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Our ancient man could not remain aloof with the amazement of the miracle of the birds taking to the sky and was deeply passionate to put the wings on his arms and take on to the sky of his dreams. Leonardo Da Vinci once asserted, “ A bird is an instrument working according to a mathematical law. It lies within the power of man to make this instrument with all its motions”. (Kemp, 2005). This led to his invention of Ornithopter flying machine in 1485 to turn the man’s dreams into reality; this invention later gave us helicopter. He undertook many scientific studies about the various aspects of flight mechanism and produced his thoughts in his 100 drawings illustrating theories on the mechanism that lay behind flights. (Flying Machines, Online)

In 1783, Jacques Montgolfier brothers invented the first hot air balloon and put on board sheep, rooster and duck as first passengers in this flight. The balloon flew at the height of 6, 000 feet and traveled more than one mile. Same year on November 21, brothers Pilatre de Rozier and Francois Laurent turned their dreams into reality when they sat in hot air balloons, which flew for 9 km over Paris. (The History of the Discovery of the First Flying Machine, Online) However, there was problem with balloons as winds instead of men were giving direction to the planes.

With the passage of time, more research went underway into the concept of flying and soon we saw glider taking on into the air. It was a flying machine running without motors and was a great improvement over the hot air balloon.

But, the father of Aviation was Sir George Cayley who in 1799 undertook experiments with the designs of the wings articulating the various concepts of vertical tail surfaces, steering rudders, rear elevators, and airscrews. Eighteenth century was the tenure of the industrial revolution with several inventions and changing life styles still scientists were pondering on the concept of the propulsion systems. George Cayley achievements was a proven fact that he was the first one who in a true sense could understand the fundamentals behind working of the airplanes that no body had ever before understood yet for quite a long time his achievements were not recognized till the day Lilienthal, Lanchester and the Wright Brothers began their overtures. George Cayley gave his briefings “ On Ariel Navigation” based on fixed wing aircraft with a power system for propulsion. He made it clear that a tail could help to control the flight of airplane. (Rumerman, Online)

During 1843, William S. Henson initiated plans to design a model plane, but this experiment was a failure. And again, when his friend John Stingfellow attempted to create a plane with the same model, he achieved success. The plane was able to take a flight, but was not able to keep on in the air for long. (History of Airplanes, Online)

In the late nineteenth century, Otto Lilienthal began experiments on the soaring machines and hang gliders. He was a civil engineer but was popular as a glider king. He was considered be a first person to take on successful gliding flights. He made two contributions in the area of the hang gliders. First, he showed by word and example that mastery of flight should be first accomplished in gliders. Then, he provided particular inspiration to the Wright brothers, both through his successes and his failures. The Lilienthal writings greatly inspired Wright brothers. (Bradshaw, 2002)

Then on 17 December 1903 on Kill Devil hills at four miles South of Kitty hall, North Carolina, Orville and Wilbur Wright made their first flight in their own invented machine. In Orville Wright’s own words, “ This flight was the first in the history of the world in which a machine carrying a man had raised itself by its own power into the air in full flight, had sailed forward without reduction of speed, and had finally landed at a point as high as that of which it started.” (Kelly, 1989, p. 100) Wright brothers realized the dreams of man to beat the birds and capture the sky.

In the United Kingdom, Samuel Franklin Cody undertook the first flight in 1908. (Research Machines 2008) In 1912, Sopwith and Bristol both had given the world small biplanes and it was only in 1917 the first airplane with two engines, Handley Page bomber became active with the efforts of chief engineer, Frederick Handley Page. The World War I (1914–18) stimulus and the invention of the petrol engine increased the speed of the planes to 20 kph/200 mph and more importance was given to streamline its body. The body, wings, and other parts were given new shape to minimize drag.  (Research Machines, 2008)

German Heinkel was the first person to design the Jet plane in 1939. Instead of propeller, hot gases were used in the plane. The first Jet plane came into appearance during World War II when the jet engine as means of propulsion gave birth to new questions and riddles for the aircraft designers to solve entirely different and new degrees of stress and new forces which earlier planes with propellers did not intend especially sound barrier. (Guttman, 1998) For putting new features into practice, there was need to perceive and redesign the plane.

In 1950, Comet, the first jet airliner was introduced. Though American planes such as Lockheed Constellation, the Doughlas Aircraft DC6 and the Boeing Stratocruiser were widely in use and were running with the help of priston engines the Comet had different features. Many were thinking that Jet planes would not run successfully as commercial plane as fuel consumption of Jets is more but as the Comet flew, it was a great success, and took the flight at the height of 35, 000 feet. It took only twelve hours from New York to London instead of eighteen hours. The Comet used four engines inside its wings but as expected, it did not give satisfying results. Investigations revealed that its design had certain flaw known as metal fatigue. It was said that the continuous stress of re-pressurization would make an area weak of the fuselage near the plane’s square shaped windows. The exterior portion of the plane’s skin was very thin and that would become so stressed that cabin air under very high pressure would burst even if there was a slightest fracture, tearing a large slice in the aircraft’s wall. (Erudition, 2004) All comets were put on ground yet again when it came into service in 1958 its reputation was lost. Airlines then put into service Boeing 707 and the Douglas DC 8. (Erudition, 2004)

The Concorde in 1962 was the most important achievement in the area of design and engineering. The designs needed to be altered to give its desired speed. Various issues had to be addressed, the most important of which was heat from friction, the temperature of which could reach 250 degrees Fahrenheit. Aluminum alloy was put that would not only act as a protective cover against the heat but could also protect the frame from sudden expansion when the plane would be traveling at twice the speed of the sound. There were four engines to give 150, 000 pounds of thrust to attain such a velocity. (Erudition, 2004)

During the years, 1950 and 1960 several studies were conducted on V/STOL (vertical and/or short takeoff and landing) aircraft. The fine example of this is British Harrier Jet fighter but in later aircrafts STOL technology was used. (Research Machines, 2008)

To make the planes run at small runway, modifications were also made on the earlier adopted methods like the vertical takeoff and landing (VTOL) method that could create a craft that would take off and land like helicopters do. The other method is short takeoff and landing (STOL) that would design aircrafts, which could again lead to minimize to the maximum extent the equipments required on runaways. Such types of planes could stretch its wings according to the space at the runaway while lifting off and landing and then could be pushed back while running at greatest speed. (The Columbia Electronic Encyclopedia, 2007)

During 1960 and 1970s, swing-wing aircrafts were put into use, whose wings could be whizzed back to attain greater speed. By 1980, another scientific development into the aircraft was made: it was fly-by-wire aircraft with “ computer-aided-controls.” (Research Machines, 2008) Both civilian and military aircrafts were designed using this technology. The best example is the airbus. It is an airliner with wide body. It was built in a joint collaboration of France, German, UK, Netherlands, and Spain. In 1989, the B-2 bomber was much more technologically advanced-brainwork of the United States Air Force. The front edges of its wings were of 33° angle and the behind edges of the wings were of double-W shape. The plane was manufactured at the Northrop Grumman facilities in Pico Rivera and Palmdale in California. (Air-force technology. com, 2008) The 21 B-2s planes were given to the Whiteman Air Force Base in Missouri in 1993 and maintained the success rate of 90 per cent as assessed by USAF, and they found that the two B-2s could complete the job as against same job completed by 75 conventional aircrafts. (Air-force technology. com, 2008)

Subsequently in the planes, wings were made short and swept back so that they could be dragged at a lesser rate especially at great speeds. In several cases, these backswept wings have emerged to form a triangle in shape called as delta wing that could be put together by the fuselage of the plane. Numerous other alterations have also been made in all sides of the tail only with an aim to reduce the drag plane has to do.

The latest aircraft models used in airplane carriers have among all additional features like liftoff and landing systems requiring short runaways. They need such capabilities to give direction to the total thrust of the jet engine in a downward motion during the time plane is lifting off and landing. Now people are also the owner of private planes for their personal use and they are of special types like that of Alarus CH2000, which is FAA Certified Aircraft. The plane is very simple, yet sophisticated with high technology features. It has a big, avionics, and minimum fuel requirements. It is made of metal with a structure that constitutes semi-monocoque stressed skin construction having internal ribs, longerons, and bulkheads distribute the loads. It could be easy to repair and is one of the best training aircraft. (Zenair, 2008)

Still innovations are going on to facilitate the safer take offs and landings and also make journey for passengers pleasurable and more comfortable. Besides, scientific inventions are underway to reduce the noise and air pollution. (The Columbia Electronic Encyclopedia, 2007)

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