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Aeronautical and Aerospace Sciences

TRACING THE GROWTH OF THE U.S. NAVY AVIATION. M. Leroy Spearman. Langley Research Center, Hampton, VA & Robert W. Heath, RRMC, Newport News, VA. The Navy's first interest in aviation may have occurred in March 1898. Assistant Secretary of the Navy, Theodore Roosevelt, impressed by Samuel P. Langley's success with flying models, reported the potential of aviation for use in war. A joint board (Navy & Army) was appointed to consider the role of aircraft in warfare. The board's report expressed a view in favor of aviation for military purposes. The Navy did acknowledge a role for aviation in September 1910 when Capt. Washington I. Chambers was designated as the officer in charge of aviation matters. Soon Glenn Curtiss, a U.S. pioneer in aviation, began meeting with Chambers in an effort to convince the Navy of the value of aircraft for Naval use. In November 1910 Eugene Ely took off in a Curtiss airplane from a wooden platform built over the bow of a ship in the harbor at Hampton Roads, VA. In 1921 the Army Air Service conducted bombing tests in which bombers sank a captured German battleship. The Navy recognized the need for fleet defense and expanded the development of aircraft carriers. In March 1922 at Norfolk, VA, the Navy commissioned the USS Langley (CV-1), the first aircraft carrier, on which the first take off and landing and the first catapult launching were made. In 1933 the first ship designed as an aircraft carrier, the USS Ranger (CV-4), was launched at the Newport News ship yard. Since then, 28 aircraft carriers have been constructed for the Navy at that shipyard and Navy aviation was well underway.

SOME CONTRIBUTIONS TO AERODYNAMIC RESEARCH FROM THE NACA/NASA. M. Leroy Spearman. NASA-Langley Research Center. Hampton, VA & Katie Klein, MITRE Corp. McLean, VA Leonardo da Vinci envisioned man-flight in the 15th century and designed a practical airplane concept in 1490. Many other pioneers proposed various types of flying machines over the next 400 years but it was not until 1903 that the Wright Brothers, were credited with achieving the first manned-powered flight. The use of aircraft by European nations in World War I lead to an act of the U.S. Congress in 1915 that established the National Advisory Committee for Aeronautics (NACA). Thus research began at Langley Field, VA in the early 1920's. This research has transformed low-speed, wood and fabric, propeller-driven airplanes into high speed, all-metal, jet-propelled airplanes. In July 1955 the U.S. announced plans to launch an earth-orbiting satellite. The need for space research lead to the establishment of the National Aeronautics and Space Administration (NASA) in July 1958. The nucleus of the NASA was the existing NACA with the charge expanded to include space research. The skilled researchers at NASA-Langley have continued to provide improvements in aircraft

developments and contribute to the development of spaceflight as well. Continued advances in aerospace research required well trained researchers. To this end, NASA-Langley participates in mentorship programs to encourage high school students to become researchers. The first author of this paper has been a mentor for this program and the second author of this paper has been a student.

FEDERAL FUNDING OF AERODYNAMIC RESEARCH IN THE UNITED STATES. M. Leroy Spearman, NASA-Langley Research Center, Hampton, VA 23681. In 1898 the Assistant Secretary of the Navy, Theodore Roosevelt reported to the Secretary of the Navy of the potential of aviation for use in war. A joint board was appointed (Army & Navy) to consider the role of aircraft in warfare. In April 1898 the Board's report favored the value of aviation for military purposes. In 1910 Capt Washington I. Chambers was designated officer in charge of Navy aviation matters. The Navy constructed an Experimental Model Basin. In 1912, at the urging of Capt. Chambers, President Taft appointed a board to consider a national aerodynamic laboratory. Legislation to create the laboratory was introduced in Congress in 1913 but was defeated. When war broke out in Europe in 1914 it was apparent that European countries had adapted the airplane and that development in the U.S. was lagging. Charles D. Walcott of the Smithsonian Institute undertook the effort to get approval for a federally funded aerodynamics laboratory. In January 1915, Assistant Secretary of the Navy, Franklin D. Roosevelt endorsed a resolution introduced in Congress for the creation of an advisory committee for aeronautics and suggested that it be attached to the Naval Appropriations Bill. The bill was approved on March 3, 1915. President Woodrow Wilson signed a bill that established the National Advisory Committee for Aeronautics (NACA), now the National Aeronautics and Space Administration (NASA), that provides federally funded research for aeronautics and astronautics.

Agriculture, Forestry and Aquaculture Science

EFFECTS OF DIFFERENT ORGANIC APPLICANTS ON SOIL CONDITIONS FOR BLUEBERRY PRODUCTION. Jeremiah D. Vallotton & Roman J. Miller, Dept. of Biology, E. Mennonite University, Harrisonburg VA, 22802. Blueberries are a potentially profitable crop that have yet to be tested under organic agricultural practices in the Shenandoah Valley of Virginia. Blueberries require a low pH between 4.8 to 5.5 and high levels of organic matter for optimal growth. In this experiment, four treatments of organic matter (horse manure, sheep manure, pine needles, and compost) were used to grow blueberries, along with a control plot where chemical herbicides and pesticides will be used. Elemental sulfur was used on all plots to lower the pH of the soil over time. Soils were sampled and analyzed to measure soil pH, soil organic matter, and nutrients. Tests suggest that the organic treatments had a highly positive effect on the soil organic matter levels, while decreasing the pH yielded higher levels of available Mn and Fe, but Cu remained low. Soil pH mostly decreased to desirable ranges, but in some of the plots application of sulfur resulted in less change. The most recent tests indicate that the pH continued to decrease, from an average of 6.1 to 5.5,