

Their professional discipline turned ad-hoc test flights into superb testing techniques.

The McCook Pilots

By Walter J. Boyne

America's entry into the space age introduced a new hero, the astronaut. Yet 44 years before Alan B. Shepard Jr.'s epic May 5, 1961 flight in Freedom 7, another group of pilots captured America's imagination. They were the test pilots of McCook Field, Ohio, who made aviation history with their record-breaking flights.

The McCook test pilots advanced aviation by setting speed, altitude, and endurance records and by participating in the first trans-continental and -world flights. They pioneered a long series of aerodynamic innovations, ranging from controllable-pitch propellers and pressurized cabins through instrument flight, superchargers, self-sealing fuel tanks, high octane fuel, and in-flight refueling.

McCook Field established a tradition for integrity and excellence in engineering that endures to this day. Many of these advances contributed directly to victory in World War II, and all were laden with hazard. Seventeen members of the McCook Field Engineering Division died in crashes.

McCook pilots turned ad-hoc test flights into a professional discipline that was developed into today's superb aircraft test techniques.

America's entry into the World War on April 6, 1917 brought the fledgling Army Signal Corps an unprecedented flood of funds. Congress appropriated \$694 million (nearly \$11 billion in current dollars) to buy an air force. While most of the money was lavished on procurement and training, aeronautical research and development was also emphasized.

On Oct. 1, 1917, the Army acquired a field a mile-and-one-half from downtown Dayton, naming it McCook Field after a prominent Dayton family. McCook soon employed more than 2,300 personnel working on a wide variety of projects in 70 buildings.

The flight facilities at McCook were simple, bounded by the Miami River on one side and by private housing on the

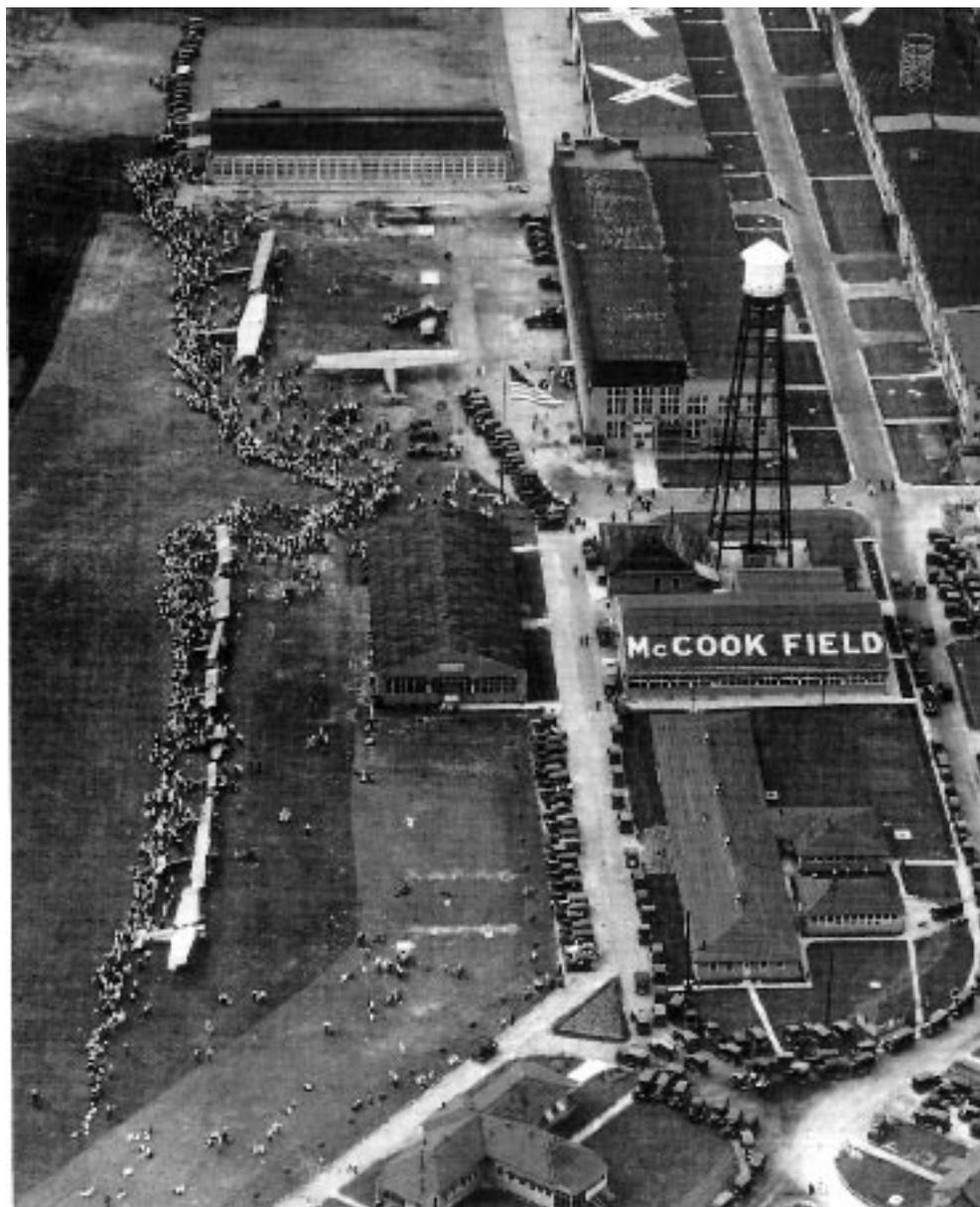
other. The flying area consisted of a series of wooden hangars strung along an easily flooded sod field harboring a 1,000-foot-long macadam and cinder runway.

A prominent hangar-front sign read "This Field Is Small—Use it All," still good advice. Despite its small size, there was so much flying activity at McCook

that its pilots often operated out of nearby Wilbur Wright Field, where pilots and mechanics were trained.

For the next decade, McCook Field was the Army's center for developing and testing aircraft, engines, and equipment.

Much of the success was made possible by a single generation of brilliant pilots



who gradually turned amateur test flying into a disciplined profession. They were challenged by unprecedented new missions, unproven aircraft, and radical new equipment.

Engineering and manufacturing techniques were unsophisticated and the new designs were often gravely flawed. The pilots also had to work their way through a spectrum of new aerodynamic phenomena, including control surface flutter and the effect of G forces. They did it in open cockpit aircraft with primitive instrumentation, no brakes, no heating, and, for too many years, no parachutes.

The Air Service recognized the public relations value of the test pilots and their record setting, and used it to the maximum extent to gain visibility when the 1918 armistice brought back a long era of penurious peacetime budgets.

Operations at McCook were blessed



Photo courtesy of Aeronautical Systems Center History Office

Left: An aerial view of McCook Field taken on July 4, 1923. Above: 1st Lt. Edwin Aldrin (father of astronaut Edwin Aldrin Jr.), seated, second from right, was the assistant school commandant at McCook Field from 1919 to 1922.

with good leadership early on. Edward A. Deeds, a dynamo behind the success of National Cash Register Co., the Dayton-Wright Airplane Co., and the Liberty engine, was commissioned a colonel in the Signal Corps Reserve and appointed head of the Equipment Division. Deeds was instrumental in establishing both Wilbur Wright Field and McCook Field.

Powerful Personalities

Lt. Col. Virginius E. Clark became McCook's first commanding officer, while Maj. Jesse G. Vincent served as his executive officer. Clark would later head the aircraft design division and contribute not only a series of excellent aircraft designs but also the famous "Clark Y" airfoil used in countless aircraft. Vincent oversaw aircraft engine development and, with Elbert J. Hall and others, brought the legendary Liberty engine into being.

It was Col. Thurman H. Bane, not an engineer, who guided the Air Service's Engineering Division and founded what ultimately became the Air Force Institute of Technology.

Bane laid the groundwork for the research and development efforts essential to victory in World War II and to the subsequent emphasis on research and development in the Air Force. Bane knew how to establish and manage organizations in which engineers and test pilots could prosper, and was assisted by 1st Lt. Edwin E. Aldrin, expert test pilot and father of Edwin "Buzz" Aldrin Jr., the

second man to walk on the moon. Bane even tested the daunting de Bothezat helicopter when he deemed it too demanding for other pilots.

From the very start, powerful personalities dominated test flying at McCook Field, especially in the role of chief test pilot. Rudolph W. "Shorty" Schroeder, 6 feet 4 inches tall, began as a mechanic in a Curtiss exhibition team and learned how to fly on the job. He enlisted in the Aviation Section of the Army Signal Corps in 1916 and by 1919 was a major at McCook Field at age 33—old for a test pilot. He was a driving force behind the development of parachutes and was the first to wear one at McCook.

As chief of the Engineering Division's Flight Test Section, the rough-hewn Schroeder handed out the assignments, often reserving the most dangerous—and most noteworthy—for himself.

He gained his greatest fame in one of the Army Air Service's indigenous designs, the Packard-LePere LUSAC-11, a biplane powered by a supercharged Liberty engine. (The only surviving example of the LUSAC-11 is on exhibit at the National Museum of the US Air Force in Dayton.)

Schroeder gained experience by setting three successive high-altitude records, then on Feb. 27, 1920, he flogged his LUSAC-11 to a record height of 33,114 feet. His primitive oxygen equipment malfunctioned, and sensing that he was suffering from hypoxia, Schroeder pulled



Lt. John Macready is shown here with the LePere LUSAC-11 airplane in which he set a world altitude record.

the power back, letting his aircraft dive earthward as he lost consciousness.

In his open cockpit, the temperature had dropped to a minus 63 degrees Fahrenheit, freezing the moisture coating his eyeballs. He recovered consciousness and managed to land successfully back at the field.

Ice packs—the incorrect frostbite remedy of the era—were applied to his eyes, and he was hospitalized for several days, never completely recovering his vision.

A successor to Schroeder, Capt. John A. Macready was completely different in personality but maintained the same laser focus on achievements. A Stanford graduate in economics, he was early on stationed in San Antonio, where, as officer in charge of flying, he wrote the basic text for student pilots, *The All Thru System of Flying Instruction as Taught at Brooks Field*.

At McCook, he undertook a long series of dangerous altitude flights in the LUSAC-11 and later in the Engineering Division XCO-5.

On one mission, his supercharger blew up, while on another his propeller flew off its hub. There were several other misadventures, but he set records nevertheless.

Macready is the only pilot ever to have won the MacKay Trophy three times. The first was for his open cockpit world altitude record of 40,800 feet—7.7 miles—in 1921. The second was for his 35 hour, 18 minute world endurance record set on Oct. 6, 1922 with Lt. Oakley G. Kelly, while his third was for the first nonstop transcontinental

flight. Taking off on May 2, 1923, he and Kelly flew the Fokker T-2 across the United States in 26 hours, 50 minutes.

On to Harris

Many other exploits distinguished Macready's relatively short Air Service career. In 1921, Macready used a Curtiss JN6-H Jenny to dust a grove of moth-infested catalpa trees near McCook Field. The experiment was so successful that it inspired the Delta Flying Service (later Delta Air Lines) to begin a crop-dusting service. In 1923, with Capt. Albert W.

Stevens, he flew a photographic expedition across the United States. In 1924, he made the Air Services' first night parachute jump.

On May 2, 1924, again with Stevens, he set an unofficial two-person altitude record of 31,450 feet.

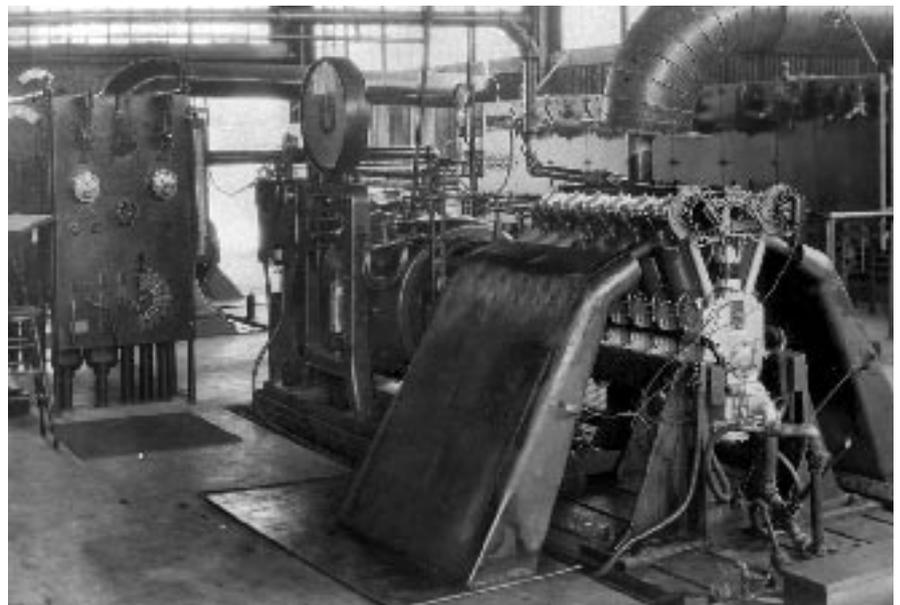
Stevens, a photography expert, set two records on this flight for the highest altitude at which a photo had been taken and for the largest area ever included in one photo.

The Air Service became unattractive to some high-spirited leaders because promotions were virtually frozen and low salaries were threatening to go lower. Macready left for civilian life in 1926. He was recalled to service in 1941 as a colonel, serving as inspector general of Twelfth Air Force. He died in 1979.

Another chief of the Flight Test Section at McCook was Lt. Harold R. Harris, whose ebullient personality both filled and lit up a room when he walked in. He possessed an endless repertoire of stories about his adventures in the Air Service and in his accomplished civil life, where he was a pioneer of both agricultural crop spraying and airlines.

Harris learned to fly in Foggia, Italy, soloing in a Maurice Farman biplane after just three hours of instruction. He went on to fly the huge trimotor Caproni bombers and became an instructor in the aircraft. Harris delivered a Caproni Ca.5 to the Army Air Service on July 25, 1918 by flying it across the Alps from Turin, Italy, to Lyon, France.

His experience made him the expert on large aircraft when he was assigned to be chief of the flight test branch at McCook



A Liberty engine undergoes testing on a dynamometer. Liberty engines powered the LUSAC-11 on record-setting flights.

Photo courtesy ASCHD



Maj. Rudolph Schroeder flew a Packard-LePere LUSAC-11 biplane from McCook Field for a record-breaking altitude flight in 1919.

Field in October 1920. He worked with Brig. Gen. Billy Mitchell in the battleship-sinking tests before being tasked to test the huge triplane Barling NBL-1 bomber.

Harris managed to set several load-carrying records in the six-engine Barling, despite its low speed (96 mph) and short range (170 miles).

Harris' genius at storytelling could even make flying the Boeing GA-X—another triplane—sound like fun.

The GA-X was an unfortunate Engineering Division design, intended as a heavily armored attack aircraft to strafe trenches. Harris likened flying it to being inside a kettle drum during Tchaikovsky's "1812 Overture."

He had a similar fund of stories of his flights in the first pressurized cockpit aircraft, a converted USD9-A biplane. The Engineering Division had underestimated the size of the exhaust valve in the cockpit, while overestimating the size of the pressure inlet valve. The result was that as soon as he was airborne, Harris found himself pressurized at 3,000 feet below sea level with no way to relieve the pressure.

Visibility from the cockpit was poor, and the inside temperature was rising as Harris brought the aircraft around to land and slowly decompress. In telling the story, he bemoaned the fact that, as usual, he had flown in tennis shoes and thus had nothing to use to try to break the capsule's window.

As short as that flight was, it started the process toward the Lockheed XC-35, the first pressurized cabin aircraft.

Harris also flew a memorable mock dogfight against Lt. Muir S. Fairchild, for whom Fairchild Air Force Base is named. In a turn, Harris encountered a violent control vibration—flutter—that

uncontrollably banged the control stick back and forth between his knees.

A Legacy of Invention

Certain that the aircraft would disintegrate, Harris leaped from the cockpit. He tugged on what he thought was the rip cord three times, only to note that it was his leg strap. At some 500 feet above the ground, he pulled the right handle and the parachute deployed.

He was thus recognized as the first Air Service member to use a parachute in an emergency escape and became the first member of the Caterpillar Club, an organization established originally by Irvin Air Chute Co. (Membership was gained by bailing out of an airplane during an emergency; William O'Connor used the company's parachute in an emergency bailout in 1920, but his feat was not officially recognized.)

Harris too left the Air Service and became vice president of Huff-Daland Dusters. There followed an airline career that saw him serve with numerous airlines before finally becoming president of Northwest Airlines.

During World War II, he returned to the USAAF, serving with Air Transport Command and retiring as a brigadier general.

Of all the noteworthy McCook Field test pilots, none became more famous than Jimmy Doolittle. He was noted for his pioneering instrument work and other daring test flights, but these were later overshadowed by Doolittle's

intellectual contributions to science and to combat.

Among the many other famous names from McCook are "Dawn to Dusk" flier Lt. Russell L. Maughan, Lt. Eugene H. Barksdale, and Lt. Leigh Wade.

A skilled pilot, Maughan had scored four victories in World War I, won the 1922 Pulitzer race in a Curtiss R-6, and set an international speed record of 236 mph. Then, on June 23, 1924, he crossed the United States during daylight hours in a Curtiss PW-8.

Barksdale, for whom the Air Force base is named, scored three aerial victories during World War I and made a 575-mile navigation flight using only his flight instruments in 1924.

Barksdale died at McCook in 1926 when he had to bail out of a Douglas O-2 observation airplane and his parachute became tangled in the wires of the wing.

Wade was an overseas test pilot during World War I, where he flew both Allied and captured enemy aircraft. In 1924, he was one of the pilots who made the first around-the-world flight, from April 6 to Sept. 28. He left the Air Service in 1926 to become chief test pilot for Consolidated Aircraft. In 1941, he returned to active duty and commanded Batista Field in Cuba before retiring in 1955 as a major general.

The real story of the McCook Field test pilots lies not so much in their famous flights or dangerous escapes but in the aircraft and equipment they did so much to develop, working in close concert with the engineers.

As a single example, engineers such as Sanford A. Moss, Maj. George E. Hallet, and Adolph Berger created the supercharger that Macready used on the LUSAC-11. The joint result was the General Electric supercharger that enabled Boeing B-17s and Consolidated B-24s to reach altitudes and speeds that made them more difficult targets for the Luftwaffe.

McCook Field closed in 1927, but its flight test pilots passed the torch to new generations of test pilots. Perhaps most important, the rigorous tone of the Engineering Division's flight test division set the standard for the many other disciplines at Wright Field, Wright-Patterson Air Force Base, and ultimately the Air Force Flight Test Center at Edwards Air Force Base, Calif. ■

Walter J. Boyne, former director of the National Air and Space Museum in Washington, D.C., is a retired Air Force colonel and author and a member of the National Aviation Hall of Fame. He has written more than 600 articles about aviation topics and 50 books, the most recent of which is Soaring to Glory. His most recent article for Air Force Magazine, "The Years of Wheelus," appeared in the January issue.