

The Wright Brothers Study Guide

The Wright Brothers by David McCullough

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Summary

The Wright Brothers by David McCullough is a biography of the brothers who invented the first functioning flying machine. While the book touches on the personal life of the brothers and their family, the focus on the book is on the ten-year pursuit by the Wright Brothers of developing the airplane.

The brothers are both around thirty and still living in the family home when an interest in aeronautics that always existed among them began to really take flight. While Wilbur was raised to consider his slightly younger brother, Orville, as the boss, it was Wilbur's visionary nature and curiosity that set the brothers on a course that would change history forever and in a manner so momentous that they actually created a new age for mankind – the age of aviation. The results of their dedication, intelligence and perseverance are obvious in modern times. Their invention changed the world forever.

Wilbur was very bright and planned on attending college. Due to a horrible accident, he was laid up for a lengthy period and was unable to begin his university career. The accident was part of the brothers' destiny because it left the energetic and imaginative Wilbur idle with nothing but time on his hands. He and Orville had always been interested in aviation and led by younger brother Wilbur they began doing research on gliders that had been developed in the past and "flying machines" that had been built and failed. Wilbur was also fascinated with the flight of birds and observed birds in flight for hours at a time. He would later apply that knowledge to the warped wing that helped make their Wright Flyer successful.

After successful ventures in running a print shop, publishing a newspaper and operating a bike shop, the brothers developed a glider. They conducted research to find the location with optimum conditions for the testing of their aircraft. They learned that Kitty Hawk, North Carolina, would be ideal with its high prevailing winds and its soft sandy dunes that would accommodate soft landings. It was there in Kitty Hawk that the brothers did their first test runs which included taking turns in the piloting of the glider. With each test run, they learned more and more and continually made improvements and adjustments to their glider. The next step was adding a light-weight motor to the craft which would turn the glider into a flying machine.

After developing the Wright Flyer, Wilbur and Orville contacted the U.S. War Department which apparently wasn't interested because they didn't even respond to their letter. The brothers were patriotic and wanted to sell their invention to their own country. The public and media dismissed their efforts with the fundamental belief that man wasn't meant to fly. The Wright brothers found the true believers in France which was the home to many early aviators and aeronautics engineers and enthusiasts. The Wright brothers shipped their flying machine over to France and conducted trial runs in Le Mans that initially were at low altitudes, lasted only minutes and covered only feet and yards. Ultimately new altitudes were attained in flights that lasted for hours and covered many miles. The French declared them heroes and the world was soon enthralled with the accomplishments of the Wright Brothers.

Although a little late, the United States finally got on the bandwagon. In the year that the brothers spent in Europe, they amassed more than \$200,000 in awards and sales. The skeptics who doubted the viability of the Wright brothers' achievement were in the end silenced forever.



Part I, Section 1

Summary

In 1909, Wilbur Wright was 42 and Orville Wright was 48 and they were at the top of their career. They appeared to be ordinary men but they had changed the world forever. The two men were close. They lived together, worked together and even had a joint bank account. Their minds worked alike similar to that of twins. Their voices and handwriting were alike. Wilbur was two inches taller and Orville was always better dressed. They both loved music; Wilbur played the guitar and Orville the mandolin. Working hard like their father and sister Katharine was a family trait. They were equals but Orville, four years older than Wilbur, was the big brother or senior partner of the duo. The brothers lived at their family home with their father, Milton, who was an evangelist, and their younger sister, Katharine.

The family home was on Hawthorn Street in a modest part of Dayton, Ohio. The compact two-story house was on a small lot. The brothers were in their twenties before there was running water or plumbing. The house was near the Dayton Western and Union Railroad so there was the sound of train whistles throughout the night. The family had a large collection of books. Bishop Wright put more emphasis on informal rather than formal education and was unconcerned about his children's attendance at school. He encouraged his children to take advantage of the vast reading choices in his personal library.

After running a successful print shop and publishing a local newspaper called, the brothers became interested in bicycles which had become a craze. The sport was considered healthy and the bicycle was considered one of the greatest inventions of the 19th century. Others believed that bikes kept kids from doing their homework and took them to far away from the safety of their home. But these concerns died away and bicycling remained a growing trend. The brothers opened the Wright Cycle Exchange in 1893 near the family home. They kept busy between running the bike shop and renovating the family home.

Bishop Wright fretted about health and safety and was concerned that contaminated water because it caused typhoid fever. Orville contracted typhoid in the summer of 1896. He had a high fever and became delirious. He almost died but recovered after a month. During Orville's illness, Wilbur began reading about a glider invented by German Otto Lilienthal. Wilbur became obsessed with reading books about the flight of birds. Wilbur passed on his reading to Orville who pored over the books with great interest, too. All the while the bicycle shop was still operating. The family home and bicycle shop narrowly escaped destruction during a dangerous flood in 1898. The automobile was beginning to surface on the streets of Dayton. Orville wanted to try to build an auto but Wilbur's mind wasn't on the ground.



In response to a letter that Wilbur wrote to the Smithsonian Institute – the most important letter of his life – the institute provided him with pamphlets on aviation and sent him a list of books about flight. He particularly was taken with the writings of Octave Chanute a French-American civil engineer who had developed a series of gliders. He also read with great interest the works of Samuel Pierpont Langley, a celebrated astronomer and official at the Smithsonian. Langley had developed a steam-powered “aerodrome,” a vehicle with V-shaped wings which flew from a rooftop for a half-mile then crashed. He read the works of other scientists and inventors including Alexander Graham Bell and Thomas Edison.

There were a lot of contraptions made throughout the 19th century of all description. The Wright brothers did not want to appear as cranks or be ridiculed for their efforts to create a flying machine. But it was a risk they took because of all the failures that had gone before them. The San Francisco Chronicle had described these would-be inventors as imbeciles. A huge, fishlike machine called the “aerostat” that failed convinced the Washington Post that man can’t fly. A comic poem about a farm boy leaping off his barn in his invention gained huge popularity.

Despite all the failures and ridicule about human flight, the brothers were undaunted. Neither brother had a college education, any technical training or experience in the field and no influential person or big money behind them. They also were aware that they could lose their lives when testing their invention. It was the age of invention. The bicycle and car had just recently been invented along with the Kodak camera, electric sewing machine, the elevator, safety razor and mousetrap. They were in the heart of American invention. Dayton had received more U.S. patents than any other area in the nation.

Orville and Wilbur decided to build their own glider-kit basing its design on the vast material they had read and studied. They had learned about lift, pitch, roll, yaw and equilibrium – all important elements of flight. Wilbur had observed how birds regained equilibrium after lift and that balance was attained by relying on “dynamic reactions of the air instead of shifting weight.” Wilbur designed a prototype of a wing from a cardboard box that could present different angles to the air at different elevations. No one knew it at the time but with that cardboard prototype he had made a great advance toward human flight.

In 1899 the brothers built a flying kit made of bamboo and paper that had wings with a span of five feet. A test of the kite proved that they were on the right track. Carrie Kayler, a 14-year-old, was hired to help around the house. She was part of the family for the next fifty years. Wilbur wrote to Octave Chanute asking him where the best location was to test out their gliders. Chanute replied that California and Florida were the most temperate but didn’t have areas for soft landings. South Carolina and Georgia were also candidates for the testing. Wilbur contacted the U.S. Weather Bureau where the strongest winds in the nation were. The Weather Bureau responded that a remote spot on the outer banks of North Carolina called Kitty Hawk had the ideal steady prevailing winds that the brothers were looking for.



The brothers built a two-winged glider that they would first fly as a kite and then try it out themselves. The cost of materials was \$15. They shipped the glider in parts to Kitty Hawk to be assembled there.

Analysis

This first section provides information about the early days of the Wright brothers and their family life in Dayton, Ohio. The brothers were good friends and had a lot in common. They opened and operated a print shop and published a local paper. Wilbur was a good writer and took care of the editorials for the publication.

The author stresses the influence that their father had in their lives. He was a dedicated traveling evangelist who taught his children to be polite and respectful and not to be boastful about their achievements.

This section also describes how the brothers, especially Wilbur, became a voracious reader when he was laid up with an accident. He was influenced and inspired by the books he read on aeronautics among other topics. The brothers opened and successfully ran a bike shop which helped finance their pursuit of a flying machine. It was partially boredom and a yearning within each of the brothers to do something more with their lives and abilities that led them to focus on the development of a flying machine.

Vocabulary

argyles, frippery, imperturbable, lucid, itinerant, excruciating, palpitations, ecclesiastical, agnostic, quatrain, inundated, contrivance



Part I, Section 2

Summary

Wilbur arrived in Norfolk, Virginia on September 7, 1900. When asking for directions to Kitty Hawk no one seemed to have heard of it. He eventually found a boatman, Israel Perry, who was born in Kitty Hawk and agreed to take him there on his schooner. Wilbur was leery of the boat which was in disrepair. He hoped he and his glider wouldn't sink in the Pasquotank River on the forty mile trek to Kitty Hawk. There were rough times on the trip; waves lapped at the schooner making it roll and pitch. The boat sprang a leak. The touch-and-go and conditions forced them to spend the night in North River. After making repairs that took half of the next day, they were off again and the next morning reached their destination at Kill Devil Hills in Kitty Hawk.

Orville finally joined Wilbur on September 26th. Wilbur had the glider nearly complete by then. Experiments began on October 3rd. When the wind was too strong, they would fly the glider as a kite. They had to use all their might to keep the kite from flying too high. A strong gust of wind caught the grounded glider one day, picked it up and crashed it to the ground in pieces. They almost gave up but decided to repair the glider which took three days. Wilbur would pilot the glider when the winds allowed a manned flight.

October 19th was a clear day with perfect wind conditions. The brothers had been working on their project for four years. Wilbur had made numerous unmanned flights that reached heights of 300 to 400 feet at a clip of 30mph. No matter what, the brothers felt that the trip was a learning experience and not a waste of time no matter how it turned out. They packed up for home and left their glider behind.

The brothers ran the bicycle shop for the next eight months but thoughts of returning to Kitty Hawk never was far from their thoughts. They had plans to build an improved glider. Octave Chanute came to visit them in Dayton during that summer. He brought the brothers a portable French anemometer a device that measured the wind velocity. They hired Charlie Taylor to run their shop while they were gone.

Orville and Wilbur returned to Kitty Hawk on July 7, 1901. This time they built a custom shed for their glider that was larger than the first one they tested there. It was history's first aviation hangar. Edward Huffaker and George Spratt, associates of Chanute, came to help. Huffaker was mainly annoying and did nothing while Spratt helped however he could. On July 27th the wind at Kill Devil Hills was clocked at 13 mph. In addition to the Wright brothers, Huffaker and Spratt, Bill Tate and his brother Dan were on hand. Wilbur did all the test piloting. They had a lot of starts and stops but after a few failed attempts, Wilbur sailed the glider more than 100 yards. The brothers were disappointed in the results. In a subsequent attempt, the glider rose dangerously high but Wilbur was able to control the glider and set it down without damage or injury. They knew they had to make some adjustments to the curvature of the wings. After altering



the wing curvature the glider responded quickly to even the slightest movement of the rudder. His landings were smooth even at 20 mph.

The glider experienced more problems; the glider began to list to one side upon landing. Wilbur got a black eye and a few bruises on one of his landings. The test period was over and everyone headed out. The brothers were down in spirit. They felt they had gone backwards and that some of their theories had not held out. Wilbur wrote later that at that money he thought man wouldn't fly even in a thousand years.

The brothers were down but not out. They had not lost their resolve. They were obsessed with flying and continued their studies and research undaunted. Wilbur and Orville decided to scrap the calculations of Lilienthal and Chanute and develop their own data. To test out their new model, they built a scaled down wind tunnel. Although others who had gone before them had conducted experiments in wind tunnels their testing was unique and innovative. They started at square one and developed their own process. Over two months, they tested 38 different wing surfaces by adjusting airfoils and balances that they installed in the wind tunnel. The success of this experimentation led them in the right direction; it taught them how to build their gliders. The brothers were focused on their goal and they didn't let voices of dissension, even authoritative ones, discourage them.

They had completed a series of experiments by December then devoted their time to the bike shop. They needed strong sales to pay for their experiments. By late the following summer, the brothers put the final touches on their new glider, packed up and left for Kitty Hawk. Orville began taking better daily notes about their progress. On September 19th, they took the glider to a hill and flew it as a kite with good results. After taking it to their actual test area at Kill Devil Hills, they successfully glided their craft 50 times and up to 200 feet in distance. Orville worked up the nerve to try his hand at gliding. He crashed once but it was a minor incident and he wasn't hurt. Wilbur wrote his father that he thought that they were nearing to finding the solution for human flight.

It came to Orville one sleepless night that the rear rudder should be fixed, it should be hinged. Wilbur who usually questioned any idea that wasn't his got on board with Orville. He added that control of the rudder and wing warping should be connected for the pilot. They immediately went to work to make the adjustment. In anticipation of being part of history, Lorin Wright appeared at camp along with George Spratt, Octave Chanute and another one of his associates, Augustus Herring.

By October 17th, most everyone was gone except Wilbur and Orville who took their reconfigured glider to Kill Devil Hills for testing. It was cold by then and a fire was kept burning day and night. They increased the number of glides and the distance attained over the next few weeks. They had resolved the control problem. On October 28th, they packed up to return home. But this time, they were heartened by all the accomplishments and success that they had experienced. They could glide and float like a bird. Now they needed a motor.



Analysis

In this section, the author describes how the Wright brothers began to test the first versions of their motorless gliders. It also explains how they decided that Kitty Hawk, North Carolina was the ideal place for their trial runs. They checked with the weather bureau and found that Kitty Hawk had the most constant high winds in the nation. The terrain at Kitty Hawk consisted of a series of sandy dunes which made for safe and soft landings.

The author describes many of the test runs that the brothers conducted at Kitty Hawk and the harsh living conditions that Orville and Wilbur endured while staying there. They struggled with wind and weather conditions and were constantly improving the gliders as they learned more and more about how it maneuvered in the air. There were disappointing results but the brothers were undaunted.

The brothers returned repeatedly with new versions of the glider to Kitty Hawk. The town was sparsely populated and Orville and Wilbur were required to do most of the set-up work themselves. The section demonstrates that their belief in what they were doing and in attaining their goals saw them through failures that would have discouraged others.

Vocabulary

cumulus, dihedral, sustenance, eccentrics, concave, prophecies, contentious, defalcations, exuberant, cumbersome



Part II, Section 1

Summary

There was a spirit of innovation and invention that had embraced Dayton - and in fact the entire country - by New Year's Day 1903. Even a pessimist had to view the future with some positivity. Employment and earnings were on the rise, the nation had shed its national debt and was enjoying a budget surplus and the rousing music of rag time was everywhere. There was a new spirit under Teddy Roosevelt's leadership. The country was embarking on huge advancements; the building of the Panama Canal was planned. There was, however, a lingering question as expressed in the Philadelphia Inquirer. Why wasn't there more progress in aerial navigation?

A short time before the New Year, the Wright brothers had already put out feelers to automobile engine makers about motors for their glider, stressing that they were looking for a light-weight model. They only received one response that described a motor that was too heavy. Charlie Taylor took on an important role in the brother's goal of human flight. Charlie was a whiz at mechanics and by February had developed a light-weight gas motor that was perfect for the glider. There were a few bugs to work out and after another few months, it worked perfectly.

The brothers focused on the design of the propellers. There were no existing data on the design and building of propellers. After months of research and designing prototypes, they concluded that the only way to be sure of their design was to test them. For the first time in their years-long project, the brothers had screaming arguments about the design of the propellers. The Wright brothers applied for a patent on March 23rd for their flying machine.

The new glider that Orville and Wilbur called the whopper flying machine was only partially assembled in Dayton. The rest would have to be completed in Kitty Hawk. Charlie oversaw the packing of the motor and frame for transport. Dan Tate built a larger hangar for the Flyer. The brothers and Tate worked hard at finishing assembly. During a storm, the tar paper roof of the shed almost ripped off but Orville and Wilbur were able to repair it. There was a report that another Langley test for flight had failed.

On October 26th, they successfully flew the glider several times. On October 27th, George Spratt rejoined them and they started up the engine but it failed to ignite. They were finally able to fix the motor and get it running with almost no vibration. They made other final adjustments to the propeller shafts and other parts. The brothers returned to Dayton to look after their bike shop.

The brothers heard about the failures of Langley's aerodrome but never belittled Langley's efforts. They understood how difficult what they were all trying to accomplish was. They had nothing but respect for Langley who had inspired them to pursue the development of a flying machine. Orville and Wilbur returned to Kitty Hawk in early



December. With the help of a few robust locals, they hauled the 605 pound Flyer to the test area. The brothers flipped a coin and Wilbur won. He would pilot the test of the Flyer. On a first run, Wilbur had pulled too hard on the rudder and crash landed with only minor damage that took a few days to repair. But the motor and launching device had worked. On December 16th, the Flyer was ready.

Only five local men showed up on December 17th to help with the test. It was Orville's turn to test pilot the Flyer. The brothers had invested in a good camera to chronicle their progress. At 10:35 in the morning Orville released the restraining rope allowing the Flyer to move forward. It was slowed by strong headwinds. At the end of the track the Flyer lifted into the air and after an erratic ride it stayed up only 12 seconds and went 120 feet. The brothers took turns with more test flights. Wilbur flew a half a mile at a distance of 852 feet, staying aloft 59 seconds. After four years of work and multiple trips to the test area, the brothers had succeeded.

What occurred that day was a turning point in mankind's advancement. The Wright brothers proved that man could fly. The Langley had cost a total of \$70,000 and was a total failure. The Wright brothers spent less than \$1,000 and invented the airplane. They were sure they had mastered mechanical flying but there were many improvements yet to be made. The Flyer was destined for storage and was never flown again.

The brothers resumed their work in the bike shop to earn money to cover cost of the new, heavier flyer they planned to build. To cut costs they decided to try to find a test area that was closer to home. They found a cow pasture near Huffman Prairie, Ohio that they would be allowed to use at no cost. Orville was piloting the Flyer one day when it crashed going 30mph. He was shaken and bruised and wasn't able to fly for a month. On September 15th, Wilbur flew a half mile and turned a controlled half circle. Still, the public and the media remained disinterested. Some news organizations who didn't bother to travel to the test site, didn't believe the stories of the Wright Brothers flying across the countryside.

Only Amos Root, an elderly aviation enthusiast and fan of the Wright brothers, and Charlie Taylor were on hand for the momentous occasion when Wilbur would attempt to fly the machine in a complete circle. Strangely, the American government and news media had little or no interest in the amazing progress that the Wright brothers were making but Europe did.

The brothers went to work on the Flyer III which would prove to be the first practical and fully functioning airplane in history. They made important improvements and adjustments to the new model. They were also learning to be better pilots through the many trial runs they conducted. In many ways in the summer and fall of 1905, they had truly learned to fly an airplane and were able to enjoy the fruits of their labor. The brothers encouraged their family, friends and neighbors to come to and observe the Flyer III perform. On October 5, 1905, Wilbur circled around the field 29 times landing only when he ran out of gas.



The War Department finally showed some interest in the Wright brothers' flying machine but demanded that photos and specs be sent if it was to be considered by the government. Wilbur refused. He and his brother had done too much work to just give it away.

Analysis

Author David McCullough describes the atmosphere and spirit of the nation during the time the Wright brothers were developing their flying machine. It was a time of invention – the car and bicycle had recently been invented. President Teddy Roosevelt displayed energetic leadership which inspired inventors and entrepreneurs to take on new projects. There were plans for the building of the Panama Canal. This was a time before World Wars and the Great Depression. The world was largely at peace and was eager for new advancements.

In the section, the author describes how the brothers took the next logical step in the advancement of their invention. They had designed and created a one-pilot glider that could be controlled with a rudder and other directional controls. In the spirit of the country at the time, Wilbur and Orville took the next logical leap and worked at motorizing their aircraft. They recruited a local friend and associate to build a lightweight machine. Once the machine was incorporated into the glider's design, they had effectively created the first airplane.

The author describes how other aviators both domestic and in Europe were making advances toward the creation of the airplane. However, the Wright brothers maintained a substantial lead among other aviators. Orville and Wilbur were not threatened by the work of other inventors; they admired the work of their peers.

The brothers found another test area closer to home. They were allowed to use the Huffman Prairie dairy farm in Ohio to test their motorized aircraft. There were more trees and objects that they could collide with but the lift on the flying machine rose the craft to higher altitudes. There were mishaps, however, that resulted in injuries to the brothers and damage to their Flyer.

Vocabulary

pessimist, imbibe, godsend, flotilla, catapult, ludicrously, improvisation, velocity, horsepower, syndicate

Part II, Section 2

Summary

Word got out that the French were going to purchase a Flyer III. The French were keeping a low profile sensing that the American government might take umbrage at their bold move to purchase the airplane. They didn't want to commit an international incident. There was growing interest and excitement in Paris about the Wright Brothers' invention. There were intense discussions for two weeks but no final agreement was reached but the door was open for that possibility.

Wilbur wrote home and told Orville to pack up everything and bring Charlie Taylor with him. Wilbur didn't get a response for a month. Katharine wrote that Orville had been almost driven insane waiting to hear what was happening in Paris. Katharine was nearly cracking up herself. She and Orville were arguing all the time. They feared that Flint and the French were taking advantage of Wilbur. He wrote a long letter describing everything that was going on in Paris and assured them that he was not under duress and was not agreeing to any bad deals. He ended his letter with the news that he was going on his first balloon ride that afternoon.

Finally Orville settled down and headed for New York to make the trip across the Atlantic. The Flyer II had already been packed up and was on its way. After almost two months apart, the brothers were reunited in Paris and met with the Flint representatives the next day. They discussed patents, their relationship, expenses and percentages. Orville began to feel more relaxed and confident. Wilbur showed Orville around Paris. Flint treated the brothers to an exquisite gourmet dinner at a posh French restaurant that night. Wilbur and Berg decided to travel to Berlin to meet with interested parties there. It was late summer and both Germany and France had seemed to lose interest in the Wright Flyer.

Wilbur traveled to Washington, D.C. after he returned from Europe. He was pleased to learn that the U.S. Army was finally seriously interested in the Wright Flyer. They signed their first contract with the U.S. government for \$25,000 and a contract with a French company a short time later.

The brothers had to demonstrate their aircraft in both Washington, D.C. and France. It was 1908 and neither had flown in more than two years. Testing began on May 6th. Orville piloted the first test which covered more than 1,000 feet. Wilbur attained a speed of 50 mph and turned the plane in a large circle. Wilbur made a mistake and the plane plunged to the ground causing cuts and bruises to his face and body. The plane was a wreck. But he knew what he did wrong and wasn't worried about it. He headed for France to conduct that demonstration and Orville traveled to Washington, D.C. for that trial run.



Wilbur arrived in France on May 29th where he met with Hart Berg of Flint for the next week. They scouted around for the perfect place to conduct the demonstration. The French press had turned on the Wright brothers and were ridiculing them in the French papers and touting the advances of French aviators. Leon Bollee suggested Le Mans as a possible site for the trial run. A horse track outside of town seemed to be ideal and it was available for the dates that Wilbur needed it. A young French journalist, Francois Peyrey, interviewed Wilbur and was impressed with his gentle and honest nature. Francois became an ally for the Wright brothers and wrote positive reports about them.

Wilbur was furious when he started unpacking the Flyer. It was in shambles and in a tangled mess in the crates. Wilbur worked long and hard to reassemble and repair the damaged Flyer III which was housed at the Bollee factory. The Flyer III was finally in one piece and in perfect condition by the first week of August.

In the late evening of August 6th, Wilbur, Leon Bollee and Hart Berg hauled the Flyer onto the racetrack where it was stored in a shed. In the dark of night, they were able to move the plane without the press spotting them. August 8, 1908, appeared to be a perfect day for a trial run. The sky was clear and there was a gentle northwest breeze that Wilbur deemed would be adequate for the test flight. Word spread fast that this could be the day that citizens and members of the international press alike gathered in hopes of seeing history being made. The French were far more celebratory about the event that the locals in Kitty Hawk had been.

At 3 p.m. Wilbur opened the shed and rolled the gleaming white Flyer out. Flyer was rolled out onto the race track. At 6:30 p.m. the the propeller was set in motion, Wilbur taxied down the race track and lifted off to the cheers and applause of the crowd. He made a graceful half circle and headed back. The people were ecstatic and shouting their praises.

Headlines exploded across the globe about the accomplishment by the Wright Brothers that would change life on Earth forever. It was not just a successful test run it was the triumph of mankind. It was obvious to all those present that Wilbur's brief ride was one of which the pilot was in complete control and that could have gone on much longer. Wilbur's former critics had nothing left to say. More than 2,000 spectators surrounded the race track.

In the crowd on that second day of testing was a French military man taking photographs of the flights. Wilbur spotted him and demanded that he turn over his camera and plates and leave. It was widely known that Wilbur would allow no photographs be taken of the trial runs other than his own. Wilbur thrilled the crowd by making a series of figure eights in the air. More Frenchmen in the aviation field were lured to the testing grounds.

Later that week, Wilbur executed his longest flight before the biggest crowd yet to gather. Even though he had a rough landing that caused some damage to the Flyer, the crowd's enthusiasm was not diminished a bit. Wilbur accepted an offer from the French Army to move the Flyer to a larger test area at Camp d'Auvours. The camp was in a



remote area surrounded by woods but the people found their way there. They couldn't get enough of Wilbur and his flying machine. Wilbur's thoughts were often on Orville who was in Washington, D.C. preparing for demonstration runs there. He wrote and warned him about some of his mishaps and cautioned him to take no risks.

Analysis

This section describes the year-long testing of the Wright Flyer in Europe. The brothers had contacted the U.S. War Department on several occasions but the government showed little or no interest in the Wright brothers' flying machine. The brothers were patriotic and didn't want to sell their airplane to a foreign government but they were given no choice. They didn't want it to sit in a hanger and collect dust. Orville and Wilbur invented the airplane not to make money but to advance mankind.

Wilbur traveled to Europe first and became a real hero especially to the French who were aeronautics fanatics. While the progress that Wilbur and Orville make in their home country went largely ignored, the French couldn't get enough of Wilbur and his flying machine. Thousand would gather to watch his trial runs. They celebrated his victories and understood his failures. The American media ignored the Wright brothers; French reporters followed Wilbur around everywhere.

Perhaps it was the partially due to the positivity that he felt from the French citizenry and media that propelled Wilbur to his longest and highest flight to date.

Vocabulary

hodgepodge, entrepreneurial, panoramic, prodigal, inextricable, exuberant, countenance



Section III, Part 1

Summary

For Myer was on the Virginia side of the Potomac, near Arlington Cemetery. The area that Orville was given for his trial runs was smaller than Wilbur's Les Hunaudieres location. But there was already a small hanger and a dozen army soldiers to help him. Charlie Taylor and Charlie Furnas were both on hand to help him. They were planning to demonstrate the Wright Flyer for the first time before an American audience. Orville was uneasy when the Flyer was rolled out of the hanger on September 3rd.

Despite his battle with his nerves, Orville climbed into the airplane. The propellers were started and he shouted to his team to, "Let her go!" It lifted up and it soon was high in the air. Everyone was shouting and excited. He circled around and came in for a landing. It was a rough landing which Orville explained was due to his lack of practice. Orville created further excitement when on September 9th he stayed in the air almost an hour and circled 57 times. Government offices were closed so they could witness the marvel first hand. Each day, Orville would stay up in the air a little longer, breaking world records each time. Orville and Wilbur were true American heroes.

That following Saturday, 5,000 people jammed into the area to see the show. Octave Chanute was among the observers. The excitement in Washington, D.C. was paralleled in Dayton, Ohio. The mayor wanted to plan a big celebration when the brothers returned. Milton had plans to go to Washington to see his son demonstrate the airplane.

Word about Orville's great successes reached Wilbur; Orville had set seven world records. Wilbur was growing tired of all the attention he was getting. He spent many hours locked in his shed so he could avoid the reporters and people.

Katharine took a leave of absence from school and Milton returned home from his road work. Berg told a disbelieving Wilbur about the accident as 1,000 people had gathered to watch him fly the plane. He felt guilty feeling he should have been with Orville. The normally stoic Wilbur was moved to tears. He scrapped his planned trial runs and drove to Le Mans to learn if there was more news. He shared his angst in a letter to Katharine. With a renewed spirit and feeling that Orville would recover, Wilbur resumed his demo flights the next week.

Katharine traveled to Washington, D.C. to tend to her brother. Orville was in terrible pain and emotionally upset. His recovery was tough and went up and down. The doctors felt that his broken leg wouldn't be shorter than his other leg because it was broken cleanly in two places. An investigation was launched by the Aeronautical Board into the airplane crash. The conclusion was that the accident was due to a cracked propeller. There was no finding of pilot fault. Katharine was allowed to stay at the hospital to keep a watch on Orville.



Alexander Graham Bell and two other members of the Aerial Experiment Association came by the hospital to see Orville. But he wasn't up for any visitors. The trio stopped by the hanger where Bell was allowed in and took several wing measurements. Chanute said not to worry about it. Bishop Wright felt that it was a nervy thing for Bell to do. Orville suffered terribly which put Katharine under great stress. She responded to letters and visitors wanting to see Orville. She represented the family at Selfridge's funeral. It appeared that Orville would probably never fly again.

By the end of October after over five weeks in the hospital, the decision was made to move Orville to Dayton. They thought being home would speed up his recovery. Their train was met with a crowd to welcome the hero home. The Bishop greeted his son at home; he thought Orville was as good as ever. Katharine was "tired to death." He began to improve at home. A local doctor said he lost an inch in the broken leg but it could be fixed with proper padding in his shoe. As soon as he fully recovered, Orville and Katharine planned to join Wilbur in France.

After the plane had been sufficiently tested, Wilbur began training three French aviators. He felt the pressure to perform perfectly because that was his nature and because of Orville's accident that got worldwide press. He was given awards and monetary prizes by several private French clubs. The Aero-Club held a banquet in his honor on November 5, 1908. There were 250 guests many of whom were French dignitaries and celebrities. After a delectable gourmet dinner, Wilbur was awarded the club's Gold Medal to thunderous applause.

Wilbur began practicing taking off without the catapult. He planned to vie for the Michelin Cup which did not allow catapults in their competitions. On December 31, Wilbur stayed aloft a record two hours and twenty minutes and covered a distance of 77 miles. Wilbur got word that the French government planned to award the Legion of Honor to both Orville and Wilbur.

On January 5, 1909, Katharine and Orville boarded the German liner Kaiser Wilhelm der Grosse. Orville was still hobbling about with the aid of a cane. He had a noticeable limp and could have never made the trip without his sister. They landed in Cherbourg on January 11th and then traveled by train to Paris. Wilbur was waiting at the station with a huge bouquet of American Beauty red roses. The brothers met with Andre Michelin, the automobile tire manufacturer, who presented Wilbur with the \$4,000 check, the prize money for winning the Michelin Cup. Prizes and awards that were bestowed up on the brothers resulted in a \$35,000 bank account in Paris.

Wilbur created a sensation when he began his trial runs in Pau. The elite traveled to the test field to watch in wonder every day except Sunday. He also spent time training three aviators. He took Katharine for her first time in the air. She wasn't afraid and enjoyed the free ride. Bishop Wright was disappointed that his sons hadn't learned a bit of French while Katharine was gaining a measure of fluency with the language. Katharine took over writing letters for her brothers including those to their father. Orville was feeling much better and Wilbur was anxious to return home. Orville eventually joined Wilbur in Europe along with their sister, Katharine. They were all treated like celebrities.



Analysis

When Orville and Wilbur returned to America, they were worldwide heroes. America no longer ignored the brothers, in fact they embraced them as national heroes. They received the highest civilian award for excellence from the President. There were celebrations and banquets for the brothers wherever they went. Due to their upbringing, their heads were never turned. They remained humble and appreciative of their success and ever focused on making improvements to their airplane. The focus was never on their monetary rewards or fame – it remained focused on their flying machine.

Orville was badly injured in a demo flight. He had broken leg and other serious injuries. Katharine left her job as a teacher to tend to Orville. Many people thought that Orville would never fly again. Even though he suffered terrible and was nervous when he finally went behind the controls again, nothing could keep him from flying. It had gotten into his system and he could not stay away.

Although making money was never their purpose, the brothers began making a lot of it. They signed contracts with manufacturing companies and governments. Although money was not their number one concern, they were very protective of their intellectual property and were careful to file for patents to protect their invention from exploitation.

Vocabulary

panoramic, furtiveness, decadence, personification, taciturn, intrepid, entourage, personification

Section III, Part 2

Summary

The Aero Club of American and the U.S. Congress both planned to award medals to the Wright brothers upon their return to the states. Dayton was planning a huge celebration. The New York Times reported that a dozen airplane manufacturing companies had sprung up in France. The Wright brothers had launched a whole new industry. With his commitments fulfilled in Paris, Wilbur packed up his equipment and he and Katharine headed for Rome. Katharine and Orville followed a week later. In Rome, Wilbur stayed near the test field called Centocelle. Rome was a huge success; Wilbur flew more than fifty successful flights without a hitch. He trained several Italian military officers to pilot the plane. Just as in Paris, large crowds gathered and watched in amazement. Among the crowd were the famous and elite including American businessman J. P. Morgan. The Wrights did not enjoy the overly crowded city of Rome; it paled in comparison to Paris. The Italians honored them with a luncheon at the villa of a Contessa.

The Wright siblings were anxious to come home. They traveled home through London where they were also honored at a special banquet. Wilbur had been in Europe an entire year. In that year, the Wrights had amassed over \$200,000 in contracts and awards. Wilbur had enjoyed his time in Paris the most. He had made some very good friends there that he would cherish forever. Orville was able to relax and recover during his four months in Europe and Katharine had the time of her life.

Orville told reporters that he planned to resume his flying in Fort Myer where more trial runs would be conducted. There was an announcement that President Taft would be presenting the brothers with several national merit medals. Katherine planned to accompany them to Washington, D.C. for the ceremony.

The U.S. Congress adjourned during the award ceremony so they could participate and observe a demonstration that followed. There were many important and distinguished guests at the trial run. The wind was too strong for a good test and Wilbur cancelled it. Although the crowd was disappointed, they admired Wilbur more than ever for doing the right thing and not taking any risks. The trial was rescheduled with Orville behind the wheel. Orville and Wilbur found a few repairs and adjustments that needed to be made to the Flyer. Orville hit a tree on one glide landing when the motor shut off but he was unharmed. There were a bad couple of days but the brothers had been at it ten years and knew how to work through it. There was progress to crow about. The plane reached a speed of 44 mph which was a high.

Orville piloted a flight with Lieutenant Frank Lahm that lasted over an hour at an altitude of 150 feet. Orville was working on his landings which were getting smoother with each flight. Wilbur was focused on the test requirements and in perfecting the new plane. The world's first international air race was to take place in Reims, France. It was a testament the Wright Brothers that there would be twenty-two pilots participating. The Wright



brothers would not be participating but Orville and Katharine took off to take part in the festivities.

Crowds numbered in the 200,000s, a number that was well beyond the capacity of the grandstands. Glenn Curtiss who accepted the invitation from the American Aero Club after the Wright brothers declined the offer won the speed competition. The race was an international success and overnight Curtiss was yet another American hero. Orville piloted demonstrations in Berlin and broke a record by flying an hour and thirty-five minutes with a passenger. Wilbur made an historic flight from Governor's Island over the Hudson River where he circled the Statue of Liberty.

Once back home, the Wright brothers were busy with the business of their flying machine. They were required to attend meetings in New York and Washington to make business decisions and patent concerns. The Wright Company, a manufacturer of airplanes, was established on Fifth Avenue in New York City. A plant would be opening up in Dayton. There were more banquets and award ceremonies. With the uptick in planes being flown around the world, accidents, injuries and deaths occurred. Several renowned French aviators were killed in crashes.

Wilbur had a falling out with Octave Chanute that began in January 1910 and lasted throughout the spring. Wilbur claimed that the Wright brothers had been the sole developers of the lateral control system, or wing warping, which was being used around the world. Chanute disagreed and expressed his belief that they had not been the only innovators of the system. He accused the Wright brothers of being greedy. Wilbur responded in an uncharacteristically angry reply pointing out that Chanute had made false claims of having influenced their early work. Wilbur reached out to his old friend later and their differences were smoothed over.

The Wright brothers settled back to normal life in Dayton. They seemed to be unchanged despite the international fame and attention they had experienced. There were patent suits ongoing, one involving the Curtiss Company for patent infringement. There was much public support for the Wright brothers' position on the matter. A crowd of 2,000-2,000 gathered on May 25, 1910 at Huffman Prairie to see Orville fly. He put on quite a show, flying low to the ground and performing twists and turns and figure eights. During his exhibition, he reached an amazing altitude of 2,720 feet.

The brothers had intentionally never flown together. In case there was an accident, one brother would survive to carry on their work. But during the Huffman Prairie exhibition, they relaxed that rule and flew together with Orville at the controls. Bishop Wright also took his first flight that day. At 82, he was the oldest person to ever fly. He had no fear and kept telling Orville to go higher and higher.

Analysis

America caught flying machine fever. The War Department finally was interested in the flying machine that the Wright brothers invented. They were made to demonstrate the



plane before the agreement was solidified. On the day that the demonstrations were conducted, the U.S. Congress closed up so that they could observe the remarkable event.

The author describes the demonstration flight that Wilbur conducted from Governor's Island in New York, down the Hudson River to the Statue of Liberty. It was an historic and symbolic event. Wilbur circled his plane around the Statue of Liberty, an image that was caught on camera and made the cover of a large national magazine. It showed a true American hero circling the symbol of freedom that represented his country.

Although the brothers had never flown together in all those years, after their great successes they decided it was time to co-pilot a flight. Their 82-year-old father finally took his first ride. At the time he was the oldest person to fly. He wasn't nervous in the least he kept telling Orville to go higher.

Vocabulary

flippant, formidable, piston, pantheon, aeronautics, britches, interurban



Important People

Orville & Wilbur Wright

Orville and Wilbur Wright were brothers and were individuals, but the achievements they made that ultimately catapulted mankind into a new era and a new reality, could not have been accomplished by either brother alone. In many ways the brothers were alike. They were raised in a very conservative Protestant family and always honored the Sabbath. Even at the height of their success and celebrity, the brothers refused to do any work on Sundays.

But it was probably the differences in the brothers that created the perfect chemistry for the pursuit of the flying machine. Wilbur worked faster than Orville who worked at what would be considered a normal pace. Orville was a bit more laid back; Wilbur was intense and serious. Wilbur had an amazing memory and never forgot anything he heard. Though he was distant and remote in person he was a surprisingly articulate public speaker. He was also an extremely effective writer who could express himself succinctly and with clarity. Orville left all the correspondence and other writing chores to Wilbur since he seemed to enjoy it.

Orville presented a more retiring and gentle persona. He was talkative at home among family and friends but shy socially. He was the optimist among the two brothers and had a natural tendency toward entrepreneurism. He was also a mechanical whiz which of course played an integral in their ultimate success. His cheery exterior could turn dark when he was tired or stressed. Like their father, the brothers were always polite and respectful of others and had no vices to speak of. In their forties they were unmarried with no apparent plans for matrimony in sight.

The brothers were around thirty when they began to develop their first gliders. They still lived in the family home with their father Milton and sister Katharine who was the only college graduate in the family. Their mother, Susan, was deceased and his father was an itinerant pastor who was often away from home. They had older brothers, Reuchlin and Lorin who were both married with families. Some felt that Wilbur and Orville remained single because of the struggles that their older brothers had in supporting their families. Milton wrote home about the different towns and cities he visited during his evangelism which may have sparked a general interest in travel in the brothers.

Milton made sure to treat all his children the same but it was not a secret that Wilbur was his favorite. Wilbur had excelled in his school work and on the football field. He had done so well that he had been encouraged to go to Yale on an athletic scholarship. But that dream evaporated when he was hurt playing hockey. He was hit in the mouth by a hockey stick which knocked out all his upper front teeth. There may have been violent intention since the boy who wielded the stick was Olive Crook who murdered his entire family and was suspected of killing others.



Wilbur suffered from severe pain after the incident. He also developed heart palpitations, digestive problems and depression. His mother tended to him as much as such could but she was in failing health. In fact, Wilbur began caring for her. His brother Lorin criticized Wilbur who he thought should be out working and earning money. Wilbur became a recluse and was homebound for three years during which time he became a voracious reader.

Wilbur's unfortunate accident kept him from attending college but it provided idle time for a mind that wanted to achieve. While Orville provided steadiness and balance in their pursuit, Wilbur was the visionary who provided the inspiration and drive for invention. Both balance and inspiration were necessary for the 10 years of dedication that proved to be crucial in the ultimate success by the brothers in the development of the first functioning flying machine.

Milton Wright

Milton Wright was an itinerant Protestant evangelist who traveled about spreading the good word. At the time his sons, Orville and Wilbur, began pursuing the development of a flying machine, he resided at the family home in Dayton, Ohio, with his two sons and daughter, Katharine. Milton was interested in a plethora of topics as witnessed by his vast personal library and had a particular interest in genealogy. He talked freely with his children about most every subject there was except making money which didn't interest him. His open invitation to his kids to read his books may have backfired on the pastor. After Orville and Wilbur read "The Great Agnostic" by Robert Ingersoll they stopped going to church. But the Bishop was open-minded and accepted their decision. There were no mention of religion or God in the letters Milton wrote from the road and no religious icons about the house.

During the time that his sons were inventing the airplane, Bishop Wright became embroiled in a controversy over the United Brethren Church's anti-Masonic stance. The Radical sect of the church, led by Bishop Wright, did not want to allow Masons into the church. The liberal sect won and Bishop lost his fight. The Bishop suspected that the Reverend Millard Keiter was embezzling money from the church. Bishop Wright asked Wilbur to investigate the charge. The Bishop faced another disappointment when the church sided with Keiter. He had Wilbur write up an exposé listing all of Keiter's crimes and without church approval confronted him with it. The church membership sided with Keiter. Wilbur continued to work on behalf of his father when the Bishop was on the road. Although he suffered for two years, the Bishop was fully exonerated two years after the incident began when others learned of Keiter's deception.

Although Bishop Wright did not observe the early test flights performed by his sons, he was fully supportive of them and was present in the huge welcoming crowd that welcomed back from their phenomenal performance in Europe.



Katharine Wright

Katharine Wright was the younger sister of Wilbur and Orville. While the brothers were both on the quiet and reserved side, Katharine was more outgoing and talkative. She accompanied Orville to Europe to join Wilbur who was demonstrating their airplane to the French, German and Italians among others. Orville had been badly injured in a crash during a trial run and he admitted that he couldn't have made it without Katharine's assistance.

The reporters who dogged the brothers were happy to see their younger sister on the scene because she'd answer their questions and talk to them. She was a college graduate and a teacher in their hometown of Dayton. During the year she tended to the injured Orville and traveled with her brothers in Europe, she had a wonderful time and was treated like a celebrity herself.

Reuchlin and Lorin Wright

Reuchlin and Lorin Wright were the older brothers of Orville and Wilbur. By the time their younger brothers began developing their first glider, Reuchlin and Lorin were both married and had families. They were both skeptical of the ambitions and goals of Wilbur and Orville. They complained to their father that the brothers should be out on their own with their own families instead of living at home. Of course, the older brothers came around when Orville and Wilbur developing the first airplane and were celebrated around the world. The older brothers were among the hordes of fans who watched early demonstrations of the Wright Flyer.

Susan Wright

Susan Koerner Wright was married to Bishop Milton Wright and was the mother of Orville and Wilbur and three other children. Susan was born in Virginia and was of German heritage. She was described as intelligent, affectionate and shy – traits seen in Orville and Wilbur as adults. She died in July of 1889 before her sons became historic figures. She had suffered for eight years with tuberculosis prior to her passing.

Oliver Crook

Oliver Crook was a contemporary of Wilbur Wrights. They play on competing hockey teams when Oliver viciously slashed Wilbur in the mouth with his hockey stick and knocked out all his front teeth and caused other severe injuries. Wilbur was scheduled to attend Yale that fall but he was in so much pain and had gotten so depressed over his injuries that he was unable to attend. Oliver Crook later killed his whole family and was suspected of killing others. During recovery Wilbur had lots of time on his hands and began reading voraciously about aeronautics and other topics. If it weren't for this mass



murderer's assault on Wilbur, Wilbur would have become a CPA and perhaps someone else would have invented the airplane.

Otto Lilienthal

The Wright brothers, especially Wilbur, were greatly influenced by German aviator Otto Lilienthal who had begun manufacturing his gliders in 1869. Lilienthal had studied the flight of birds and how their wings rode the wind. He had designed and built more than a dozen different models over the years and tested most of them himself. He survived a crash in a glider he was testing in 1894. In 1896 he crashed and fell 50 feet while flying a No. 11 glider. He died of a broken spine at the age of 49.

Octave Chanute

Octave Chanute was a French-born American civil engineer who was an avid aviation enthusiast. He had designed and built bridges and railroads. He had also designed a number of gliders. Wilbur and Orville pored over many of Chanute's writings about his gliders. After hearing about the work of the Wright brothers, Chanute reached out to them and offered his help. The brothers, however, were not interested in collaboration. After the great success of the Wright brothers who were the first aviators to create a true flying machine, an airplane, Chanute tried to take credit for being their mentor. There was bad blood between the Wright brothers and Chanute for a period of time. Wilbur took the initiative to smooth it over. The brothers respected Chanute but the only help he gave them was through his writings. The brothers were conservative and humble but they had worked too hard to allow someone else to take credit for their years of dedication.

Samuel Pierpont Langley

At the same time that the Wright brothers were developing their flying machine, aviator Samuel Pierpont Langley, was working on designing and developing his own version. While the Wright brothers openly worked on their pursuit, Langley's well-financed project had been taking place in secret. It was a re-launch of his steam-powered aerodrome which had failed to produce any positive results.

The brothers got word that Langley was going to test the latest model of his flying machine in Quantico, Virginia. The new model was dubbed the Great Aerodrome and had cost \$50,000 in taxpayer money alone. The airship went 1,000 feet and then crashed into the Potomac River. The only reaction from the brothers was found in a letter from Wilbur to Chanute. He wrote that Langley seemed to be having his share of problems.

Aviator Charles Manly test piloted the aerodrome in Washington, D.C. Langley and his associates watched from boats on the Potomac. The aerodrome lifted up, stalled and plunged into the river. Manly was able to get out of the aerodrome and was pulled to



safety. It was reported as the worse catastrophe yet for the Langley flying machine. Langley was mortified. He died three years later and had never gotten over the stinging defeat.

Louis Pierre Mouillard

Wilbur was a voracious reader on many subjects but on aeronautics and engineering in particular. He was most impacted by a book entitled *L'Empire de l'Air* by aviation researcher Louis Pierre Mouillard. He wrote of flying with an evangelical fervor; his words were a great inspiration to Wilbur. Mouillard wrote about watching the great African vultures circle overhead when he visited Egypt. The book inspired Wilbur to take up bird watching to study their wings and flight an avocation which led to the warped wing design that helped to advance the development of the airplane.

Alberto Santos-Dumont

During Wilbur's time in Europe, French aviator Alberto Santos-Dumont, flew a motor-powered olio of box kites and stayed aloft 726 feet. The French were delighted. This event had no impact on the brothers because they had advanced far beyond what the Frenchman had accomplished.

Amos Ives Root

Amos Ives Root, an elderly man from Medina, Ohio, was interested in man's advancements – everything from clocks to automobiles fascinated him. He had begun corresponding with the Wright brothers earlier in the year asking that he be allowed to observe their testing. The brothers responded that they would let him know when the new flyer was ready for testing. As soon as Root got word that the testing would take place, Root took off at once for Huffman Prairie.

Root arrived when there were problems with the new Flyer. He kept his word and didn't mention a word about their troubles. He was called back after repairs and adjustments were made. Root was able to witness Wilbur piloting the Flyer and maneuvering it in a complete circle.

Hart O. Berg

Hart O. Berg was the European sales rep for Flint & Company, a New York based firm that marketed war materials to European nations. Flint was interested in purchasing the Wright Flyer but asked Wilbur to meet with Berg in London. The two men traveled to France together where the miracle of the Wright brothers' invention was solidified. Berg proved to be an honest broker who Wilbur trusted and formed a close relationship with.



Thomas Selfridge

There was a rumor that President Teddy Roosevelt wanted to take a ride with Orville, but Orville wasn't enthusiastic about it because he felt the president shouldn't take such a risk with his life.

For the September 17th trials, a young army officer, Lieutenant Thomas Selfridge, had been assigned to fly with Orville. He was an aviation specialist and enthusiast. He was a member of the Aerial Experiment Association which was founded and headed by Alexander Graham Bell.

Orville was a little leery because, at 175 pounds, Selfridge would be the largest passenger to take a ride on the Flyer. The plane circled the field several times at 40mph. On one of their turns, a piece of the propeller fell off. The plane listed and began to go straight down and hit in a swirl of dust. Orville and Selfridge were bloodied and pinned beneath the plane. Orville was conscious and moaning; Selfridge was unconscious and his face was covered in blood.

The scene was chaotic. Several doctors tended to Orville and Selfridge until ambulances arrived. A crowd gathered around the hospital where they were taken. Orville was in critical condition with a broken leg, hip and ribs. Selfridge died having suffered a fractured skull. Despite the tragedy, no one gave up on the Wright brothers or the airplane. They knew aviation was part of the world's future. Later, Orville had to think that Teddy Roosevelt could have been his passenger that day.

Royalty

In the last week of February, King Alfonso XIII of Spain came to witness the "miracle." Alfonso's only special request was that he be allowed to see one of the aviators who Wilbur had trained pilot the Flyer. He was amazed the new pilots had learned so quickly. Edward VII, the King of England also came to be a spectator to the amazing event. The King was given a tour and taken inside the shed to see the plane. Wilbur apologized for its worn appearance. As Wilbur took off in the Flyer, Orville explained its workings to King Edward.

French Aviators

The Wright brothers received word that French aviator Louis Bleriot had flown the 23 miles across the English Channel. Orville and Wilbur were not disturbed by the French achievement which they considered remarkable. Bleriot's historic flight marked the beginning of a robust French aviation industry. Comte de Lambert flew a Wright Flyer across the city of Paris – the first flight that was taken directly over a city. He flew over the Eiffel Tower which was the tallest structure in the world at 1,400 feet. Among the well-wishers who greeted the new aviation hero were Katharine and Orville Wright.



Objects/Places

Dayton, Ohio

Dayton, Ohio, was the home of the Wright family. When Orville and Wilbur began their ten-year pursuit in the development of a flying machine, they were 32 and 28 respectively. They lived at home with their father, Bishop Milton Wright, and younger sister, Katharine. Two older brothers had left home and had their own families.

The Wright brothers began their quest for man to fly in Dayton by studying books on aviation and aeronautics. Many of the books came from the voluminous family library in the Wright home. They also studied the flight of birds and built their first gliders in Dayton.

After the Wright brothers earned worldwide celebrity for developing the first airplane, Dayton welcomed them home with a huge celebration that included a hero's parade.

West Side News

In 1889 while still a high school student, Orville opened his own print shop in the shed behind the house. He designed and assembled the press using scrap materials that were available to him. With Wilbur's assistance Orville published a weekly newspaper, the West Side News. It contained events occurring in Dayton neighborhoods on the west side of the river. The newspaper also contained national coverage including the flood in Pennsylvania and international news like the completion of the Eiffel Tower in Paris. Wilbur took care of writing the editorial comment. The brothers were successful enough to move the operation from the shed to a rented office in town. Wilbur was officially listed as the publication's editor. In 1889 the paper printed the obituary of Susan Wright who died of TB of July 4, 1889. The holiday was never the same again for the family.

The brothers eventually dropped the issuance of the newspaper and ran a small printing establishment. Orville complained that he did most of the work but had to split the little money the business earned with Wilbur.

Wright Cycle Company

In 1893, Wilbur and Orville Wright became interested in the recently invented bicycle. Although many thought it to be a passing fancy and a distraction for school children, the brothers opened a small bicycle shop in Dayton which they called the Wright Cycle Exchange where they sold and repaired bikes. They eventually renamed the shop the Wright Cycle Company. Wilbur and Orville developed a custom-designed bike called the Van Cleve in honor of their great-great-grandmother. The Van Cleve was a success and



it boosted their sales. The brothers used revenues from the bike shop to finance the development of the airplane that spanned a decade.

Aviation Research

During their quest to invent the airplane, Wilbur and Orville studied the writings of engineers and aviators like Octave Chanute and Samuel Langley, about the possibility of human flight. They also studied the flight of birds and their favorite works on the subject included *Animal Mechanism* by Etienne-Jules Marey and *Animal Locomotion* by J. Bell Pettigrew.

Smithsonian Institute

On May 30, 1899, Wilbur was home alone and was fidgety; he wanted to do more with his time than repair and sell bikes. He wrote the most important letter of his life that day. The letter, in fact, was one of the most important in history. It was addressed to the Smithsonian Institute in Washington, D.C. He explained that he had a long-time interest in flight – mechanical and human. He wrote that after exhaustive study, he had concluded that human flight was possible. He asked for all the information that the Smithsonian had on the subject. The institute responded by sending all the available literature they had on the subject. There was no offer from the Institute to provide the Wrights with any monetary sponsorship for their pursuit. However, the material that Wilbur was sent helped to invigorate the interest that he and Orville had in aviation and launched their pursuit of a flying machine.

Kitty Hawk, North Carolina

After the Wright brothers conducted research to find where high winds were most consistent, they concluded that Kitty Hawk, North Carolina, was the ideal locale to test their gliders because of its prevailing winds and the soft sandy dunes that had been sculpted by the winds which enabled soft landings.

The small isolated town of Kitty Hawk was comprised of only 50 homes with most of the population involved in the fishing industry. Wilbur stayed with William Tate, the former postmaster of the town who had urged the brothers to test their gliders there. Wilbur set up a camp and began assembling the glider while he waited for Orville to join him. Kitty Hawk residents were very curious about the visitor and the contraption he was building.

Their stay was not the most comfortable. They lived in a tent and had to put up with ticks and mosquitoes. Their diet was limited and they longed for coffee, corn bread and bacon. One pleasant aspect of their stay was the beautiful scenery that surrounded them. There was always a wind and birds of every variety flying about and circling overhead. Wilbur watched the birds carefully and filled notebooks with his observations. He focused on how the birds used the wind to turn and bank. He found that buzzards were the masters in using the wind to their advantage.



Many of the townsfolk thought the brothers were a pair of nuts standing on the beach and watching birds in flight for hours on end. They took numerous photos of the birds and the surroundings in Kitty Hawk. The wind was relentless but that was part of the reason they chose Kitty Hawk – its strong winds. The other reason Kitty Hawk was ideal was the treeless sand dunes that would allow for unfettered and soft landings. Their diet was very limited but they were having fun. They loved the work and never slacked off. They enjoyed the friendly people of the community some of whom volunteered to help them in any way they could. During their first summer in Kitty Hawk, they were deluged by hordes of mosquitoes that looked like they were being attacked by a black cloud. They worried about contracting typhoid and constructed nets to protect themselves. They also suffered through a few weeks of little or no wind and oppressive heat.

Huffman Prairie

Wilbur and Orville decided to try to find a test area closer to home. The owner of a dairy farm called Huffman Prairie allowed them to use his farmland. It was a spacious remote area. There was barbed wire and trees which could play havoc with flight tests. The tighter more restricted areas would force the brothers to have more control over their flights. The owner of the land said that he would not charge them as long as they moved his livestock to safety.

In the spring of 1904, Wilbur and Orville were preparing the test area as best they could. They invited family, friends and the press but would allow no photographs to be taken so that no one could copy their innovative design. By the following summer Wilbur's writing confirmed that trials continued on the improvements and adjustments that had been made on the design. On August 13th, Wilbur flew a thousand feet further than they had accomplished in prior tests.

The brothers didn't have the strong prevailing winds at the Huffman Prairie test site so they had to compensate for that loss of power by building a starting apparatus that could give them a better launch. The catapult was equipped with heavy weights that had to be hauled to the top of the device by a team of horses. The lift the catapult gave them rewarded them with longer distances and more maneuverability.

Flint & Company

Flint & Company of New York, a supplier of war materials to Europe, offered the brothers \$500,000 for the sales rights of the airplane outside the U.S. The Wright brothers would keep sales rights for the U.S. Wilbur was asked to meet with the Flint company representative in Europe. They were becoming skeptical and wanted to be convinced of the virtues of the Wright Flyer. Wilbur sailed on the RMS Campania on May 18th and was met by Hart Berg, the European sales rep for Flint. The two spent many days together and became good friends and business associates.

Le Mans, France

There was nowhere on earth that treated the Wright brothers more like heroes than in France. The famous Le Mans race car track was selected for the test runs of the Wright Flyer. The public and press alike treated Wilbur and Orville like they were celebrities. When Wilbur conducted his demonstrations, the stands and grounds were crowded beyond capacity with those who wanted to witness man in flight. The French brought picnic baskets and made Wilbur's flight runs something to enjoy and celebrate.

Governors Island

Wilbur was paid \$15,000 by the organizers of the maiden flight of the Wright flyer in America. It was taking place in New York with a starting point on Governor's Island and a route down the Hudson River to the Statue of Liberty and back. Another American Aviator, Glenn Curtiss would also be participating in the show. Two hangars were provided on Governor's Island which was a half a mile southeast of Manhattan. The inventor of the telegraph, Guglielmo Marconi was on hand to send telegraphs announcing the flights of the two aviators.

When Wilbur made his test runs, a red canoe was attached to the bottom just in case he wound up in the Hudson. When Wilbur took off he headed toward the Statue of Liberty. Thousands watched as he circled around and then flew over the harbor and toward Liverpool. Thousands were aboard the Lusitania waving and cheering him on. Circling the Statue of Liberty brought the most cheers. A photograph of Wilbur circling the statue was on the cover of Harper's Weekly.

After a few days delay due to strong winds, Curtiss had to leave for a commitment which left Wilbur to make the Hudson River flight alone. Even though it was still a little windier than was ideal, Wilbur decided to make the flight from Governor's Island on October 4th. He took flight with the red canoe still hanging beneath the Flyer and an American flag affixed to the rudder. All work stopped in New York City as people gaped at the Flyer high in the air. As he flew further into Manhattan, strong winds coming off the tall skyscrapers presented Wilbur with air currents he had never before experienced. He was forced to fly at a lower altitude and hug the New Jersey coastline. He turned back at Grant's Tomb. With the wind behind him, he felt he was moving at twice the speed on the first leg of his journey. It was estimated that a million people watched the flight. He landed back at Governor's Island at nearly the precise spot that he took off from. The winds had shredded the American flag that he flew.



Themes

Tenacity

Orville and Wilbur right had many qualities that enabled them to have such phenomenal success. They were both exceptionally bright, inquisitive, humble and daring. Wilbur was the stoic visionary who refused to let go of his dream of creating a flying machine. Orville had a more relaxed nature than his hyper younger brother but was inspired by him. Orville was a mechanical whiz which was an integral element in their ultimate victory over the air.

The most important quality that the two brothers shared was tenacity. They were dedicated to their goal of creating the first fully-functioning, pilot-driven flying machine. While they adapted different methodologies – Wilbur the intellectual route and Orville the hands-on approach – they both fully bought in to their shared dream.

No matter what happened, they stayed focused on the end result. When they first began their ten-year journey, they were widely ignored by their fellow townsfolk. Those who didn't ignore them ridiculed or criticized them or thought of them as a little off. Even their own brothers thought they should get jobs and raise families. The criticism rolled off their backs. They really didn't care what anyone thought. They had a single-minded focus and nothing was going to get in their way, deter them or discourage them.

Both brothers were injured during flight tests, Orville the most seriously. Everyone thought Orville may never fly again but he recovered and was back at the controls again breaking one long distance or high altitude record after the other. When the War Department didn't respond to their request to submit a proposal, the brothers were undaunted. After another attempt was made to make contact with the U.S. government, the patriotic brothers were forced to turn to Europe where they finished developing the Wright Flyer and came to world renown fame.

The Wright brothers didn't develop the first flying machine for money or fame although both came to them. They wanted to move mankind forward. They never lost focus. Even after they stood heroic before the entire world, they never stopped perfecting and improving their flying machine.

Destiny

Just as many events and innovations occurring throughout history can be compared to the perfect storm, the direction that the Wright brothers took in pursuit of developing a flying machine was one that was marked with destiny.

Wilbur was a bright student in high school and was accepted at Yale University. Math came easy for Wilbur and he was looking at a possible career as an accountant. But fate stepped in and changed all that in one day. Wilbur was very athletic and was



playing ice hockey when he was slashed in the face by a hockey stick. It knocked all his front teeth out and caused other serious injuries to his face and head. When it was time for him to begin his college career, Wilbur was in awful pain and had to scrap that dream. Wilbur became very depressed over his physical pain that persisted for quite a while. Recovery left a brilliant mind with nothing to do. His father had amassed an extensive personal library and Wilbur became a voracious reader. His interest grew in the area of engineering and aeronautics.

When Wilbur was near 30 and Orville was 32, the two young men still lived at home. Their older brothers criticized them for not beginning their own lives. Reuchlin and Lorin were both married and had their own families. The two younger brothers watched their older brothers struggle to make ends meet to support their families. Some scholars felt that Wilbur and Orville may have departed from the traditional route of marrying and having children because of the hardships that their brothers were having.

Had Orville and Wilbur, or even Orville or Wilbur, left home and had a family they would not have been able to afford to finance their decades-long pursuit of developing a flying machine. Their commitments would have been in totally different areas. Had Wilbur not been hurt, he would have gone to Yale and his life would have gone in a completely different direction. Wilbur acquired an intense interest in aviation because of the large library that his father had amassed. His bright mind was idle and was yearning for something to grab onto.

If destiny had provided a different pathway for the brothers, the development of the airplane would have also had a different pathway.

Humility

No matter how celebrated and famous and sought after the Wright brothers became after their development of the world's first flying machine, they never lost their humble attitude. They were intensely focused on the development of their aircraft. Once it was developed and successfully flown, they worked at perfecting it and negotiating contracts so that the world at large would benefit from their wonderful invention.

When a reporter asked Wilbur how he felt about conquering flight, he quickly responded that he and his brother in no way had conquered the air – they had merely made it possible to share the air with nature's real aviation wonders – the birds that he so closely studied for years. Their humility was large attributed to their upbringing which focused on others and not on themselves.

The brothers were single-minded in their quest to develop the airplane. They had worked many dedicated years and had put their personal lives on the back burner for the sake of the advancement of mankind. During the entire ten years it took to develop a successful flyer, they would not accept funding from individuals or organizations. They kept their bike shop in operation in order to finance their dream. They wanted to control



the release of their invention and not allow others to exploit it. They believed that the airplane didn't belong to them it belonged to mankind.

Although they had secured a spot in history for all time and was instrumental in launching the aviation era, Wilbur and Orville Wright kept their feet on the ground while their Flyer soared high above.

U.S. Disinterest

The media and public in America were oddly disinterested in the early work of the Wright Brothers. Even the town they lived in, Dayton, Ohio, was largely dismissive of their efforts. Prior to the work of the Wright brothers, there had been many attempts from aviators and engineers around the world to develop a flying machine – and they all had failed. Naturally there was skepticism and disbelief when the Wright brothers began developing their airplane and actually showing potential for success.

After Orville sent a telegram home about their successful test flights in Europe, Lorin took it to the city editor of the Dayton Daily Journal, Frank Tunison, who was a member of the Associated Press. But Tunison didn't think it was a story because the plane had only stayed aloft 59 seconds. Fifty-nine minutes would have been a story. Most town folk had grown accustomed to the two inventor brothers and were not in awe or perhaps even aware of their advancements. Luther Beard, the managing editor of the Dayton Journal, felt sorry for them that they were neglecting their business and wasting their time.

The testing of the Wright brothers' early gliders and later their motorized airplane was conducted in two remote locations in the U.S. Kitty Hawk, North Carolina, was a sparsely populated area that was difficult to reach. The brothers had chosen Kitty Hawk because of its high prevailing winds and its sandy beaches that made for soft landings. Reporters and the general public were not interested in attending the test flights because of the inconvenient nature of Kitty Hawk. The second U.S. location selected by the brothers for trial runs was at Huffman Prairie and remote cow farm surrounded by thick woods. The press and public were put off by the unfriendly surroundings and difficulty in reaching the test area – besides most thought it was all for naught. Man was not meant to fly!

The War Department was approached by the Wright brothers several times. The first letter that Wilbur wrote was not even responded to. The brothers were patriotic and didn't want to open negotiations with foreign nations. They wanted to sell their aircraft to the U.S. government. However, the U.S. government was not interested initially. Leaders in the War Department were skeptical of the success of the Wright Flyer. The second attempt that Wilbur made to reach them was met with a demand that the brothers send photos and specs for their airplane. The brothers were patriotic but not fools – they worked too hard to give their plans away.



European Heroes

The American government and press had no interest in the Wright Brothers' flying machine but Europe did. Lieutenant Colonel John Edward Capper of the British Army's Balloon Section came to visit them on orders from his government. They didn't take him to the testing area but showed him photos of their flying machine and discussed their progress at length. He asked that they submit a proposal to the British government for the sale of Flyer II. Although their own government had ignored them thus far, they were patriotic and would not enter into such a deal with a foreign power. Besides, they wanted to perfect the Flyer II and hadn't envisioned exactly what use it would have for society.

Wilbur contacted his local congressman who suggested that the brothers write a proposal to the Secretary of War William Howard Taft. In their letter, Wilbur and Orville described the Flyer II and the many trials it had undergone and the successes that they achieved. The War Department wasn't interested in receiving a proposal from the brothers. With that rejection, the brothers felt free to deal with the Brits notifying them that they were ready to submit a proposal.

With the obvious disinterest from the U.S. government, the brothers decided to pursue possibilities in Europe. Wilbur landed in Liverpool on May 25th and took a train to London where he met with Hart O. Berg, the Flint & Company European sales rep. After Berg arranged for a tailor to make a dress suit and tuxedo for Wilbur, they were off to Paris. Joined by another Flint executive they crossed the channel to Paris. While the U.S. press largely ignore the Wright brothers and their invention, Wilbur could not go anywhere in Paris without a horde of reporters following him.

Wilbur and the Flint people met with aviation enthusiasts and military and government officials. The French would pay \$350,000 for their Flyer with the caveat that a demonstration be conducted in France. Despite being in a foreign land and dealing people who only spoke French (Berg translated for him) Wilbur held his own in the deal making.

Youngsters were perched in the trees surrounding the Le Mans track for a bird's eye view. Families brought picnic lunches for the event. Also showing up at the trial were two Russian military officers who had a great interest in the Wright Flyer. Several noted French aviation heroes and influential enthusiasts were also on hand.

The Wright brothers who were Americans did not become worldwide celebrities and heroes until they demonstrated their flying machine in France. More importantly, their amazing invention did not gain attention or credibility until the brothers conducted demonstrations in Europe. The U.S. finally caught on but without the interest of Europe, especially France, it is impossible to know how this story of invention would have turned out.

Styles

Structure

Although *The Wright Brothers* by David McCullough is a biographical work of Orville and Wilbur Wright inventors of the first successful flying machine, also known as the airplane, the focus of the book is on their work. There is only cursory mention of their personal lives. But that structure is fitting since their personal lives were normal and unremarkable; however, their successes and achievements in aeronautics was nothing short of miraculous. The book is structured in part as an epistolary; many letters exchanged between principals are included verbatim in the narrative.

The author describes the many similarities that the brothers shared in characteristics and traits and their differences which created the strength and tenacity that was crucial in attaining their goals. This story of the Wright Brothers begins in the family home in Dayton, Ohio. The brothers are around 40 years of age then and from that point the story looks back at their lives and career. The author touches on their family life and relationship with their traveling evangelist father, Bishop Milton Wright. Their mother had died years earlier of tuberculosis. There are brief descriptions of other ventures that the brothers entered into together.

The majority of the story is devoted to the ups and downs of their progress in designing and developing the airplane. There is considerable attention given to the disinterest that America showed to the advancements made by two home grown inventors and juxtaposes it against the near fanaticism that the French and other Europeans displayed for the aeronautics heroes.

After the Wright brothers returns to America following their fantastic experience in Europe where the Wright Flyer was finally proven to be a successful flying machine, America welcomed them back with open arms. After parades, awards, contracts and celebrations for the two brothers, Orville and Wilbur returned to their ordinary at the family home in Dayton. They never stopped working at improving the design and performance of the airplane.

Perspective

The Wright Brothers by David McCullough is told in the third person with author McCullough as the narrator. It is told from several viewpoints. Firstly, it is the story of Orville and Wilbur Wright, two brothers who shared the same dream of man in flight. They weren't an overnight success; it took ten years of hard work and dedication through many ups and downs, unrelenting criticism and ridicule until they achieved final success.

The story of the development of the airplane is also told from an historic viewpoint. Every test run the brothers conducted and every demonstration they performed made



history. In each flight they took, they flew a little higher and a little longer. The development of the airplane is described in some detail. Of the two brothers, Wilbur is portrayed as the more visionary of the two. He studied the flight of birds for hours on end. He noted the curvature of their wings and how they easily maneuvered through the air. The brothers modeled their glider designs and then later their motorized airplanes after the flight of birds.

Author David McCullough is a Pulitzer Prize winning author for his biographies on Harry S. Truman and John Adams. He is the author of many other critically acclaimed books that focus on historic events. He is the recipient of many awards for his works including the Presidential Medal of Freedom.

Tone

David McCullough has written *The Wright Brothers* in an academic manner and in a historic framework. The detailed work that the Wright brothers accomplished over the span of their 10-year pursuit of the development of a flying machine is a tribute to their dedication and tenacity in the face of criticism, ridicule and failure. McCullough successfully inspires the reader not by words of praise and laudatory commentary. Their accomplishments speak for themselves and services as all the inspiration necessary.

McCullough sets the stage for the ultimate invention of the airplane by first telling the reader about the two quiet, conservative brothers who still lived at home and seemed to have no big plans for the future. The brothers are depicted as very much alike but with some distinct differences that laid the groundwork for their amazing achievements. Wilbur is depicted as stoic and serious and unable to forget anything he ever heard. The hours upon hours that he spent studying birds and focusing on their wing designs and maneuverability proved to be crucial in the ultimate success in the development of the rudder and proper wing warp design.

Orville was the elder of the two and because of their upbringing was considered the “boss” of the two brothers. But they were equals. Wilbur was the visionary while Orville provided balance and steadiness and was a whiz at mechanics. The author provides an image of the ideal pairing that was necessary for the phenomenal success they achieved together. McCullough paints a picture of the brothers and their characteristics and traits that stays with the reader throughout the entire work.



Quotes

The strongest impression one gets of Wilbur Wright is of a man who lives largely in a world of his own.”

-- Schoolmate of Wilbur's (chapter 1 paragraph 13)

Importance: Wilbur was serious and intense and never forgot anything he heard. He would often isolate himself so that he would be alone in his own world.

In a speech years later Wilbur would remark that if he were to give a young man advice on how to get ahead in life, he would say, ‘Pick out a good father and mother, and begin life in Ohio.’”

-- Narrator/Wilbur Wright (chapter 1 paragraph 39)

Importance: After Wilbur and Orville Wright came to international fame, Wilbur never forgot his roots and attributed his success to his parents and the conservative Midwest where he was born and raised.

A friend told Orville that he and his brother would always stand as an example of how far Americans with no advantages could advance in the world. ‘But it isn't true,’ Orville responded emphatically, ‘to say we had no special advantages... the greatest thing in our favor was growing up in a family where there was always much encouragement to intellectual curiosity.’”

-- Orville Wright (chapter 1 paragraph 71)

Importance: This quote captures the values that Orville and Wilbur relied upon in their lives and in the pursuit of the flying machine.

It must not remain our desire only to acquire the art of the bird. It is our duty not to rest until we have attained a perfect scientific conception of the problem of flight.”

-- Lilienthal (chapter 2 paragraph 10)

Importance: Lilienthal had developed the first successful glider and was a predecessor of the Wright brothers in the field of aviation. He had designed his gliders after the wings of birds. The Wright brothers studied carefully the work of Lilienthal.

Learning the secret of flight from a bird was a good deal like learning the secret of magic from a magician.”

-- Orville Wright (chapter 3 paragraph 68)

Importance: The Wright brothers studied the only source of that was available in their lead-up to inventing the plane – birds.

The soaring problem is apparently not so much one of better wings as of better operators.”

-- Wilbur Wright (chapter 5 paragraph 37)



Importance: Wilbur's study of birds taught him that wings with less resistance than bird wings have could be designed but it was the skill that the birds, or operator had, was what counted.

He made a point of stressing that the Wrights were not just the sort who love machinery, but were 'interested in the modern developments of science and art.' He had been 'astonished' by the extent of their library and to find in conversation that 'they were thoroughly versed not only in regard to our present knowledge, but everything that had been done in the past.'"

-- Narrator/Amos Root (chapter 6 paragraph 59)

Importance: Amos Root was fascinated with the advancements that man was making. He was on hand for some of the historic trials that the Wright Brothers conducted on their flying machine. The mild-mannered Wright brothers were more than flying machine enthusiasts, their father's library had afforded them a liberal education without having gone to college.

We were all seasoned campaigners in the field of unexpected events but for all that, this spectacle of men flying was so startling, so bewildering to the senses in that year 1908, that we all stood like so many marble men."

-- Byron Newton (chapter 8 paragraph 18)

Importance: Byron Newton was a reporter for the Paris Herald. His comment captures the irony that even cynical members of the media were astonished by flying men.

The summer Saturday in Le Mans, France... one American pioneer had at last presented to the world the miracle he and his brother had created on their own and in less than two minutes demonstrated for all who were present and to an extent no one yet had anywhere on earth, that new age had begun."

-- Narrator (chapter 8 paragraph 103)

Importance: The significance of the brief test ride that Wilbur piloted was an event that changed the world forever. Prior to this trial, the progress that the Wright brothers had made had been taken lightly, sometimes ridiculed and largely ignored.

Orville Chanute... exclaimed, 'Good for you, my boy!' then asked him how it felt to be making history. 'Pretty good,' Orville said, 'but I'm more interested in making speed.'"

-- Orville Wright (chapter 9 paragraph 33)

Importance: This quote captures the humble and dedicated nature of both Orville and Wilbur Wright. They eschewed fame as celebrities and devoted their time to developing and perfecting their flying machine.

Never in their lives had the three Wrights been among so many who, by all signs, had little to do but amuse themselves. Nor did they feel out of place or the least intimidated by such company. They felt that they, in their way, were quite as well-born and properly



reared as anyone. Never did they stray from remaining exactly who they were....”
-- Narrator (chapter 10 paragraph 63)

Importance: When Orville, Wilbur and Katharine visited the posh resort of Pau, France, they were among the wealthy, elite and royal. This passage emphasizes that despite the global status that the Wright Brothers had attained, they remained loyal to their Midwestern roots and values.

A man who works for the immediate present and its immediate rewards is nothing but a fool.”

-- Wilbur Wright (chapter 11 paragraph 111)

Importance: This was Wilbur Wright’s response to a report who asked him if he had conquered aviation. His answer captures his humility and humble nature about the historic nature of his invention.



Topics for Discussion

1

What businesses did the Wright brothers venture into before developing the airplane? What successes or failures did they have in these businesses?

2

What was the general attitude among the public and press about man being able to fly prior to the development of the Wright flyer? What early criticism was directed at the Wright brothers and how did they react?

3

What inspired the Wright brothers in their development of a flying machine? What other inventions were made around the same time? What advancements had been made in gliders or flying machines?

4

Why did the Wright brothers settle on Kitty Hawk as the locale in which to test their flying machines? What other U.S. locations did they use for trial runs? What was the first city in the world to be flown over by a flying machine?

5

What innovation about the flying machine's rudder came to Wilbur in the middle of the night? What is wing warping and what did the brothers study in order to perfect this element?

6

What position did the brothers initially hire Charlie Taylor for? What important contribution did he make in the development of the airplane?

7

What spirit encompassed the nation in the first decade of the twentieth century? Who was the president during that time and what impact did he have on the nation? What large project was planned during his administration?



8

What can the seeming disinterest that the U.S. public and press demonstrated be contributed to? Contrast the reaction the U.S. had to the Wright brothers and their work with France and other European countries.

9

Why did the Wright brothers want to negotiate with the U.S. War Department before they made a deal with another country? Why did the War Department show no interest in the Wright Flyer? What made Wilbur reject the offer that the War Department initially made?

10

How did Katharine Wright help her brothers? Why did she accompany Orville to Europe for meetings and demonstrations in France and other countries?