. Lahm, USA, at College Park, Md. As a result, Sweet is credited with having been the first Navy officer to fly in an airplane.

## 1910

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



*Eugene Ely Leaving Birmingham at Hampton Roads in the first takeoff from any ship, November 14, 1910 42878*

1910—Continued

**11 October** The General Board, of which Admiral George Dewey was president, recommended to the Secretary of the Navy 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 be considered in all new designs for scouting vessels.

**7 October** In a letter to the Secretary, the Chief of the Bureau of Steam Engineering, Captain Hutch I. Cone, 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* (CL 1) and the services of an instructor to teach one or more officers to fly the machine.

**13 October** The Secretary of the Navy 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 be appointed to investigate the subject of aviation and gain technical knowledge of airplanes, and directed that these officers keep Captain Washington I. Chambers, previously designated to serve in a similar capacity in the Secretary’s office, fully informed of work contemplated and the results of all experiments.

**22 October** The International Aviation Tournament opened at Belmont Park, N.Y. Attending in an official capacity as Navy observers were the three officers recently named to investigate aviation: Captain Washington I. Chambers, Naval Constructor William McEntee, and Lieutenant N. H. Wright.

**31 October** The Chief of the Bureau of Construction and Repair suggested to the Secretary of the Navy that steps be taken 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, specifications for the battleship *Texas* (Battleship No. 35) be modified so as to require its contractors to supply one or more aircraft as a part of their obligation.

**14 November** First take-off from a ship—Eugene Ely, a civilian pilot, took off in a 50-hp Curtiss plane from a wooden platform built on the bow of *Birmingham* (CL 2). The ship was at anchor in Hampton Roads, Va., and Ely landed safely on Willoughby Spit.

**29 November** Glenn H. Curtiss wrote to the Secretary of the Navy offering flight instruction without charge for one naval officer as one means of assisting “in developing the adaptability of the aeroplane to military purposes.”

**23 December** The first naval officer to undergo flight training, Lieutenant Theodore G. Ellyson, was ordered to report to the Glenn H. Curtiss Aviation Camp at North Island, San Diego, Calif.

## 1911

**18 January** At 11:01 a.m., Eugene Ely, flying the same Curtiss pusher used to take off from *Birmingham* (CL 2), landed on a specially built platform aboard the armored cruiser *Pennsylvania* (Armored Cruiser No. 4) at anchor in San Francisco Bay, Calif. At 11:58 he took off and returned to Selfridge Field, San Francisco, completing the earliest demonstration of the adaptability of aircraft to shipboard operations.

**26 January** The first successful hydroaeroplane flight was made by Glenn H. Curtiss at North Island, San Diego, Calif. This important step in adapting aircraft to naval needs was witnessed by Lieutenant Theodore G. Ellyson, who assisted in preparing for the test.

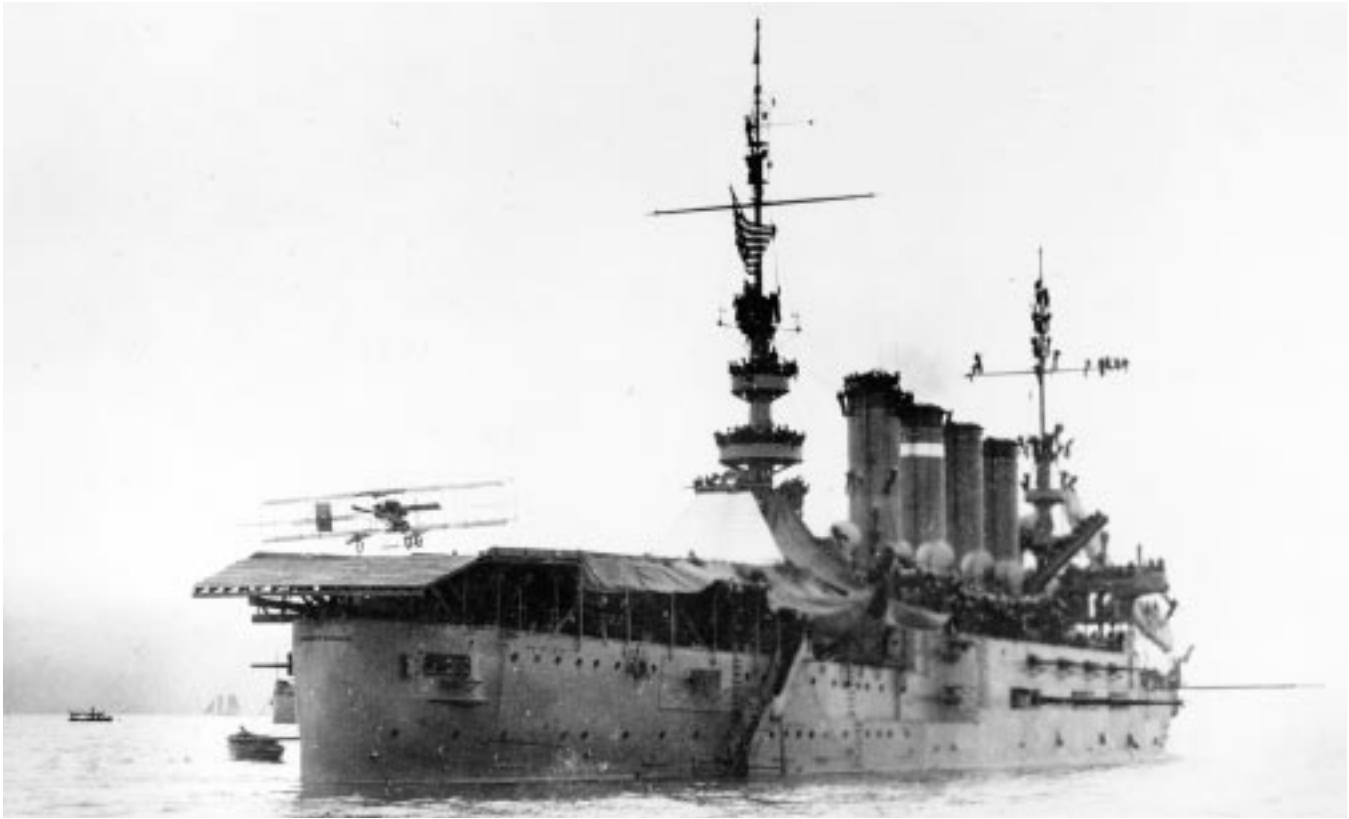
**1 February** Glenn H. Curtiss made two successful flights from the water at San Diego, Calif., in his standard biplane using a single main float in place of the tandem triple float used in earlier tests. These take-offs demonstrated the superior efficiency of the sled profile float which was used on Navy hydroaeroplanes up to World War I.

**10 February** Acting Secretary of the Navy Beekman Winthrop directed the Point Loma, Calif., Wireless Station to cooperate with Captain Harry S. Harkness, U.S. Aeronautical Reserve, in experiments in connection with use of wireless from aeroplanes.

**17 February** In another of the early demonstrations of the adaptability of aircraft to naval uses, Glenn H. Curtiss taxied his hydroaeroplane alongside *Pennsylvania* (Armored Cruiser No. 4) at anchor in San Diego Harbor, was hoisted aboard and off again by ship’s crane and then returned to base.

**4 March** The first funds for Naval Aviation were appropriated, providing \$25,000 to the Bureau of Navigation for “experimental work in the development of aviation for naval purposes.”

1911—Continued



*Ely in Curtiss biplane comes aboard Pennsylvania in the first shipboard landing, January 18, 1911 428455*

**9 March** The Wright Company made a formal offer to train one pilot for the Navy contingent upon the purchase of one airplane for the sum of \$5,000. This offer was later made unconditional.

**17 March** Lieutenant John Rodgers, who became Naval Aviator No. 2, reported to the Wright Company at Dayton, Ohio, for instruction in flying.

**1 April** Captain Washington I. Chambers, the officer in charge of aviation, reported for duty with the General Board, a move suggested by Admiral George Dewey, when space for aviation was not available in the office of the Aid for Operations.

**14 April** The embryo office of Naval Aviation was transferred from the General Board and established in the Bureau of Navigation.

**8 May** Captain Washington I. Chambers 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; with provisions for carrying a passenger alongside the pilot; and with con-



*Captain Washington Chambers 424786*

1911—Continued

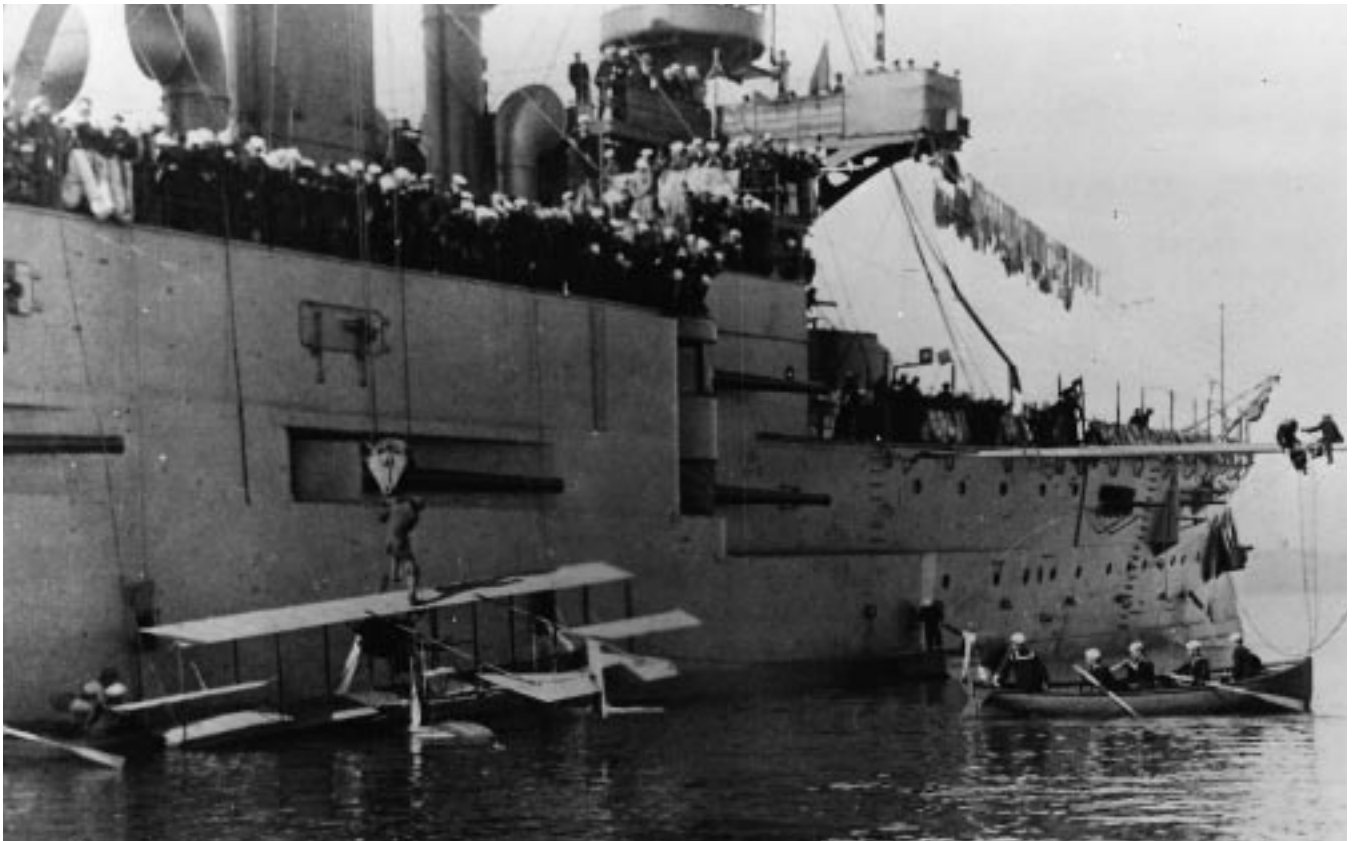


*Sandbags, first arresting gear, halt Ely's plane 450108*

trols that could be operated by either the pilot or the passenger. The machine thus described later became the Navy's first airplane, the A-1. Although these requisitions lacked the signature of the Chief of the Bureau of Navigation, necessary to direct the General Storekeeper to enter into a contract with the Curtiss Company, they did indicate Captain Chambers' decision as to which airplanes the Navy should purchase. From this, 8 May has come to be considered the date upon which the Navy ordered its first airplane and has been officially proclaimed to be the birthday of Naval Aviation.

**27 June** Lieutenant (jg) John H. Towers, who became Naval Aviator No. 3, reported for duty and instruction in flying at the Curtiss School, Hammondsport, N.Y.

**1 July** First flight of the A-1—At 6:50 p.m., Glenn H. Curtiss demonstrated the A-1, the first aircraft built for the Navy, taking off from and alighting on Lake Keuka at Hammondsport, N.Y. This flight was of 5 minutes' duration, and to an altitude of 25 feet. Three other flights were made the same evening, one by Curtiss with Lieutenant Theodore G. Ellyson as a passenger, and two by Ellyson alone.



*Hoisting plane aboard Pennsylvania, February 1911 1051558*

1911—Continued

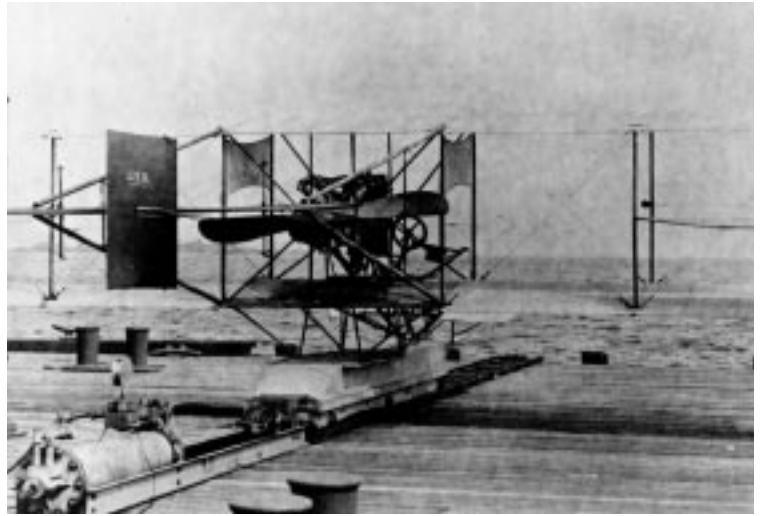


*Preparing A-1, first Navy plane, for wire launch 428450*

**3 July** Lieutenant Theodore G. Ellyson flew the A-1 from Lake Keuka to Hammondsport, N.Y., on the first night flight by a naval aviator, landing successfully on the water on the second attempt without the aid of lights.

**6 July** Captain Washington I. Chambers was ordered to temporary duty at the Naval Academy in connection with the establishment of an aviation experimental station, the site for which had been previously selected on Greenbury Point, Annapolis, Md. Although not occupied by the aviators until September, this was the first base for Naval Aviation.

**10 July** Amphibious features of the Navy's first aircraft were demonstrated by Glenn H. Curtiss in the 24th flight of the Triad—the machine in which he took



*A-1 on the first catapult, Annapolis, July 1912 650864*

off from land, lifted the wheels while in the air, and landed in water.

**13 July** The Navy's second aircraft, the A-2, was set up and flown at Hammondsport, N.Y. The first flight was made by Glenn H. Curtiss, and the second by Lieutenant Theodore G. Ellyson.

**23 August** The officers on flight duty at Hammondsport, N.Y., and Dayton, Ohio, were ordered to report for duty at the Engineering Experiment Station, Naval Academy, "in connection with the test of gasoline motors and other experimental work in the development of aviation, including instruction at the aviation school" being set up on Greenbury Point, Annapolis, Md.



*First Navy aircraft, the A-1 Triad Hydroaeroplane, taxiing on Lake Keuka, Hammondsport, New York 1061484(NHF)*



*Lieutenant Ellyson gives Captain Chambers a flight in the A-1 424469*

1911—Continued

**7 September** A memorable experiment in the Navy's search for a shipboard launching device was completed at Hammondsport, N.Y., when Lieutenant Theodore G. Ellyson made a successful takeoff from an inclined wire rigged from the beach down to the water. Ellyson's report contained the following description of the run: "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."

**16 September** Plans to purchase flight clothing were described in a letter from Lieutenant Theodore G. Ellyson, who hoped to get the Navy Department to pay for them later. Requirements were previously outlined as a light helmet with detachable goggles, or a visor, with covering for the ears and yet holes so that the engine could be heard; a leather coat lined with fur or wool; leather trousers; high rubber galoshes and gauntlets; and a life preserver of some description.

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



*John Towers and Theodore Ellyson 42790*

**10 October** Lieutenant Holden C. Richardson, CC, USN, reported to aviation at the Washington Navy Yard. Richardson became the Navy's first engineering and maintenance officer for aviation.



*Holden C. Richardson (CC) 650871*

**16 October** Plans for a scientific test of hydroaeroplane floats at the Washington Navy Yard Model Basin were described in a letter from Captain Washington I. Chambers in which he stated that a model of the pontoons with Forlanini planes (hydrovanes) was nearly ready for test.

**17 October** Searching for improved powerplants, Captain Washington I. Chambers, in a letter to Glenn H. Curtiss, discussed heavy oil (or diesel) engines and turbine engines similar in principle to those that, some 30 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."

**25 October** Lieutenants Theodore G. Ellyson and John H. Towers, on a flight in the A-1 from Annapolis, Md., to Fort Monroe, Va., to test the durability of the aircraft on cross-country flight, were forced down by a leaking radiator near Milford Haven, Va., having covered 112 miles in 122 minutes.

**8 November** Ensign Victor D. Herbster, later designated Naval Aviator No. 4, reported for flight instruction at the Aviation Camp at Greenbury Point, Annapolis, Md.

**14 November** The Navy's first major aircraft modification, conversion of the Wright B-1 landplane into a hydroaeroplane, was initiated with a telegraphic order to the Burgess Company and Curtiss, Marblehead, Mass., for a suitable float.

**20 December** Experiments with airborne wireless transmission were conducted at Annapolis, Md., by Ensign Charles H. Maddox in the A-1 airplane piloted by Lieutenant John H. Towers. The trailing wire anten-

1911—Continued



*Herbster, Rodgers and Wiegand with B-1 1053801 (NHF)*

na, reeled out after take-off, was found to be too weak, and no definite results were obtained.

**26 December** Search for a shipboard launching device continued as Captain Washington I. Chambers reported that the Bureau of Ordnance was interested in experimenting with a catapult for launching aeroplanes somewhat after the manner of launching torpedoes.

**29 December** The aviators at Annapolis, Md., were ordered to transfer with their equipment to North



*Navy Wright, B-1 after installation of pontoon 428225*

Island, San Diego, Calif. to set up an Aviation Camp on land offered for the purpose by Glenn H. Curtiss.

## 1912

**9 March** Interest in steel and aluminum as aircraft structural materials was evident in a letter from Assistant Naval Constructor Holden C. Richardson, who wrote to Captain Washington I. Chambers, "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** An early, if limited, interest in the helicopter was shown as the Secretary of the Navy authorized expenditure of not more than \$50 for developing models of a helicopter design proposed by Chief Machinist's Mate F.E. Nelson of *West Virginia* (Armored Cruiser No. 5). The Secretary's accompanying policy implication was followed with a few exceptions for the next 30 years: "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 at Mare Island Navy Yard, San Francisco, Calif., in which he made transmissions from a dummy airplane fuselage hoisted to a height of 85 feet, which were received by a station at Point Richmond, Calif., 20 miles distant.

**22 May** 1st Lieutenant Alfred A. Cunningham, USMC, the first Marine Corps officer assigned to flight instruction and later designated Naval Aviator No. 5, reported to the Superintendent of the Naval Academy for "duty in connection with aviation" and subsequently was ordered to the Burgess Company at Marblehead, Mass., for flight instruction. This date is recognized as the birthday of Marine Corps aviation.

**21 June** Lieutenant Theodore G. Ellyson ascended 900 feet over Annapolis, Md. in 3 minutes and 30 seconds in the A-1.

**20 July** Comparative tests of Wright steel wire and Monel wire were conducted at Engineering Experiment Station Annapolis, Md., by the Aviation Camp. These, the earliest recorded Navy tests of aircraft structural materials, showed the Monel wire to be both free of corrosion and 50 percent stronger than the steel wire.



1912—Continued

**25 July** Aircraft specifications—On the basis of the Navy's experience with its first airplanes, the Secretary of the Navy published "Requirements for Hydroaeroplanes," the first general specifications for naval aircraft. The purpose expressed by the Secretary 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** Tests of airborne wireless were continued at Annapolis, Md., using the Wright B-1 piloted by Lieutenant John Rodgers. On one flight, Ensign Charles H. Maddox, who was giving technical assistance to the aviators, sent messages to *Stringham* (Torpedo Boat No. 19) at a distance of about one and a half miles.

**31 July** The Navy's first attempt to launch an airplane by catapult was made at Annapolis, Md., by Lieutenant Theodore G. Ellyson in the A-1. The aircraft, not being secured to the catapult, reared at about mid-stroke, was caught in a cross wind and thrown into the water. The pilot was not injured. This catapult, which was powered by compressed air, was

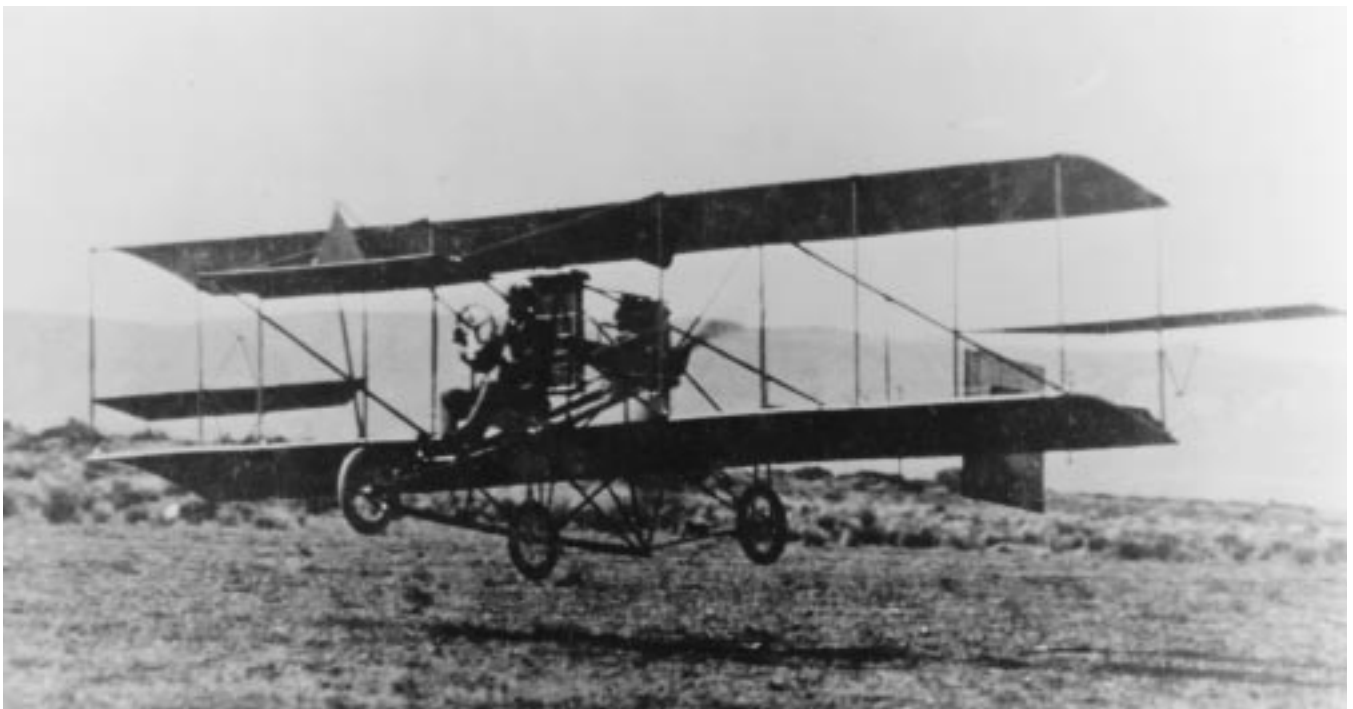
constructed at the Naval Gun Factory, Washington Navy Yard, from a plan proposed by Captain Washington I. Chambers.

**18 September** Lieutenant 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 in Annapolis, Md.

**3 October** The Davis recoilless gun was given initial tests at Naval Proving Ground, Indian Head, Md. This gun was designed by Commander Cleland Davis 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.

**6 October** Lieutenant John H. Towers, flying the Curtiss A-2, took off from the water at Annapolis, Md., at 6:50 a.m. and remained in the air 6 hours, 10 minutes and 35 seconds, setting a new American endurance record for planes of any type.

**8 October** Tests of a Gyro 50-horsepower rotary motor were completed at the Engineering Experiment Station, Annapolis, Md. This, the Navy's first recorded attempt to utilize laboratory equipment and methods



*Single-seat Curtiss trainer, similar to the A-2 428449*

1912—Continued

in evaluating an aircraft engine, consisted of three brief dynamometer tests, followed by ground runs and flight tests.

**8 October** Physical requirements for prospective naval aviators were first defined in Bureau of Medicine and Surgery Circular Letter 125221.

**25 October** Ensign Godfrey deC. Chevalier, later designated Naval Aviator No. 7, reported for flight training at the Aviation Camp at Annapolis, Md.

**12 November** The Navy's first successful launching of an airplane by catapult was made at the Washington Navy Yard by Lieutenant Theodore G. Ellyson in the A-3. The following month a flying boat was successfully launched from this catapult.

**26 November** Lieutenant (jg) Patrick N. L. Bellinger, later Naval Aviator No. 8, reported for flight instruction at the Aviation Camp, Annapolis, Md.

**30 November** The C-1, the Navy's first flying boat, was tested at Hammondsport, N.Y., by Lieutenant Theodore G. Ellyson. Its performance, as informally reported by Ellyson, was: "Circular climb, only one complete circle, 1,575 feet in 14 minutes 30 seconds 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."



*Godfrey deC. Chevalier 466256*

**2 December** Ensign William D. Billingsley, later to become Naval Aviator No. 9, reported for duty at the Aviation Camp, Annapolis, Md., and was assigned to the Navy-Wright B-2 for instruction.

**18 December** Lieutenant John H. Towers reported completion of a series of tests begun on 26 October to determine the ability to spot submarines from the air. He gave general conclusions that the best altitude for observation was about 800 feet; that submarines could be detected when running a few feet below the surface, but that the waters of Chesapeake Bay were too muddy for a fair test; and suggested that additional trials be held at Guantanamo Bay, Cuba.

**19 December** President William H. Taft, acting on a recommendation made by the Secretary of the Navy, created a "Commission on Aerodynamical Laboratory" to determine the need for and a method of establishing such a laboratory. Navy members of the commission were Naval Constructor David W. Taylor and Captain Washington I. Chambers.

## 1913

**6 January** The entire aviation element of the Navy arrived at Guantanamo Bay, Cuba, and set up the Aviation Camp on Fisherman's Point for its first 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 fleet personnel, more than a hundred of whom were taken up for flights during the eight-week stay.



*Catapult launch of flying boat, Washington, D.C. 428462*

1913—Continued



*Base for first aviation operations with fleet at Fisherman's Point, Guantanamo Bay, Cuba, January 1913 652044*

**8 February** Lieutenant John H. Towers reported on experimental work underway at Guantanamo Bay, Cuba, including bombing, aerial photography, and wireless transmission, and stated: "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** Action to provide the Navy with a wind tunnel, a basic tool in aeronautical research and development, was approved formally by the Chief Constructor of the Navy. The resulting tunnel, which was built at the Washington Navy Yard, remained in operation until after the end of World War II.

**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, or major in the Marine Corps, could be detailed to duty involving flying.

**5 March** As a result of tests held at Guantanamo Bay, Cuba, 3-5 March, Lieutenant John H. Towers reported that submarines were visible from the air at depths of from 30 to 40 feet.

**13 March** Captain Washington I. Chambers was awarded the medal of the Aeronautical Society for the year 1912 and 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** Aircraft instruments and allied equipment for installation in a new flying boat, the Burgess



*Guantanamo 1913 — B. L. Smith, P. N. L. Bellinger, A. A. Cunningham, W. D. Billingsley (standing) V. D. Herbster, G. deC. Chevalier (seated) 426948*

1913—Continued

Company and Curtiss D-1, were listed as: compass, altimeter, inclinometer, speed indicator, chart board, radio, and generator. Although the radio and generator were not installed, the remaining equipment was representative instrumentation on naval aircraft of the period.

**10 April** Performance standards for qualification as a Navy Air Pilot, and issuance of a certificate to all officers meeting the requirements, were approved by the Secretary of the Navy. They were described by Chambers as being different from those of the “land pilot” and more exacting than the requirements of the international accrediting agency, the Federation Aeronautique Internationale.

**28 April** Chief of the Bureau of Navigation Rear Admiral Victor Blue approved a proposal that the Navy Department, Glenn Curtiss, and the Sperry Company cooperate in testing the gyroscopic stabilizer on a new Navy airplane.

**9 May** President Woodrow Wilson approved the designation of representatives of governmental departments to serve on an advisory committee for the Langley Aerodynamical Laboratory which had been reopened by the Smithsonian Institution on 1 May. Navy members of the advisory committee were Captain Washington I. Chambers and Lieutenant Holden C. Richardson, CC, USN.

**12 June** Secretary of the Navy approved detailing Lieutenant Jerome C. Hunsaker, CC, USN, 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 at M.I.T. in the Department of Naval Architecture.

**13 June** Lieutenant (jg) Patrick N. L. Bellinger, flying the Curtiss A-3 at Annapolis, Md., set an American altitude record for seaplanes, reaching 6,200 feet.

**20 June** Ensign William D. Billingsley, piloting the B-2 at 1,600 feet over the water near Annapolis, Md., was thrown from the plane and fell to his death, the first fatality of Naval Aviation. Lieutenant John H. Towers, riding as passenger, was also unseated but clung to the plane and fell with it into the water, receiving serious injuries.

**23 June** A General Order 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 the C-2 Curtiss flying boat by Lieutenant (jg) Patrick N. L. Bellinger at Hammondsport, N.Y.

**30 August** In a report to the Secretary of the Navy, 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** Initial trials of the Navy’s first amphibian flying boat—the OWL, or Over-Water-Land type—were completed at Hammondsport, N.Y., under the supervision of Lieutenant Holden C. Richardson, CC, USN. The aircraft, subsequently redesignated E-1, was the A-2 hydroaeroplane in which the pontoon was replaced with a flying boat hull containing a three-wheel landing gear.

**7 October** The Secretary of the Navy appointed a board of officers, with Captain Washington I. Chambers as senior member, to draw up “a comprehensive plan for the organization of a Naval Aeronautic Service.” Its report, submitted after 12 days of deliberation, emphasized the need for expansion and for the integration of aviation with the fleet, and was in all respects the first comprehensive program for an orderly development of Naval Aviation. Its recommendations included the establishment of an Aeronautic Center at Pensacola, Fla., for flight and ground training and for the study of advanced aeronautic engineering; establishment of a central aviation office under the Secretary to coordinate the aviation work of the Bureaus; the assignment of a ship for training in operations at sea and to make practical tests of equipment necessary for such operations; the assignment of one aircraft to every major combatant ship; and the expenditure of \$1,297,700 to implement the program.

**17 December** Captain Mark L. Bristol reported to the Navy Department for special duty as officer in charge of aviation, thereby relieving Captain Washington I. Chambers of that duty.

## 1914

**6 January** The Marine Corps element of the Aviation Camp at Annapolis, Md., under Lieutenant Bernard L. Smith, USMC, and equipped with a flying boat, an amphibian, spare parts, and hangar tents, was ordered to Culebra Island, P.R., for exercises with the Advance Base Unit.

1914—Continued



*Pensacola 1914 with flying boats, hydroaeroplanes and tent hangars at the first permanent station 72-CN-6422*



*Henry C. Mustin 1061482*

**7 January** The Office of Aeronautics, with Captain Mark L. Bristol in charge, was 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 men, 7 aircraft, portable hangars, and other gear, under Lieutenant John H. Towers as officer in charge, arrived at Pensacola, Fla., on board *Mississippi* (BB 23) and *Orion* (AC 11) to set up a flying school. Lieutenant Commander Henry C. Mustin, in command of the station ship *Mississippi* (BB 23) was also in command of the aeronautic station.

1914—Continued

**16 February** Lieutenant (jg) James M. Murray, Naval Aviator No. 10, on a flight at Pensacola, Fla., in the Burgess D-1 flying boat, crashed to the water from 200 feet and was drowned.

**20 February** The beginnings of Aviation Medicine were apparent in a letter to the Commanding Officer at Pensacola, Fla., on the subject of physical requirements for aviator candidates which expressed the opinion that useful information could be obtained by observing pilots during flight and by physical examination before and after flight. The letter further directed that this be considered and a program developed that would permit incorporation of such practice in the work of the flight training school.

**9 March** The wind tunnel at the Washington Navy Yard was tested. Calibration required about three months, and its first use in July was a test of ship's ventilator cowling.

**27 March** The original designations of aircraft were changed to two letters and a number of which the first letter denoted class, the second type within a class, and the number the order in which aircraft

within class were acquired. Four classes were set up; A for all heavier-than-air craft, D for airships or dirigibles, B for balloons and K for Kites. Within the A Class, the letters L, H, B, X and C represented land machines, hydroaeroplanes, flying boats, combination land and water machines, and convertibles, respectively. Thus the third hydroaeroplane, formerly A-3, became AH-3, and the first flying boat, formerly C-1, became AB-1.

**20 April** First call to action—In less than 24 hours after receiving orders, an aviation detachment of 3 pilots, 12 enlisted men, and 3 aircraft, under command of Lieutenant John H. Towers, sailed from Pensacola, Fla., on board *Birmingham* (CL 2) to join Atlantic Fleet forces operating off Tampico in the Mexican crisis.

**20 April** Mr. A. B. Lambert of St. Louis, Mo., informed the Secretary of the Navy that the services of the Aviation Reserve, which he had organized the year before, were available for use in the Mexican crisis and listed the names of 44 members, 20 of whom could furnish their own aircraft.

**21 April** A second aviation detachment from Pensacola, Fla., of one pilot, three student pilots, and two aircraft, commanded by Lieutenant (jg) Patrick N. L. Bellinger, embarked on *Mississippi* (BB 23) and



*Aviation detachment at Veracruz 1914, Bellinger (right) in front of first plane to be hit by hostile gunfire 391984*

1914—Continued

sailed for Mexican waters to assist in military operations at Veracruz, Mexico.

**22 April** The Bureau of Navigation approved formal courses of instruction for student aviators and student mechanics at the Flying School at Pensacola, Fla.

**25 April** On the first flight by the *Mississippi* (BB 23) aviation unit at Veracruz, Mexico, Lieutenant (jg) Patrick N. L. Bellinger piloted the AB-3 flying boat to observe the city and make a preliminary search for mines in the harbor.

**28 April** Lieutenant (jg) Patrick N. L. Bellinger and Ensign Walter D. LaMont made a flight in the AB-3 flying boat to photograph the harbor at Veracruz, Mexico.

**2 May** The AH-3 hydroaeroplane, piloted by Lieutenant (jg) Patrick N. L. Bellinger with Ensign W. D. LaMont as observer, flew the first mission in direct support of ground troops as Marines encamped near Tejar, Mexico, reported being under attack and requested the aviation unit at Veracruz, Mexico, to locate the attackers.

**6 May** The Curtiss AH-3 hydroaeroplane, piloted by Lieutenant (jg) Patrick N. L. Bellinger with Lieutenant (jg) Richard C. Saufley as observer, was hit by rifle fire while on a reconnaissance flight over enemy positions



*The AH-7, Burgess-Dunne, flying over Pensacola 1061479*

in the vicinity of Veracruz, Mexico—the first marks of combat on a Navy plane.

**19 May** As the need for scouting services diminished at Veracruz, Mexico, the aviation detachment resumed routine flight instruction while awaiting orders to return to Pensacola, Fla.

**24 May** The aeronautic detachment on board *Birmingham* (CL 2) arrived at Veracruz, Mexico, from Tampico to join the *Mississippi* (BB 23) detachment in the school routine of flight instruction.

**26 May** On the basis of flight tests, Lieutenant Holden C. Richardson, CC, USN, recommended that the Navy buy 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 aircraft which were subsequently obtained were designated AH-7 and AH-10.

**1 July** Aviation was formally recognized with the establishment of an Office of Naval Aeronautics in the Division of Operations under the Secretary of the Navy.

**28 July** Lieutenant (jg) Victor D. Herbster reported on bombing tests which he and Lieutenant Bernard L. Smith, USMC, carried out at Indian Head Proving Grounds, Stumpneck, Md. Both dummy and live bombs were dropped over the side of the machine 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** Lieutenant Commander Henry C. Mustin, Lieutenant Patrick N. L. Bellinger and 1st Lieutenant Bernard L. Smith, USMC, arrived in Paris, France, from *North Carolina* (ACR 12) for a two-day tour of aircraft factories and aerodromes in the immediate area. This temporary assignment, the first use of Naval Aviators as observers in foreign lands, was a precedent for the assignment of aviation assistants to naval attaches, which began the same month when Lieutenant John H. Towers was sent to London. In September Lieutenant (jg) Victor D. Herbster and 1st Lieutenant Bernard L. Smith reported to Berlin, Germany, and Paris, respectively.

**16 November** An administrative reorganization at Pensacola, Fla., shifted overall command from the station ship to headquarters ashore and the station was officially designated Naval Aeronautic Station, Pensacola.

1914—Continued

**23 November** The title “Director of Naval Aeronautics” was established to designate the officer in charge of Naval Aviation. Captain Mark L. Bristol, already serving in that capacity, was ordered to report to the Secretary of the Navy under the new title.

**25 November** To measure and record velocity and direction of winds, gusts, and squalls at the ends of the speed course at Pensacola, Fla., Director of Naval Aeronautics Captain Mark L. Bristol established requirements for special meteorological equipment to be installed there.

## 1915

**1 February** The Division of Naval Militia Affairs in the Bureau of Navigation directed that an aeronautic corps could be organized in each of the state Naval Militia.

**3 March** A rider to the Naval Appropriations Act created the National Advisory Committee for Aeronautics. Navy members in the original organization were Captain Mark L. Bristol and Lieutenant Holden C. Richardson, CC, USN.

**3 March** The Naval Appropriations Act of 1916 added enlisted men and student aviators to those eligible for increased pay and allowances while on duty

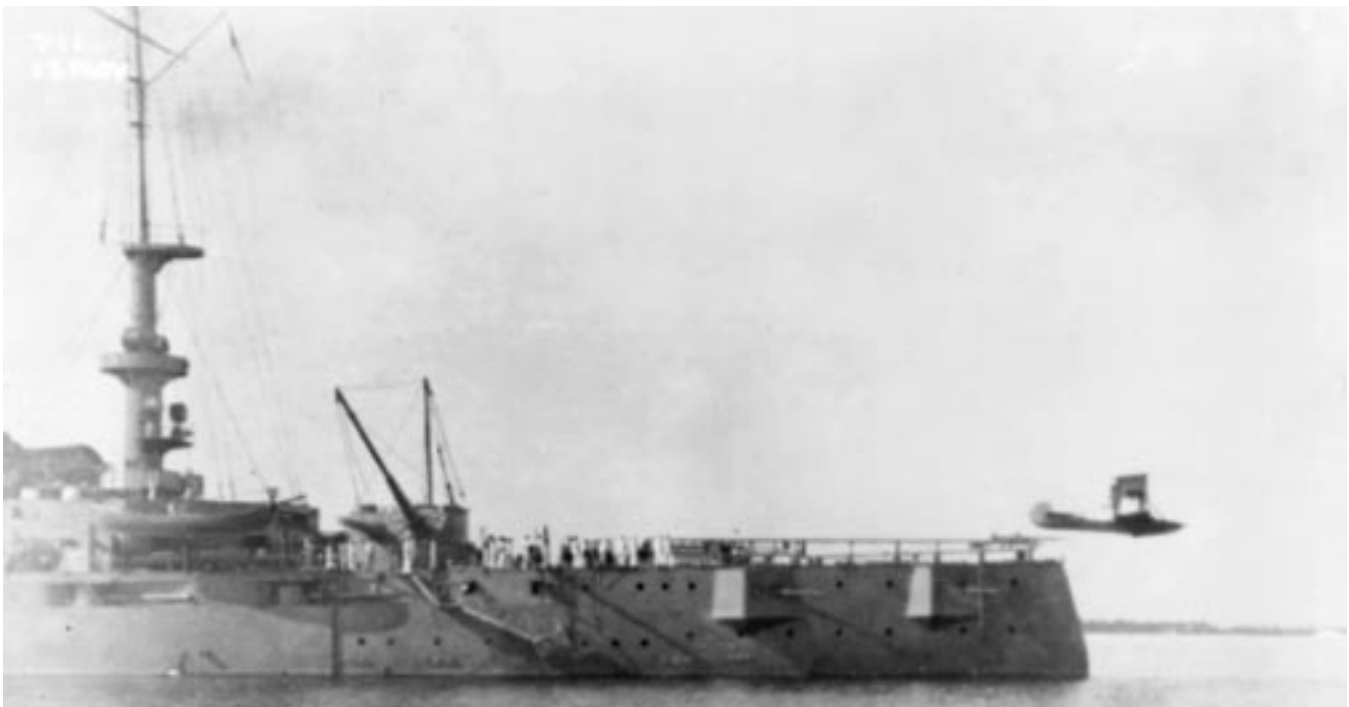
involving flying; increased the amount previously provided for qualified aviators; and provided for the payment of one year’s pay to the next of kin of officers and men killed in aircraft accidents. The same act also raised the limits on personnel assigned to aviation to a yearly average of not more than 48 officers and 96 men of the Navy and 12 officers and 24 men of the Marine Corps.

**22 March** The title “Naval Aviator” replaced the former “Navy Air Pilot” designation for naval officers qualified as aviators.

**16 April** The AB-2 flying boat was successfully catapulted from a barge by Lieutenant Patrick N. L. Bellinger at Pensacola, Fla. The catapult used had been designed in 1913 by Lieutenant Holden C. Richardson, CC, USN, and fabricated at the Washington Navy Yard. The success of this and subsequent launchings led to installation of the catapult aboard ship.

**23 April** Lieutenant Patrick N. L. Bellinger, in the Burgess-Dunne AH-10, established an American altitude record for seaplanes by ascending to 10,000 feet over Pensacola, Fla.

**8 May** Lieutenant (jg) Melvin L. Stolz, student aviator, was killed in a crash of the AH-9 hydroaeroplane at Pensacola, Fla.



*First catapult launch from ship, Mustin in AB-2 439969*



1915—Continued

**28 May** The Naval Militia was informed that refresher flight training at Pensacola, Fla., was available for a limited number of its aviators.

**1 June** The Navy let its first contract for a lighter-than-air craft to the Connecticut Aircraft Company, New Haven. It ordered one non-rigid airship which was later designated the DN-1.

**7 July** In the initial step towards mobilizing science, Secretary of the Navy Josephus Daniels stated in a letter to Thomas A. Edison: "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 Consulting Board, a group of civilian advisors which functioned during the World War I period and included in its organization a "Committee on Aeronautics, including Aero Motors."

**10 July** The Aeronautical Engine Laboratory had its beginnings at the Washington Navy Yard, Washington, D.C., with an authorization by the Secretary to outfit a building for testing aeronautic machinery.

**10 July** After test of a sextant equipped with a pendulum-type artificial horizon, NAS Pensacola's commanding officer, Henry C. Mustin, 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 was the first to provide for an aeronautic force within the Naval Militia. Its composition, paralleling that of other forces established at the same time, was in sections of not more than 6 officers and 28 enlisted men; two sections forming a division. Officers were in the "aeronautics duty only" category, the highest rank provided being that of lieutenant commander at the division level. Its enlisted structure provided that men taken in under regular ratings of machinist mates and electricians would perform duties as aeronautic machinists; carpenter mates would perform duties as aeronautic mechanics; and landsmen, the equivalent of today's strikers, would 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, incidence indicator, tachometer, skidding and sideslip indicator, altitude barometer, oil gauge, fuel gauge, compass, course and distance indicator, magazine camera, binoculars, clock, and sextant. All except the navigational instruments, camera, binoculars, and clock were also required for school aeroplanes.

**5 August** Lieutenant Patrick N. L. Bellinger, flying the Burgess-Dunne AH-10, spotted mortar fire for Army shore batteries at Fort Monroe, Va., signaling his spots with Very pistol flares.

**11 August** The Naval Observatory requested the Eastman Kodak Company 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.

**12 October** A directive was issued establishing an Officer in Charge of Naval Aeronautics under the newly created Chief of Naval Operations and giving authority for aviation programs in the Navy Department to the Chief of Naval Operations 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 detachment of the incumbent director.

**15 October** The Secretary of the Navy referred a proposal, made by Captain Mark L. Bristol, to convert a merchant ship to operate aircraft, to the General Board with the comment that there was a more immediate need to determine what could be done with *North Carolina* (ACR 12), already fitted to carry aeroplanes.

**5 November** Lieutenant Commander Henry C. Mustin, in the AB-2 flying boat, made the first catapult launching from a ship, flying off the stern of *North Carolina* (ACR 12) in Pensacola Bay, Fla.

**3 December** Lieutenant Richard C. Saufley, flying the Curtiss AH-14, set an American altitude record for hydroaeroplanes, reaching 11,975 feet over Pensacola, Fla., and surpassing his own record of 11,056 feet which he had set only three days before.

## 1916

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

1916—Continued

**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 World War I.

**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, to authorize the radio operators at the Pensacola Radio Station to experiment with aircraft radio. Simultaneously, four sets of radio apparatus for aeroplanes were received at Pensacola. 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 by directing that designating numbers be assigned to all aircraft under construction and that these numbers 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 would be used. Numbers, beginning with 51-A, were simultaneously assigned to 33 aircraft. This was the introduction of serial numbers hereafter assigned to all aircraft.

**4 March** Captain Mark L. Bristol was detached as Director of Naval Aeronautics and both the title and the office ceased to exist. Captain Bristol was assigned to command *North Carolina* (ACR 12) and, under a new title of Commander of the Air Service, assumed operational supervision over all aircraft, air stations, and the further development of aviation in the Navy. Such aviation duties as remained in the Office of the Chief of Naval Operations were assumed by Lieutenant Clarence K. Bronson.

**25 March** Qualifications for officers and enlisted men in the Aeronautic Force of the Naval Militia were defined by General Order which, in each instance, were over and above those prescribed for the same ranks and ratings of the Militia. These extras, cumulative for ranks in ascending order, required ensigns to have knowledge of navigation (except nautical astronomy) and scouting problems, practical and theoretical

knowledge of aeroplanes and motors, and ability to fly at least one type of aircraft. Lieutenants (jg) were in addition to have some knowledge of nautical astronomy, principles of aeroplane 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 lieutenant commanders, the highest rank provided for the force, were also to have knowledge of Navy business methods used in aeronautics. Aviation mechanics were to have knowledge of aircraft maintenance and aviation machinists were to have similar knowledge of motors.

**29 March** Lieutenant Richard C. Saufley, flying a Curtiss hydroaeroplane at Pensacola, Fla., bettered his own American altitude record with a flight to 16,010 feet and on 2 April extended it again with a mark of 16,072 feet.



*C. K. Bronson 416339*

**30 March** The Secretary of the Treasury informed the Secretary of the Navy that Coast Guard officers Second Lieutenant Charles E. Sugden and Third Lieutenant Elmer F. Stone had been assigned to flight instruction at Pensacola, Fla., in accordance with an agreement between the two departments.

**15 April** An anchor and a two digit numeral, both in dark blue on a white background, were prescribed as "Distinguishing Marks for Naval Aeroplanes" in a Bureau of Construction and Repair drawing. 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.

1916—Continued

**13 May** The Chief of Naval Operations requested appropriate bureaus to undertake development of gyroscopic attachments for instruments and equipment, including compasses, bombsights, and base lines, the latter being a forerunner of the turn and bank indicator.

**20 May** Development of a gyroscopically operated bomb-dropping sight was initiated with the allocation of \$750 to the Bureau of Ordnance to be used in placing an order with the Sperry Gyroscope Company.

**22 May** The Naval Observatory sent a color camera, made by the Hess-Ives Corporation, to the Naval Aeronautic Station at Pensacola, Fla., to determine whether color photography would be of value in aeronautic work.

**3 June** Formal instruction in free and captive balloons was instituted at Pensacola, Fla., when the Secretary of the Navy approved a course proposed by Lieutenant Commander Frank R. McCrary, and directed that it 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** Lieutenant Richard C. Saufley, on an endurance flight in the AH-9 over Santa Rosa Island off Pensacola, Fla., crashed to his death after being in the air 8 hours and 51 minutes.

**20 June** A General Order, superseding that of 23 June 1913, was issued defining 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 were not provided for in the earlier order.

**12 July** The AB-3 flying boat, piloted by Lieutenant Godfrey deC. Chevalier, was catapulted from *North Carolina* (ACR 12) while underway in Pensacola Bay, Fla. The launch completed calibration of the first catapult designed for shipboard use; *North Carolina* became the first ship of the U.S. Navy equipped to carry and operate aircraft.

**17 July** The first flight of the Gallaudet 59-A, a novel airplane with the propeller mounted in the fuselage aft of the wings, was made at Norwich, Conn., by David H. McCulloch and witnessed by Navy Inspector Lieutenant (jg) George D. Murray.

**18 July** Flight clothing allowances were established by the Secretary. Aviators were to be furnished helmets, goggles, and safety jackets. Enlisted men whose duties involved flying were to receive, in addition, wool head cover, suit, gauntlets, and boots.

**22 July** Serious interest in the development of light metal alloys for aeronautical use led Chief Constructor Rear Admiral David W. Taylor to request that the Aluminum Company of America apply its resources to the development of a suitable alloy, and for use in fabrication of Zeppelin-type girders.

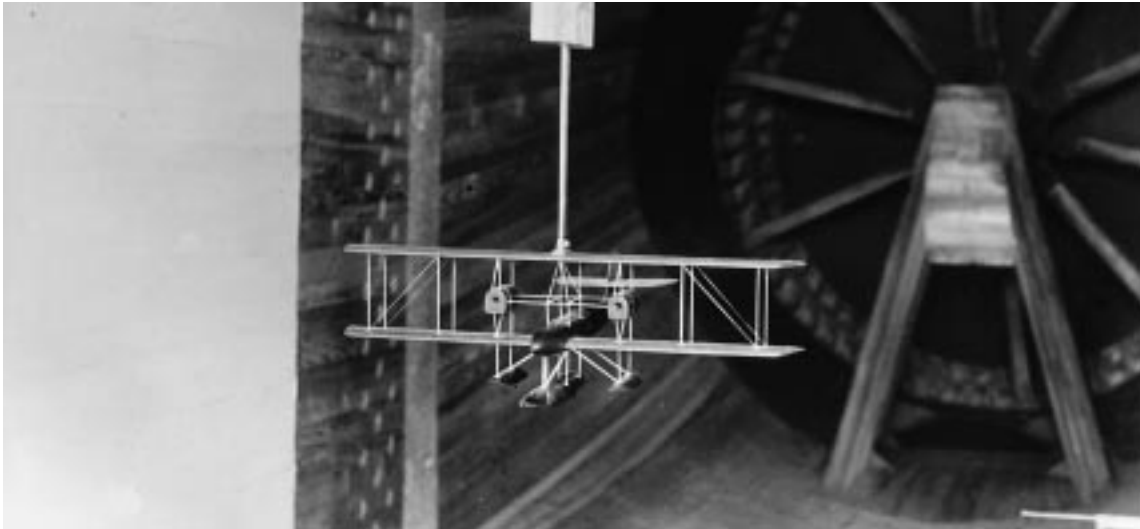
**8 August** The Secretary clarified the place of aviation in the departmental organization by redefining the responsibilities of bureaus and offices for specific elements of the aviation program. While the new directive followed the division of cognizance over material established by the General Order of 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 [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 four pounds per square foot, and power loading of about twenty 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." This telegram resulted in a contract for thirty N-9s which were delivered between November 1916 and



*Experimental Gallaudet, propeller in the fuselage 1061646*

1916—Continued



*K Model of 82-A, first aircraft designed and built by the Navy, under wind tunnel test 72-CN-6423*



*Ensign Wadleigh Capehart holds early simple bomb while straddling cockpit of a Burgess-Dunne 416327*

1916—Continued

February 1917. The aircraft became the Navy's most popular training aircraft during World War I.

**12 August** The Secretary of the Navy agreed with the Secretary of War that the straight Deperdussin system of controlling aircraft in flight be adopted as the standard system for use in all aircraft of both services.

**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 personnel for aeronautic services with the fleet as a primary mission, and ordered the establishment of an Aeronautics School and departments for Manufacturing, Experimental Test and Inspection, Public Works, Supply and Medical.

**29 August** The Naval Appropriation Act for fiscal year 1917 provided for the establishment of a Naval Flying Corps to be 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 to be composed of officers and enlisted men transferring from

the Naval Flying Corps; of surplus graduates of aeronautics schools; and of members of the Naval Reserve Force with experience in aviation.

**9 September** The initiation of formal flight testing as a basis for accepting new aircraft and the establishment of procedures for determining whether operational aircraft were safe to fly were provided for in an order issued by the Secretary.

**12 September** A demonstration of guided missile equipment—a piloted hydroaeroplane equipped with automatic stabilization and direction gear developed by the Sperry Company and P. C. Hewitt—was witnessed by Lieutenant Theodore S. Wilkinson of the Bureau of Ordnance 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."

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



*Pilot E. F. Johnson and pioneer Naval photographer W. L. Richardson 452495*

1916—Continued

**11 October** The Acting Secretary of War recommended to the Secretary of the Navy 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. With the Secretary's concurrence, there came into being an agency for interservice cooperation in aeronautics which under its later title, Aeronautical Board, functioned for over 30 years before being dissolved in 1948.

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

**27 October** The Chief of Naval Operations directed that all aircraft loaned or donated to the Naval Militia by private individuals or organizations be designated NMAH and be given numbers in sequence beginning with one.

**8 November** Lieutenant Clarence K. Bronson, Naval Aviator No. 15, and Lieutenant Luther Welsh, on an experimental bomb test flight at Naval Proving Ground, Indian Head, Md., were instantly killed by the premature explosion of a bomb in their plane.

**17 November** Efforts to develop high speed seaplanes for catapulting from ships led Chief Constructor

David W. Taylor to solicit suitable designs from various manufacturers. Among the requirements were a speed range of 50 to 95 mph, two and a half hours endurance, and provisions for radio.

**7 December** Lieutenant Commander Henry C. Mustin reported that an Eastman Aero camera, tested at NAS Pensacola, Fla., at altitudes of 600 to 5,100 feet, was by far the best camera tested up to that time, and produced photographs very satisfactory for military purposes.

**12 December** Captain Mark L. Bristol was detached as Commander of the Air Service, and the functions of the command but not the title were transferred to Rear Admiral Albert Gleaves, Commander Destroyer Force, Atlantic Fleet.

**30 December** The Commission on Navy Yards and Naval Stations, authorized by the Act of 29 August 1916 for the purpose of selecting new sites for the expansion of Navy Yards and for submarine and air bases along the coast, submitted its preliminary report. For aviation the commission could only report 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 recommended that a joint Army-Navy board decide upon locations that might be used by both services.



*Ken Whiting 1061480*



*W. McIlvain, USMC 1061483*