

## Air and Space this Week

### Item of the Week

## *Test Pilots and the Caterpillars*

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**KEY WORDS:** John Macready Harold Harris Catalpa Caterpillar Crop Dusting  
Huff-Daland Parachute McCook Field

*No, this is NOT a doo-wop group from the 1950's! But it it'd have been a cool name for one...*

*Catalpa Trees are noted for two things: their wood is beautiful and easy to work, and they attract the catalpa moth, whose caterpillar form is an excellent bait for fishing. They also attracted the attention of two extraordinary test pilots **a hundred years ago**, and both of their stories have an ironic twist...*

### John A. Macready

John Macready was born in San Diego on October 14, 1887. He graduated Stanford with a degree in economics in 1912, but was inspired to fly, enlisting in the Army for WWI and earning his wings soon thereafter. He did not see combat, but rather was placed in charge of Brooks Field, in Texas, for the duration. While there, he literally “wrote the book” for the instruction of student pilots, “The All-Thru System of Flying as Taught at Brooks Field.

After the War, he was assigned to McCook Field, the Army’s new flight test facility in the Wright Brothers home town of Dayton, Ohio. There, he and his test pilot colleagues tested the latest aviation technologies, setting a number of flight records and “firsts” in the process.

The Mackay Trophy had been established earlier as the premier award in military aviation. Macready would win three of them; a feat never equaled.

In 1921, Macready set a new altitude record of 34,509 feet, in an open cockpit airplane but with oxygen support. This daring feat won Macready his first Mackay Trophy, for 1921.

The next year, Macready set a record for flight endurance, over 35 hours, and earned his second Mackay.

In 1923, he and a fellow pilot, Oakley Kelly, made the first non-stop transcontinental flight, earning his third Mackay Trophy. Three Mackays in three consecutive years! Hap Arnold only won two...

Macready continued making high altitude flights for the next few years, re-earning the official altitude record in early 1926 (38,704 feet). [He had made some flights over 40,000 feet, but they were not eligible for “official” status.]

Macready left service in later in 1926, and continued flying as a civilian in a variety of exhibition and racing events. He was recalled to service for WWII, and commanded several groups in the 12<sup>th</sup> Air Force, flying in North Africa. He retired again from service, in 1948. He died on September 19, 1979.

When Macready arrived at McCook field and began service in flight test, the Chief of the Flight Test Branch, Engineering Division, U.S. Army Air Service, was....

### **Harold R. Harris**

Harold Ross Harris was born in Chicago on December 20, 1895. Like Macready and so many of his contemporaries, he was inspired by the notion of flight, spurred in his case by his attending the Los Angeles International Air Meet, the first such event in the USA, in 1910. His interest in aviation led him to study mechanical engineering at the Throop College of Technology (now known as Cal Tech!). As WWI loomed, he joined a Citizen's Military Training Camp, in Monterey, CA, in 1916. When the penny dropped, he enlisted in the Army Signal Reserve Corps, and sent to the first ground school class at Berkeley, graduating in 1917. He spent the War in a variety of important training capacities. He was based in Italy, and he and his co-pilot led the first successful American flight over the Alps, and he helped establish an aerial ferry route (Milan to Paris) used by the U.S. Navy.

After the War, his engineering background and training experience led to a posting as a test pilot at Wilbur Wright Field in Dayton. The Army's Engineering Division was moved from Wilbur Wright across town to McCook in 1920, where he was appointed to be the Chief of the Flight Test Branch, Engineering Division, U.S. Army Air Service. There he was the first pilot to fly a pressurized-cockpit aircraft, and held several "firsts" and flight records. He flew the world's largest aircraft of the time (the Barling Bomber), some of the earliest helicopters, and performed rather robust (and very unauthorized) aerial stunts.

Harris had engineering training, piloting experience, and business/leadership acumen, which all served him well in his later aviation career. He was a senior official at the American Overseas Airline, and became a Pan Am VP when Pan Am absorbed AOA. He was the President and CEO of Northwest Airlines in the early 1950s, and held other important management and advisory posts. He passed away on July 28, 1988.

### **The First Crop Duster and the Huff-Daland Corporation**

Troy, Ohio, is about 15 miles north of Dayton, where Harris and Macready were stationed. A farmer there had a grove of Catalpa, an ornamental shade tree he used/sold for woodworking. He also captured the caterpillar form of the catalpa sphinx moth, which only feed on catalpa leaves, to use/sell for fish bait. However, he had too much of a good thing, and he faced an abundance of caterpillars who were stripping his trees of their leaves. The remedy then in use was to apply a dusting of lead arsenate to the affected trees, but effectively dusting a large grove from ground level was going to prove difficult. [There was a prevailing ignorance of possible health and environmental side effects of using lead and arsenic as caterpillar poison.]

John Macready was working with a next-generation test model of the Curtiss JN-6 “Super Jenny” aircraft when he heard of the nearby farmer’s plight. Both he and his Chief were working hard to develop new/improved airplane technology, but they were also thinking about both military and non-military uses for aircraft. It was not that big a leap to realize that lead arsenate dust could be spread from the air, if an aircraft could be fitted to release the material in the proper quantity as it flew just above the grove.

Engineering expertise was plentiful at McCook, and the modifications needed to use the Super Jenny as a caterpillar-killer were quickly made and tested. On **August 3, 1921, one hundred years ago earlier this month**, Macready flew his modified aircraft north to Troy, and dusted the infested grove thoroughly. The farmer reported the application was very successful.

The biggest agricultural concern in the South, circa 1920, was not the Sphinx moth caterpillar, it was the boll weevil, which was devastating cotton fields over a wide area. The Department of Agriculture immediately executed a program of “crop dusting” those fields, using the planes and techniques that were first used by the McCook team.

A number of aircraft manufacturers began business in the 1920s. One of them was the Huff-Daland Aero Corporation, headquartered in Pennsylvania. They realized the importance of the agriculture application aircraft and its large potential market, and added a plane specifically-designed from the ground up to be a “crop duster” to their product line. Sales began in 1924. Harold Harris helped with the research and engineering behind their airplane in 1926.

Huff-Daland sold a variety of smaller aircraft to both the military and civilian customers. The demand for crop dusters became so large by 1925 that a new subsidiary was spun off to focus on crop duster production (and improvements for subsequent models), the Huff-Daland Dusters.

A small company with a popular product was a desirable acquisition target for a larger firm or consortium, and Huff-Daland was bought by a New York brokerage firm, becoming part of the Keystone Aircraft Corporation, which was bought by the Loening Company in 1928, which was bought by the Curtiss-Wright Corporation in 1931.

And the Huff-Daland Dusters subsidiary? It became a founding component of Delta Air Lines!

### **The Caterpillar Club**

Harris and Macready share a then-rare distinction that I have neglected to mention until now. They both were saved from death in an aircraft accident through the use of a parachute.

Harris was first. And I mean THE first. On October 20, 1922, Harris was testing an aileron design for a Loening PW-2A monoplane. The aileron malfunctioned so severely that the aircraft was doomed. A crash was certain, so in desperation Harris “hit the silk.” He landed safely, and his only injury of note was a banged-up stick hand, hurt by the aileron-induced vibration.

Parachutes had saved people before; chutes stored in cylinders in their gondola saved several balloon-based observers in WWI. But this was the first “official” time that a pilot had escaped

death in a disabled airplane by “bailing out” and using a parachute that they wore, rather than by one stored elsewhere in their craft.

Leslie Irvin of the Irvin Airchute Company of Canada is credited with inventing the first free-fall parachute (unlike the balloon versions used five years previously). As a marketing gimmick, he created an informal group he called the “Caterpillar Club,” with members being those people whose lives had been saved by parachutes. The “Club” continues to this day!

Irvin’s Club had a double link to caterpillars, hence its name. The first is that the material used to make parachutes at this time was silk, made from the cocoon material of the silk worm (caterpillar). The second came from the use of chutes by balloon observers, who likened their escape to a caterpillar or raising itself by the use of a silken thread.

Harris became a charter member of the Caterpillar Club. Macready would follow soon thereafter. He made the very first night-time aerial escape via parachute from a soon-to-crash plane. On June 13, 1924, Macready was making a loop flight, from Dayton to Columbus and back. His aircraft’s engine failed while on approach back at Dayton. He had flares aboard; their light would help him see his altitude as he neared McCook. But the flares were duds, and he had no choice but to follow Harris et al.’s footsteps and “hit the silk.” He reached the ground unhurt, but had to get help to extract himself from his landing tree.

I have to believe that both Macready and Harris were quite aware of the irony of their situation. They had created an entire industry devoted to the annihilation of caterpillars and other agricultural pests, waging aerial chemical warfare against them. Yet both owed their very lives to the cocoon-spinning prowess of the silk moth caterpillar!

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