



Montgomery glider, without butterfly wheel control, in flight at Evergreen, California in October 1911. (Author's photo)

The Last Flight of John Joseph Montgomery

By MARTIN COLE

A proper length stovebolt would have saved the life of pioneer aviator John Joseph Montgomery. By a quirk of fate the fatal mishap occurred moments after a breakthrough in aeronautical development. The date aviation history was interrupted was October 31, 1911. The place was Evergreen, California.

Professor Montgomery was fifty-three years of age when he came to Evergreen for 12 days of flight experiments. At nearby Santa Clara College, Santa Clara, where he taught physical sciences, he had built a glider of promising design. Assisting in the construction were mechanics J. C. Vierra and Cornelius Reinhardt. On Ramonda's isolated ranch, where the slopes are gentle and breezes generally consistent, he would camp with his wife and two mechanics and hopefully prove in a series of flights that his latest theories were basically sound.

In the days of crackpot inventors and weird designs, Professor Montgomery had worked in various scientific

fields and made substantial contributions. He was born at Yuba City, California, February 15, 1858. While attending St. Ignatius College, San Francisco, he had the good fortune to work with Father Neri, the Jesuit scientist who was involved in the emerging field of electricity. After the Franco-Prussian War, the famous "Alliance Machine", used to furnish light in the defense of Paris, was sent to San Francisco. Father Neri, with the help of student John Montgomery, vastly improved the machine.

Following John's graduation, the Montgomery family moved from Oakland to an 80-acre ranch in the Otay Valley south of San Diego. John managed the ranch while his father, Zachary Montgomery, practiced law in San Diego--later, the senior Montgomery became assistant attorney general in President Cleveland's administration. Aside from John's ranch duties, he was active in scientific investigations. He reproduced the "Alliance Machine", adding his personal touches and gave the world the first modern dynamo of great power. Unfortunately,

young Montgomery did not patent this early accomplishment. However, later, he patented other electrical devices of his own design, including the rectifier for changing electricity from an alternating to a direct current. (1)

Aside from his interest in electricity, the boy rancher turned his attentions to flights of birds, hopeful that he might unlock the secrets of flight. It was this close study combined with crude experiments that eventually prompted a theory involved in all subsequent heavier-than-air flights:

"A properly-curved wing gets lift from pressure beneath but more lift from suction at the top." (2)

Mindful of the curved wing theory, John Montgomery constructed a glider and successfully flew at Otay Mesa in 1884. It was man's first flight! (3) It occurred 20 years before the Wright Brothers' powered flight at Kitty Hawk. In the chronology of history, flying's pale beginning was at a time the 7th U. S. Cavalry was vigorously chasing Indians on the Western plains.

Following the Otay Mesa flight, John Montgomery left the ranch to become a Professor of Applied Sciences at Mount St. Joseph College, Humboldt County, California, and later came to hold a similar chair at Santa Clara College. From his inventive mind came a gold separating machine, and a telautograph--the parent of the teletype. But, more importantly, he continued his investigations in aviation.

On April 22, 1905, before a large crowd at Santa Clara College, a Montgomery glider dropped from a balloon made the first controlled flight in history! (4) And so with this background of scientific accomplishment, the 53-year-old Professor came to the Evergreen hills with camping equipment, a soaring machine and a mobile shop that would be indispensable for field operations. The purposeful outing was the culmination of many workshop hours of studying wing models in a wind tunnel.

Shortly before the death of Cornelius Reinhardt, the Rev. Father Arthur Spearman, S. J., University of Santa Clara, interviewed the aged mechanic and set down his recollections. Regarding the workshop study he said:

"The remarkable thing which we always observed was that flour dust blowing over the front edge of the curved wing surfaces did not merely deflect a little and pass on, but always curled downward under the back edge of the wing surface and curled upward against the under surface of the wing to lift it.

"It is also worth recalling here that I built a small merry-go-round about 10 feet in diameter, on a center pole or pipe, with washer bearings and an electric motor to whirl it fast, so that Montgomery could do two things: the one to place the model gliders on the rim in such a way as to indicate the lifting power of each different wing curvature as it whirled around; the second purpose was in connection with Montgomery's study of propeller blades, with a view to later mechanical power flight. In this case we would set an electric motor on the merry-go-round arm with each different model of propeller blade pitch so as to see which one pulled the best in proportion to pitch and shape." (5)

Professor Montgomery's soaring creation was a high-wing monoplane, with an undercarriage of four baby buggy wheels. The ribs of the wing were movable, each adjustable for its own experimental curvature. Thus, different curvatures could be tested for lifting power. In the interest of making quick changes to various curvatures, the wing structure was bolted to the framework with 24 stovebolts. The $\frac{1}{4}$ inch by 3 inch bolts were longer than needed and protruded hazardously about Montgomery's head. Reinhardt insisted that the unnecessary lengths be cut off, but Montgomery declined: "No, we may need them as they are", he said. (6)

Concerning the glider site and arrangements, John Ramonda has written for the author's files: "When Mr. Montgomery asked permission to fly for twelve days on my father's land, you should have seen the expression

on Dad's face.... Montgomery was given consent to fly all he wanted to. Mr. Montgomery was very cautious in selecting the proper site to fly his glider, a hill on either side with a large hollow in between." (7)

At the glider site Professor Montgomery and crew constructed a wooden-rail runway on the slope for take-off. Of this Frances Ramonda Casissa wrote the author: "They had installed tracks on the top of the west side hill and would push the plane to the top and set it for flight and then glide to the little valley below." (8)

John Montgomery had a no-nonsense manner about him, even to his most intimate acquaintances, so characteristically, he plunged wholeheartedly into trial and error experimentation, beginning, of course, with his basic theories. Because of the isolation, few witnessed the glider flights other than children of neighbors. The mobile workshop was set up in a tent, and here the glider spent much time between flights, Montgomery directing changes in the interest of acquiring greater lift. With the changes came longer flights, from short ones to the foot of the hill to flights that eventually stretched far down the valley. At first it was not clear in the minds of Vierra and Reinhardt what Montgomery was attempting to ultimately accomplish, for in his close-mouthed way the Professor refrained from speculating aloud that he might achieve a wing with sufficient lift to sustain flight. Today we call such a glider a sailplane.

Perhaps one reason the Professor remained close-mouthed was that his mind dwelt so far into the future that his beliefs were considered downright idiotic. Picture, if you will, an era when the horse and buggy dominated the transportation scene and someone proclaiming, as Montgomery told Mr. Ramonda, that some day flying machines would be flying through the air as numerous as birds. (9)

Flights and workshop changes succeeded each other as the days sped by. Each sunrise brought forth another day of hopeful promise. With each new flight something surprising was learned in the way of performance. But Cornelius Reinhardt was troubled, nevertheless. He was troubled because his boss was a stubborn man. John Montgomery was a man in a hurry, time was short, and the Professor was impatient with time. With the changes of wing design came changes in the controls. At first the glider used a butterfly wheel control, but in haste, Montgomery abandoned that for a slipshot affair that bothered Reinhardt:

"He controlled certain phases of wing curvature and tail rudder with his feet, others with his hands raised to right and left above him, and one elevation control was by a strap around his waist attached to a stick behind him.

"I kept telling Montgomery he must get away from these makeshift arrangements. I was a master mechanic from Germany and he only had to tell me what he wanted in the way of controls and I could have made any arrangements necessary." (10)

At the end of 12 days, Montgomery's optimism was riding high. He was close to the ideal wing he believed in, and with one more day he felt he would prove his assumptions. Accordingly, he asked Mr. Ramonda for another day's stay which was granted. For this final day, there would be a drastic change in the wing design. Four inches were clipped from the leading edge, and the trailing edge was greatly lengthened. This was time-consuming work, and consequently there was no opportunity to improve the controls.

Late in the day, when the final wing changes were completed and the wing bolted to the framework with overlength stovebolts, the glider was rolled to the top of the hill. Cornelius Reinhardt recalled what happened next to Father Spearman:

"Montgomery glided down off the runway into the wind and rose and circled above the tent where his wife, three quarters of a mile away, was watching him from our supply and repair tent. He then turned around in the air

with the wind and rose beautifully as a seagull, directing his flight by means of his makeshift but workable controls, up and back to land on the ridge from where he had started." (11)

Before the glider rolled to a stop, it was seen that Montgomery's face was wreathed in smiles. All expressions revealed he was thrilled with the accomplishment. For the first time in aviation's short history, a glider had sustained flight on rising air thermals sufficiently to return to its starting position. Cornelius Reinhardt rushed forward with a camera to record the happy smiles on Montgomery's face, but the Professor waved him off.

"Wait until I make one more flight," he said, "I want to try something special." (12)

Quickly the glider was placed on the launching runway. Montgomery took his seat within, and a gentle push was given the glider. Again we return to Reinhardt's recollections:

"As the glider rolled swiftly down the runway, Montgomery pulled his elevator controls apparently too sharply. The glider suddenly rose up in the air at a sixty degree angle. I saw Montgomery was startled, seemingly afraid that the glider would flop backwards. He pulled himself up in the framework, trying to change the controls, but the glider slipped sideways and threw the back of his head against the projecting end of one of the stovebolts. The glider had only gone a few feet above the runway rails when it slipped sideways. The weight of his body, now hanging by his hands from the bamboo struts, broke one of them as the wing tip struck the ground. I was with him in a moment and he said to me, 'What is happening, what's wrong? How is the machine?' And I answered, 'How are you?' His cap had fallen off and I lifted the machine away from him, leaving it upside down. I knelt beside him and saw the small hole just above and back a little from the ear.



Trailing edge of the original wing of the Evergreen glider, showing last day splice that resulted in sustained flight.

The bolt must have penetrated about half an inch." (13)

The frantic Vierra and Reinhardt carried Montgomery down the hill to his wife, now grief stricken. Within the tent they placed him on a canvas cot. Dr. J. I. Beattie of Santa Clara was summoned, and for two hours Montgomery lingered. He died just before the arrival of Dr. Beattie. (14)

Adding to the recollections of that fateful day, John Ramonda wrote, "It was a sorrowful sight when Mr. Montgomery was taken out in an ambulance. Later they hauled out the glider all broken and smashed. For a long time I had one of the wheels off the glider. It was also smashed." (15)

Today, portions of the glider may be viewed at the San Diego Aerospace Museum. On display are other remains of Montgomery's various gliders. Dominating the exhibit is a full scale replica of the Evergreen glider. Those who know the story of John Joseph Montgomery's death will likely pause and ponder the quirk of fate that interrupted aviation history--one overlength stovebolt.

FOOTNOTES:

- (1) Anon.: "John Joseph Montgomery," The National Cyclopaedia of American Biography. James T. White Co., New York. Vol XV, pp 338-339.
- (2) Montgomery, J. J.: "Discussion On The Various Papers On Soaring Flight," Proceedings of the International Conference On Aerial Navigation, Chicago, 1893, pp 223-226.
- (3) Chanute, Octave: "Progress In Flying Machines," American Engineer and Railroad Journal, 1894, pp 247-249.
- (4) Scrapbook of newspaper and magazine clippings collected by the Montgomery family and presented to the library of the University of Santa Clara, Santa Clara, California.
- (5) From the files of Rev. Father Arthur J. Spearman, S. J., University of Santa Clara, Santa Clara, Calif.
- (6) Ibid.
- (7) From the files of Martin Cole, Whittier, California.
- (8) Ibid.
- (9) Ibid.
- (10) From the files of Rev. Father Arthur J. Spearman, S. J., University of Santa Clara, Santa Clara, Calif.
- (11) Ibid.
- (12) Ibid.
- (13) Ibid.
- (14) Oakland Tribune, Oakland, California, November 1, 1911.
- (15) From the files of Martin Cole, Whittier, Calif.

ABOUT THE AUTHOR: Martin Cole, of 6003 Pioneer Blvd, Whittier, California 90606, has had a life-long interest in aviation. Back in 1929 he traded a Model T for flying instruction in an OX5 Swallow, and this early flying was a catalyst that prompted his younger brothers to fly. Their Cole Brothers Air Show was active on the U. S. scene for seventeen years. Martin Cole has spent many years seeking out and researching little-known sidelights of American history. In his words, "I spent nine years as a commissioned officer in the Army; various assignments in the Army gave opportunity to search out the trail of the U. S. Army Camel Corps, the story of the great chase of The General locomotive, the building (by mistake) of a U. S. fort on Canadian soil, the supposed Chinese War with an invasion of junks on California, the flights of John Joseph Montgomery, and other unique historical happenings." In all, this was an avocation that eventually led Martin to the vocation of historian for the State of California, and he's presently curator of the Pio Pico State Historical Monument in Whittier. Looking forward now to early retirement, so that he might devote full time to his writing, he is married and his son, Alan, is an instructor of physics at Whittier College.