



THE GRAPEVINE



There is a very fine line between "hobby" and "mental illness."

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April Meeting And Program

NOTICE: Our April meeting will take place at 7:30 P.M. on the 5th of April. The meeting will be at the terminal - KLVK.

Calendar:

Month	Date	Speaker	Topic
Feb	2 nd	Steve Robinson	Fiberglass Fabrication & Old Airplanes
Mar	4 st	David Ringler	Patriots Jet Team Foundation
Apr	5 th	Dave Dent	Quiver number 226 – The flying cowboy

Our April Program will feature slides and videos from Dave Dent talking about his time spent with Quiver of Scaled Composites fame. Dave had scheduled a follow-on presentation with Steve Losey for next Saturday, but unfortunately that has fallen through for the time being. Stay tuned while Dave bird dogs this one.

Mailbag:

Dinner & Dues:

Mark Palajac is now accepting payments for 2012 dues. At last count only 78+ members have renewed of the 97 from 2011. You can give Mark a check at the meeting or mail your check to him at 25 Jacaranda Drive, Fremont CA, 94539. If you give money to someone to give to Mark, please notify Mark by email so he can make sure it gets to the bank (mark_pal@yahoo.com).

[The Man Aviation History Almost Forgot](#) – Submitted by Bruce Cruikshank – Thanks Bruce

Charles E. Taylor

by Bob Taylor

Three men (not two) were involved in the invention and development of the first powered airplane - that's right three.

Everyone knows about the Wright brothers, but that third man was Charles E. "Charlie" Taylor, a quiet genius who loved cigars and the sound of machinery.

Although he contributed to one of man's greatest achievements, "Powered Flight," his name was almost lost in aviation history. And if it hadn't been for Charlie that first powered airplane would never have gotten off the ground.

Charlie Taylor was born on a little farm in Cerro Gordo, IL, on May 24, 1868. As a boy Charlie moved to **Lincoln, NE**, with his family. Charlie quit school at the age of 12 and went to work as an errand boy for the **Nebraska State Journal**. However, Charlie was mechanically inclined so later, when he began working with machinery in the Journal's bindery, it came easy for him.

When Charlie was in his twenties he moved to **Kearney, NE**, where he went into a business of making metal house numbers. While in Kearney, Charlie met a young lady named Herietia Webbert in 1892 and married her two years later.

In 1896 the Taylors moved to **Dayton, OH**, where Charlie worked for a Stoddard Manufacture which made farm equipment and later bicycles. It was in Dayton where Charlie met the Wrights. Mrs. Taylor's uncle rented the building on West Third Street to the Wright brothers for their bicycle business. This was a convenient connection because in 1898 when Charlie started his own machine shop, Orville and Wilbur Wright brought him special jobs, including a bicycle coaster brake they had invented but later dropped.

Charlie eventually sold his tool shop for a profit and went to work for the Dayton Electric Co. However, he didn't like his job so he accepted, when the **Wright brothers** asked him to work for them at \$18.00 per week. This was a good decision for several reasons: The Wright brothers' shop was only six blocks from where Charlie lived, he could ride a bike home for lunch every day, he was making eight dollars a week more, and he liked the Wright brothers a lot.

Charlie started to work for the Wright brothers on June 15, 1901, doing routine repairs on bicycles. This let the Wright brothers pursue their experiments with gliders which included many trips to Kitty Hawk. After one of these trips, the brothers decided they needed more accurate information than was available and decided to build a small wind tunnel with delicate force balance. With this, they would measure the amount and direction of air pressures on plane and curved surfaces operating at various angles and improve their theories based on their gliding experiences.

Building the wind tunnel was the first job that Charlie Taylor did for the Wright brothers that had any connection with aeronautics. The wind tunnel was a rectangular box with a fan at one end driven by a natural gas engine. Charlie ground hacksaw blades and used them for balance in the tunnel. The Wright brothers did many experiments in their wind tunnel and from this data they began to make their 1902 glider with Charlie machining many of the parts. On August 13, 1902, the brothers shipped the glider to Kitty Hawk. They did several flights with the glider and on October 31, 1902, the Wrights returned to Dayton to make plans for a powered airplane. Through their experiments, the Wrights were able to accurately predict the horsepower--eight--which was needed to produce and achieve powered flight.

The next problem was where to get a light engine that would produce eight horsepower. The Wrights knew that a steam engine might suit their purpose, but a gasoline engine would be safer and more efficient. On December 3, 1902, the Wrights sent letters to almost a dozen automobile companies and gasoline engine manufacturers asking if they could produce or modify an engine that would develop eight to nine brake horsepower, weigh no more than 180 pounds, and be free from vibration.

Most companies replied that they were too busy to undertake building such a special engine. Falling back on their own mechanical experience, the Wright brothers decided to design and build their own engine. They estimated they could build a four cylinder engine with four inch stroke and four inch bore, weighing no more than 200 pounds with accessories included. By their calculation, it would develop the horsepower necessary to power the glider in flight.

Now the problem was who was going to build the engine, but it was easily solved. The brothers decided that they would give the task to Charlie and they would build the airframe. Charlie was excited about this new challenge. From his knowledge of mechanics and design he knew that the engine design was basic, straight forward, simple, and capable of being successful. Charlie had very limited knowledge about gasoline engines, but he used his craftsmanship, genius, enthusiasm, and efficiency to tackle the task.

Charlie started building the engine in the winter of 1902-03. Without any formal drawings available, it was necessary for each part to be crudely sketched out by the Wrights or Charlie on a piece of paper. After a thorough discussion about it, Taylor would pin the drawing above his workbench and go to work to complete it. Using these sketches and specifications, he finished the engine in six weeks--an amazing accomplishment.

I want to describe in some detail of how Charles Taylor made the engine so you can appreciate the craftsman he was. The first problem that Charlie and the Wrights faced was the crankcase. The case had to be light and strong. Aluminum was still a rare metal in those days and it was difficult to get a good sound casting. John Hoban, foreman of Buckeye Iron and Brass Foundry in Dayton, took on the job of making the crankcase using the strongest aluminum he had. The cylinders were turned from fine-grain gray cast iron and had a bore of four inches. The top and bottom of the cylinders were threaded so they could be threaded into the crankcase and a water jacket could be threaded on them. The next major task for Charlie was making the crankshaft. Being a mechanic most of my life, I would never even attempt taking on a project of making a crankshaft with the equipment that Charles Taylor had--a drill press, a lathe (both run by a natural gas engine), and hand tools. Charlie secured a plate of high carbon tool steel that measured 1-5/8 inches thick, six inches wide, and 31 inches long. On the plate he traced an outline of the crankshaft and carefully, painstakingly drilled hundreds of holes along the outline of the crankshaft. This weakened the plate enough so he could knock the excess material away with a hammer and metal chisel. Once this was done, he had the rough cut crankshaft ready for the lathe and the finish cut. With the small natural gas engine chugging away at full power driving the large wide leather belts that turned the lathe, Charlie turned out a near perfect crankshaft to the thousandth of an inch.

The next part that Charlie worked on was a fly wheel from a solid block of cast iron. The connecting rods, intake valves, exhaust valves, pistons, valve guides, rocker arm, and numerous other parts that made up the complete engine were carefully thought out by Charlie and tailored to fit the operation of the engine. Charlie painstakingly assembled the engine part by part, fitting and refitting each piece with the meticulous care of a jeweler making a watch. He scrutinized every detail. He assembled and disassembled the parts, time and time again, making sure of their operation until all the parts were working in harmony. It took a lot of genius and ingenuity and the engine was finally complete and assembled in February 1903. It was mounted on a test stand and ran well, producing eight horsepower at 670 rpm and 11 hp. at 1000 rpm. **Charles E. Taylor had successfully built the first aircraft engine.**

As a result of the engine producing 12 horsepower at full rpm, the Wright brothers were able to add another 150 pounds to the aircraft which allowed them to strengthen the wings and framework. The engine with its dual propeller drive drove two counter rotating pusher propellers by means of chains. The Wright brothers designed and tested propellers in the wind tunnel and built several propellers that would be used for the first successful flight. Charlie also made all of the metal parts such as all of the metal fittings where the wooden struts joined and spruce spars and Roebling truss wires were attached.

On September 23, 1903, the Wright brothers left Dayton for Kitty Hawk to start preparation for man's first powered flight and the Flyer followed on September 25. The Flyer was assembled and the engine was installed on November 2. To reduce the danger of the engine ever falling on the pilot in case of a wreck, it was placed on the lower wing to the right of center. When the engine was started, the vibration from the irregular firing caused failure of the prop shaft extensions. Charlie made new shafts out of solid steel which held up during the first flights.

On December 17, 1903, in the mid morning after a run of about 40 feet at a rate of approximately seven to eight mph, the first successful powered aircraft lifted off and flew 120 feet in 12 seconds thus introducing a new era of transportation. Although the first flight wasn't publicized that much, Charlie and the Wright brothers were very excited. The Wright brothers decided to build another flying machine, but decided against going again to Kitty Hawk. They looked near Dayton for a level place for flying. After a few days of searching the Wrights found a suitable ninety-acres pasture, often called "Huffman Prairie," belonged to Torrence Huffman, a Dayton bank president. He allowed them to use it free--provided they didn't run over his cows.

Charlie and the Wrights built a hangar to house the airplane and moved into the new facility on April 20, 1904. Charlie took care of the field and facility while the Wrights were going around the country and world. He was the first airport manager.

In a 1948 interview Charlie said that he had "always wanted to learn to fly, but I never did. The Wrights refused to teach me and tried to discourage the idea. They said they needed me in the shop and to service their machines, and if I learned to fly I'd be gadding about the country and maybe become an exhibition pilot, and then they'd never see me again." How prophetic those last words were!

The Wrights were trying to sell the aircraft to the military and started to do demonstration flights on September 3, 1908. Orville flew and Charlie kept the aircraft in good flying condition. On September 17, Charlie was slated to fly with Orville, but before the flight, larger propellers were installed to compensate for the heavier weight of the two men. At the last minute Charlie was replaced by Lieutenant Thomas Selfridge, a 20 year old West Point graduate from San Francisco. During the flight Orville heard a strange noise. He looked around, but didn't see anything. However, he decided to shut the engine down and land. Suddenly, there were two large thumps and the aircraft shook violently, as Orville tried to control aircraft to the ground. About 20 feet from the ground the aircraft started to correct itself, but it was too late. The aircraft hit the ground, killing Lieutenant Selfridge and badly injuring Orville Wright. Lieutenant Thomas Selfridge became the first passenger casualty in a powered aircraft. After the accident, Charlie investigated the crash scene and found the new propellers that they put on before the flight had delaminated. Charlie reported his findings to Orville, who was in the hospital recovering from his injuries.

Charles was the first person to investigate a powered fatal accident flight. Charles Taylor continued to work with the Wright brothers until 1911. At this time an adventurer and a pilot, Calbraith Perry Rodgers, wanted to make the first continental flight across the United States. He purchased an aircraft from the Wright brothers and enough parts to build two more aircraft. Orville realized that the aircraft would not last more than 1,000 miles without proper maintained, so he lent Charlie to Rodgers knowing that he would be the only one that could keep the plane flying for that distance successfully. Charlie sent his family ahead to California and got on the three car train that was to accompany the flight. One car of the train was a repair car where the aircraft parts would be stored and the aircraft repaired. It took Cal Rodgers 49 days to cross the United States. Three days, ten hours of that was actual flying time. His longest single flight was 133 miles. He had 16 crashes and the aircraft was repaired so many times that at journey's end only the vertical rudder, the engine drip pan, and a single strut of the original plane remained--a test to the skill which Charlie used in keeping the aircraft flying.

This was the last of Charlie's big adventures. Charlie returned to Dayton and worked for the Wright-Martin Company until 1920. Charlie eventually moved to California and lost touch with Orville Wright, but things turned bad for Charlie. The Depression hit and Charlie's machine shop failed. He lost his life's savings in a real estate venture and his wife died.

Charlie Taylor's contribution to aviation was forgotten until 1937 when Henry Ford was reconstructing the old Wright bicycle shop in Dearborn, MI. Detectives found **Charlie working at North American Aviation in Los Angeles for 37 cents an hour.** None of his co-workers realized he had built the first aircraft engine. Charlie worked for Ford until 1941 when he returned to California and worked 60 hours a week in a defense factory. However, in 1945 Charlie suffered a heart attack and was never able to work again.

In November 1955, a reporter discovered Charlie in Los Angeles General Hospital's charity ward--he was almost destitute. His income was his Social Security and an \$800 a year annuity fund belatedly established by Orville Wright before his death in 1948. The aviation industry immediately started a campaign to raise funds for Charlie. He was moved to a private sanitarium where he died a few months later on January 30, 1956, at the age of 88. Having no close relatives, Charles E. Taylor was buried in the Portal of Folded Wings Mausoleum dedicated to aviation pioneers, located in Valhalla Memorial Park, Los Angeles.

Charles E. Taylor was the last of the three that shrunk the world by building the first successful powered airplane--the mechanic who made the flight possible.

MINUTES: GENERAL MEETING EAA CHAPTER 663, 3/1/2012, 7:30 PM, TERMINAL BUILDING, KLVK.

Chapter president Ralph Cloud called the meeting to order.

One guest introduced himself.

The minutes for the February meetings as well as the transcript of the program featuring missionary pilot Brad McFarlane who flies in northern Papua New Guinea were approved as printed in "The Grapevine".

Business: The proposed chapter aircraft judging event at the coming Golden West Fly In was discussed. There was a great deal of interest expressed by those present.

The proposal comes from the Grass Valley chapter 1175. Five aircraft from each of 7 EAA chapters would present the Golden West Fly In early Sunday morning, June 10. The chapter judged with the best aircraft would win \$250. Two of the biggest questions were method of judging and how we would select the five participants from our chapter. Stay tuned.

Members Forum: Dave Dent's maintenance discussion this month concerned ignition problems: Look first at the spark plugs, then comes the leads. Dave showed us his ignition lead tester, a device that loads the lead electrically and test for breakdown of the insulation and continuity. When all else fails, check the magneto for cracks in the rotor and distribution cap.

Break and then program: Dave Dent introduced David Ringler, executive director of the Patriots Jet Team Foundation. Dave told us of the recent developments with the foundation at the Byron Airport. They are finishing a new large hangar to house part of the jet team and to have classrooms and other amenities for exposing young people to aviation and fostering an interest in math and science. It's an all volunteer organization. Part of the hangar will be a museum with a focus on jets and aerospace. At the end of his presentation he showed an excellent video of the Patriot Jet Team performing during a Fleet Week Airshow over San Francisco. Thank you David Ringler.

Meeting adjourned for pie.

These minutes are short on detail because I lost my notes (If I only had a dog to blame.)

MINUTES: BOARD OF DIRECTORS MEETING, EAA CHAPTER 663, 2/16/2012, 7:30, AT RALPH'S PLACE.

MINUTES: BOARD OF DIRECTORS MEETING, 3/15/2012, 7:30 PM, RALPH'S PLACE.

Ralph Cloud, Mark Palajac, Chuck Ray, Bob Farnam, Dave Dent, Bruce Cruikshank, Trina and Dave Anderson were present.

Treasurer Mark reported 78 dues paying members and a balance of \$5,156.62 in chapter funds.

Ralph had a few more details on the proposed aircraft judging event at the Golden West Fly In. The five items to be judged are: Appearance, Build Quality, Interior, Finish, and Attention to Detail.

Trina gave a list of coming Young Eagle events. The dates: 4/28 LVK, 5/19 TCY, 6/23 (Byron?), and 7/21. Stay tuned. 5/19 is an EAA Learn to Fly Day with the Tracy Airport hosting the event.

Ralph mentioned the EAA headquarters is conducting an Experimental Amateur Built Aircraft Survey. Of interest is the number of homebuilts owned and flown by other than the original builder. There are only couple in this chapter.

The cart that holds the folding chairs in the terminal building is missing a caster. Dave dent offered to fix it.

Tools: The chapter bore scope is still in the hands of the local Snap-On rep, and no one has seen him recently.

The program for April will be a presentation by Steve Losey who has served as crew chief for nearly all the aircraft coming from Scaled Composites at Mojave. It will be on Saturday April 7th time and location to be decided. Dave Dent will fly down to Mojave and pick him up and return him. This depends on decent weather on the 7th.

It was approved to reimburse Dave up to \$300 for fuel. There will be a normal meeting on April 5th. Get ready to spill your guts about your own project.

Ralph set the date for the first chapter barbeque for May 12th.

Announcements: Next general meeting will be 4/5 with the board meeting following on the 19th.

Meeting adjourned for pie.

Respectfully submitted, Bruce Cruikshank, Secretary.

Feedback/Questions/Suggestions

Any and all feedback is welcome. Please take a few minutes to send suggestions, tips, corrections or any other feedback to: jeffrylite@comcast.net.

Cool video's found on the internet.

[An older pilot's use of the iPad](#) – Thanks to Brice Cruikshank for this one.

[Helicopter Robots](#) - Amazing

[Magneto Interactive Assembly](#) - Thanks to Ralph Cloud.

What is it? From last month Sponsored by:



Last month Barry Weber once again was correct by naming the Thunder Mustang Longnose Turbine, however he was beaten to the punch by Leland Collins. Sponsor prizes have been restocked thanks to Aircraft Spruce. Don't forget to thank them when you call and make that next order. Might be worth jotting down a note in the comments section if you order online. A year end prize has been donated by



A new aviation headset. <http://www.comtronics-aero.com>. Missed guess's still count one point each, tallied to the end of the year with a 2 guess limit per month.

Thanks to those that called Aircraft Spruce and mentioned this contest in the newsletter as they have agreed to continue their sponsorship. Prizes are available thanks to them.



Please give them a call with your next order and tell them how much you appreciate their generous donation to our monthly newsletter.

Submit your answer to the newsletter editor to be eligible for a prize to be awarded at the regular chapter meeting.

You must be present to win but points are cumulative.

Winning entries will be decided by the email that is received with the earliest time stamp and the correct naming of the make/model of the pictured airplane as discovered. Winners that correctly identified the winning make/model that do NOT attend the meeting will forfeit the prize to the next available submission. Winning entries will be decided by the email that is received with the earliest time stamp and the correct naming of the make/model of the pictured airplane as discovered. Winners that correctly identified the winning make/model that do NOT attend the meeting will forfeit the prize to the next available submission. Chapter Judge's decision on correct identification is final.



Do not go lower than the field elevation of your airport without the wheels down.

What is it?
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