GALBREATH CHARLES BURLEIGH

STORY OF THE AEROPLANE

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Содержание

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The Ocean of Air

Around the dry land of the earth are the oceans of water. We may never have seen them, but we have knowledge of them and their navigation, and their names suggest very definite and concrete objects of thought. We sometimes do not realize, however, that we live and move and have our being at the bottom of a vaster and deeper ocean that covers to a depth of many miles the whole earth, and to the surface of which man nor beast nor bird has ever ascended; an ocean with currents and whirlpools and waves of more than mountain height; an ocean in which we are as much at home as are the finny tribes and the monsters of the deep in their watery caverns. This is the ocean of the air. We are about to consider man's efforts to rise from the bottom of this ocean and wing his flight a little way through the atmosphere above him. His excursions upward are limited, for he could not live near the surface heights of this ocean, vast and deep and boundless. The art and science of his flight through the air, because of its relation to the flight of birds, we call aviation. (*Avis*: Latin, a bird.)

Early Attempts at Aviation

"The birds can fly and why can't I?"

This query of Darius Green's, in various forms, has suggested itself to man since the dawn of history. Born with an inspiration to look upward and aspire, the navigation of the air has appealed with peculiar force to his imagination and through the centuries has at different times led bold and adventurous spirits to attempt what the world long regarded as impossible. The heavens seemed reserved for winged insects, birds and angels. Audacious man might not venture out upon the impalpable air. Can man fly? After more than four thousand years it was left for man to answer yes, to rise from the earth on wing and thrill the world "with the audacity of his design and the miracle of its execution." Bold enterprise! Fitting achievement to usher in a new century! A seeming miracle at first, but destined soon to excite no more curiosity than the flight of bees and birds. The solution of the problem of human flight was no miracle nor was it the swift work of genius accomplished at a magic master stroke. It was the result of intelligence and industry patiently applied for years till the barriers of difficulty gave way and man ventured out with assurance on the highways of the air.

Just when he first attempted to fly is not known. Ancient Greek mythology abounds in stories of flying gods and mortals. Kites which bear some relation to the aeroplane were toys among the Chinese thousands of years ago. A Greek by the name of Achytes is reported to have made a wooden dove which flew under the propelling power of heated air. Baldad, a tribal king in what is now England, so tradition has it, attempted to fly over a city but fell and broke a leg. A similar accident is said to have happened to a Benedictine monk in the eleventh century and to others attempting like exploits in after years. A fall and a broken leg seem to have been the usual results of these early attempts at aerial flight.

In the fifteenth century students and inventors gave serious attention to the navigation of the air and trustworthy accounts of their labors come down to us. Jean Baptiste Dante, a brother of the great Italian poet, made a number of gliding flights from high elevations and while giving an exhibition at a marriage feast in Perugia, like his predecessors in the middle ages, alighted on a roof and broke a leg. Leonardo da Vinci, the great painter and sculptor, was an amateur aviator of no mean attainment for his day. He invented a machine which the operator was to fly by using his arms and legs to set wings into flapping motion, like those of birds. This was called an orthopter, or ornithopter, a name which may be properly applied to any similar device. Another machine invented by him was in the form of a horizontal screw ninety-six feet in diameter. By the twisting of this the machine was designed to fly upward. This was called a helicopter. Da Vinci's third invention in this line was the parachute, with which successful descents were made from towers and other elevations. In the early half of the eighteenth century the Swedish philosopher, Emanuel Swedenborg, sketched in one of his works a flying machine of the orthopter style which he knew would not fly but which he suggested as a start, saying "It seems easier to talk of such a machine than to put it into actuality, for it requires greater force and less weight than exists in the human body."

In 1742 the Marquis di Bacqueville at the age of sixty-two attempted to make a gliding flight from the tower of his home in Paris across the river Seine to the gardens of the Tuileries, started successfully in the presence of a great multitude, but suddenly halted over the river and fell into a boat, paying the historic penalty of a broken leg.

At this point it may be well to classify the flying devices thus far considered.

Early Flying Machines

1. The *orthopters*, or as they are less commonly called, the ornithopters. The word “orthopter” means straight wing and the word “ornithopter” bird wing. This class of machines includes those designed to fly by the flapping of wings, somewhat in imitation of birds.

2. The *helicopters*. The word “helicopter” means spiral wing. Flying machines of this class are designed to fly by the rapid horizontal rotation of two spiral propellers moving in opposite directions but so shaped that their combined effect is to move the machine upward. They are like a pair of tractor propellers of the modern aeroplane but arranged horizontally to lift the machine instead of drawing it forward in a vertical position.

3. The *gliders*. As the name suggests, these were designed to coast or glide down the air, to start from a high elevation and by sailing through the air in an oblique direction reach a lower elevation at some distance from the starting point. Down to the latter part of the nineteenth century only the gliders were successfully used in man flight. In reality they can scarcely be called flying machines for they could not lift their own weight, though late experiments prove that when once in air they may rise above their starting point under the influence of a strong wind. The glider, however, performed a most important part in the evolution of the aeroplane. In coasting the air from hills, sand dunes and towers against steady wind currents a number of inventors through a series of years learned how to guide and control these gliders in their downward flight-an essential preparation for the application of motive power to lift the glider against the force of gravity and thus make it a veritable flying machine or aeroplane.

Nineteenth Century Experiments

In the early part of the last century an Englishman, Sir George Cayley, made many experiments with gliders and tabulated with great care the results of his investigations. He concluded, like Swedenborg, that man has not the power to fly by his own strength through any wing-flapping device, or orthopter, but he intimated that with a lighter and more powerful engine than had then been invented a plane like those used in his gliders, if slightly inclined upward, might be made gradually to ascend through the air. The results of his experiments he published in 1810. They clearly foreshadowed the triumph that came almost a century later.

In 1844 two British inventors, Henson and String-fellow, working out the suggestions of Cayley, made an aeroplane model equipped with a steam engine which is said to have made a flight of forty yards-the first real upward flight of a heavier than air machine on record. This model was a monoplane, that is, the lifting surface was a single plane like the outstretched wings of a bird. Twenty-two years later experiments were made with a biplane, that is, an aeroplane with two lifting planes or surfaces, one above the other.

Claims of Maxim and Ader

While others had made flying models, Sir Hiram Maxim in England constructed a multiplane, driven by a powerful steam engine over a track and rising at one time, as he declares, a few inches from the ground. He claims that his was the first machine to “lift man off the ground by its own power.” This test was made in 1889.

Clement Ader, a Frenchman, also claims this honor, saying that he was the first to make a machine that would rise and lift a passenger. On October 9, 1890, his friends say he made a short forward flight of 150 feet in a monoplane propelled by a forty horse power steam engine. In 1897 he claims to have made a number of secret flights, but a little later, in a test before officers of the French army who had become interested in the invention, the machine turned over and was wrecked. The support of the army for further experiments was withdrawn and Ader in despair abandoned the problem of aerial navigation which had claimed long years of study and unremitting effort. He stopped just short of the goal “with success almost within his grasp.”

Langley's Tandem Monoplane

About this time two Americans, Samuel Pierpont Langley, of the Smithsonian Institution and Octave Chanute were conducting along scientific lines a series of experiments in aviation. On May 6, 1896, a steam-propelled model was started in a flight over the Potomac River. Dr. Alexander Graham Bell, the inventor of the telephone, who was present, declared that after a flight of eighty to one hundred feet the machine "settled down so softly that it touched the water without the least shock and was in fact immediately ready for a second trial." Other experiments were tried with success.

Langley's first machine was a tandem monoplane, that is it had two pairs of wings, one immediately following the other. The engine and the propellers were between the two pairs of wings. In later models he used the biplane construction.

Finally the United States government appropriated $50,000 to build a machine that would carry a passenger. In constructing this, Langley equipped it with a gasoline engine of about three horse power. The machine was comparatively light, weighing all told only fifty-eight pounds. On August 8, 1903, a public test was made "without a pilot," on the Potomac River near Washington. Spectators and reporters congratulated the inventor on the success of the experiment, while he with modest satisfaction said, "This is the first time in history, so far as I know, that a successful flight of a mechanically sustained flying machine has been made in public." This statement was no doubt true of machines of any considerable size, but as we shall presently see, toy flying machines of the *helicopter* type had long ere this been exhibited to the wondering gaze of boys who were ultimately to bring to a practical conclusion man's long line of effort to rise triumphant and shape his course through the ocean of air.

Langley's machine had flown without a pilot. A little later the inventor announced himself ready for the final test. Like his first model, his machine was a tandem monoplane. Its weight with pilot was 830 pounds and its plane or wing surface was 1040 square feet. It was fifty-two feet long and its arched wings measured forty-eight feet from tip to tip. The gasoline motor with which it was equipped developed fifty-two horse power and with all accessories weighed about 250 pounds.

At Widewater, Virginia, September 7, 1903, the machine was tested. On a barge it was carried out into the Potomac River, with Charles M. Manley, Professor Langley's assistant, who was to pilot it in its first flight. The moment for the supreme test arrived. A mechanical device on the barge shot the machine and pilot into the air. To the disappointment and dismay of the spectators, the machine plunged front downward into the water. It was rescued with the young pilot unharmed. Another attempt was made to launch it in the air with a similar result, except that this time it dropped into the water rear end downward. The government gave the project no further encouragement, and the query ascribed to Darius Green remained unanswered. Professor Langley died a few years afterward, his life shortened, it is believed, through the blighting of the hope that he had long entertained to be the first successfully to navigate the air.

Конец ознакомительного фрагмента.