Henderson R/C Club

The Tailwind

AMA Charter No. 704

MARCH — DON LEWIS, EDITOR — 2017

President: Lynn Perkes *Vice-President*: Bill Pruner
Treasurer: Lynn Perkes *Secretary*: Don Lewis
Safety Officer: Carl Tackett *Instructors*: Bill Pruner, Lynn Perkes

Next Meeting on Thursday, March 16 – Be There!

Be sure to check out the website at www.fly-hrcc.org

Meeting Minutes

- January 19 meeting was called to order by L. Perkes at 7:15.

- Attendees: L. Perkes, B. Pruner, C. Tackett, D. Lewis

- No meeting was held in December, so no minutes were published.

- Treasurer's Report was given by L. Perkes and is published below. D. Lewis moved to approve; B. Pruner seconded; passed unanimously.

Old Business-

- Field improvements are still pending. Plan to install in spring.

New business-

- Reviewed MTRCCA meeting notes.
- **Dues for 2017 are due.**
- D. Lewis moved to change meeting schedule to odd months as monthly meetings have not been necessary to complete club business. Seconded by B. Pruner; passed unanimously.
- Dates for events for 2017 were agreed upon:
  - Spring – May 20 (alt. May 13 or 6)
  - Fall – Oct. 21

- There being no further business, the meeting was adjourned at 7:50 PM.

Treasurer's Report

Opening balance	$ 1,070.28
Income	892.82
Expenses	(255.00)
Closing balance	$ 1,708.10

When Your Plane Talks, Listen!

By Unknown

Once upon a time I had a new pattern plane. On the first few days of flying it, everything was fine. But one day, on the first flight, it required several clicks of down trim (odd...) after take off -- and after each turn or maneuver, the pitch trim would be off again (VERY odd...). Only when it took full down stick to fly inverted (JEEPERS!) was I smart enough to realize something was wrong. After landing, the problem was obvious: I had not bolted the wing to the fuselage!

But the plane DID "try to tell me"; I just wasn't listening. Only new, tight-fitting wing dowels had saved the plane from destruction -- it certainly wasn't the pilot! Recapping later, I thought of a number of things that would have caused similar symptoms: servo or servo tray loose, bad servo centering, broken elevator hinges, loose control horn, et cetera. The point is, ALL of those things are BAD! And with the plane not behaving properly, WHY did I keep flying??

Just suppose you're getting an occasional glitch from your radio; something that doesn't normally happen. This could be an antenna problem; it could be metal-to-metal vibration causing home-grown interference, or a loose crystal. Will any of these get better while you keep flying? And speaking of vibration, what if you start hearing it in the air? It's your plane talking to you -- loose muffler, engine mount, worn wing dowel holes, loose cowl mounting. Again, such problems don't get better, only worse.

One more example -- this has happened to all but the most careful pilots. Your engine goes lean and sags at the top of a loop. It's TELLING you that the mixture is loo lean. But you don't listen and keep flying; a minute later, while doing another loop, you're suddenly dead stick!

The sky gods know -- we have enough problems that pop up suddenly, and we don't have any opportunity to prevent them. Other times the plane "tells you" that there is, or will be, a problem. Unless you really enjoy repairing or rebuilding -- LISTEN! Cutting a hop short to check out a possible problem is much quicker (and vastly cheaper) than building another plane!

The Stall & Angle of Attack

By Unknown

Stall, spin, crash!

All too often that's how our lovingly crafted aircraft die. Our aircraft all have to be operated with certain limits - the flying ``envelope'' of any particular aircraft design. A machine can only structurally stand so hard a landing, only so many Gs loading, and go no more than a certain speed before coming apart. And aerodynamically, the plane can only go so slow and stay airborne; ...and this is the limit that seems to cause us the most difficulty.

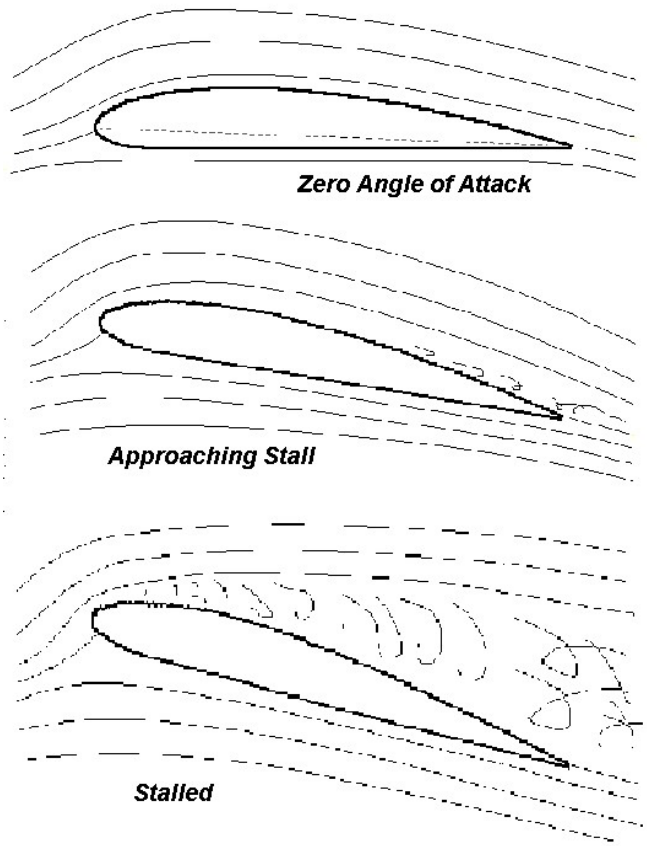
Actually, strictly speaking, a stall is NOT directly tied to airspeed. Loosely defined, a stall occurs when the angle of attack of the planes wing exceeds the point where the airflow can follow the wings contour; the organized airflow breaks down, sharply reducing lift (see diagram). Essentially, airflow just can't ``hack the turn'' at the leading edge of the wing. As long as we don't yank back on the stick, forcing a stalling angle of attack, we can still ``fly'' VERY slowly without stalling - over the top of a loop, for instance. And we all know that a plane can also be stalled at very high speeds - any snap maneuver involves a stall.

But folks will advertise the stalling SPEED of an aircraft; when they do so, certain conditions must be specified or implied: 1) straight and level flight 2) the weight of the plane (``at max gross'') 3) Atmospheric conditions (``sea level, standard day'') 4) power on or off 5) high lift devices (flaps up or down). -All these conditions affect the actual airspeed at which the plane will reach the stalling angle of attack.

Now, getting to the plane itself, what determines the stalling angle of attack? Mostly it is the type of airfoil used on the wing and the shape (plan form) of the wing.

To recap these points: Once your plane is built, the wing shape and airfoil determine the stalling angle of attack; this is pretty much FIXED. The conditions you are flying with, and how you fly the plane, determine the SPEED at which a stall will occur.

Let's take an example; the Nifty Fifty, a .40-.50 size trainer. With 500 square inches of wing, an N-60 airfoil, and an aspect ratio of 6, at 5 pounds this plane will stall at about 20 mph. Adding a 3 pound brick to the plane, the stall speed goes up to 26 mph. That may not seem too bad, but if we were landing in a 14 mph wind, the ground speed (the speed we SEE) is DOUBLED with the brick!! But in BOTH cases, the stall angle of attack is the same, at 10 degrees. Back at 5 pounds again, we enter a steady 60 degree bank turn; the stall speed in this case will be 30 mph, but STILL 10 degrees angle of attack. And if we were to pull 5 ``Gs'' coming out of a loop, the stall speed would be 46 mph!! Note that all these figures would be a bit higher at high altitude, or on a very hot day. Also, be aware that a plane stalls at a bit higher speed with power off than power on.



It follows, then, that to avoid stalling your plane, don't pay so much attention to the SPEED of the plane - its hard to judge anyway - keep your eye on the ATTITUDE of the plane with respect to its flight path. That attitude (how high the nose is) will tell you whether or not you're close to the stall, pretty much regardless of any other conditions, other than flaps or other moveable high lift devices.

Let's look at one other item - stick travel. For most fairly stable aircraft, the amount you move the stick (and thus the elevator) determines the angle of attack the plane flies at. If you can get a violent stall with less than full back stick, you may want to consider using less elevator travel. Most trainer plans give you an elevator throw figure that doesn't ALLOW a stall in any normal flight situation - this is also worthy of consideration, depending on your skill level and what you want your plane to do.

Above all, spend some time flying your plane close to, and into the stall. Most planes, other than pattern and racing craft, recover from a stall very nicely with some power and easing the back stick. Get used to the signs of impending stall; get used to recovery. Get used to the ATTITUDE at which this all occurs. Exploring the low-speed area of your planes performance characteristics will make you a far better, safer pilot!

Celebrating Flight

Boeing P-26 Peashooter
From Wikipedia

The Boeing-funded project to produce the Boeing Model 248 began in September 1931, with the Army Air Corps supplying engines and instruments. The design included an open cockpit, fixed landing gear and externally braced wings, the last such design procured by the USAAC as a fighter aircraft. It also saw the introduction of flaps to reduce speeds for landings. The Army Air Corps contracted for three prototypes, designated XP-936, with the first flight on 20 March 1932.

The Boeing XP-936 had a landing problem. Sometimes when landing it would flip forward and because of the short nose it would roll onto its back. This injured many pilots until the unarmored back canopy was replaced with an armored headrest. An additional 25 aircraft were completed as P-26Bs, with Pratt & Whitney R-1340-33 Wasp engines, and 23 P-26Cs had minor changes to carburation and the fuel system. Both Spain (one fighter) and China (11 fighters) ordered the Model 281 export version of the P-26C in 1936.

The diminutive "Peashooter" as it became affectionately known by service pilots, was faster than previous American combat aircraft, but it was also an anachronism. Although the P-26 introduced a modern monoplane design, worldwide fighter aircraft developments soon outstripped the P-26. In Europe the Messerschmitt Bf 109 and Hawker Hurricane with closed cockpits and which both flew for the first time in 1935 were more representative of contemporary monoplane fighter designs. However, the P-26 was easy to fly and remained in active service for many years until the United States entered World War II.

Deliveries to USAAC pursuit squadrons began in December 1933 with the last production aircraft in the series coming off the assembly line in 1936, designated the P-26C. Ultimately 22 squadrons flew the Peashooter, with peak service being six squadrons in 1936. P-26s were the front-line fighters of the USAAC until 1938, when Seversky P-35s and Curtiss P-36s began to replace it. A total of 20 P-26s were lost in accidents between 1934 and the start of World War II, but only five before 1940.

The first Boeing P-26 to experience major combat operation was the Chinese Model 281. On 15 August 1937, eight of the Boeing fighters from the Chinese Air Force 3rd Pursuit Group 17th Squadron based at Chuyung airfield, engaged eight out of 20 Mitsubishi G3M Japanese bombers from the Kisarazu Air Group sent to attack Nanking. The Chinese Boeing fighters helped shoot down two of the four Japanese bombers destroyed that day without suffering any losses. Subsequent engagements between the Chinese "Peashooter" pilots and pilots of the Imperial Japanese Navy flying the Mitsubishi A5M "Claudes" were Asia's first ever aerial dogfights and kills between monoplane fighter aircraft. A single P-26 was in service with the Spanish Republican Air Force during the Spanish Civil War of 1936-39, but no aerial kills were recorded with this aircraft, it being shot down during 1936.

By December 1941, U.S. fighter strength in the Philippines included 28 P-26s, 12 of them in the service of the 6th Pursuit Squadron of the Philippine Army Air Corps. Most of these were destroyed on the ground in the first Japanese attacks following Pearl Harbor, but Filipino-flown P-26s claimed one Mitsubishi G3M bomber and two or three Mitsubishi A6M Zero fighters before the last of them were burnt by their crews on December 24, 1941.

Following Pearl Harbor, only nine P-26s remained airworthy in the Panama Canal Zone. In 1942-1943, the Fuerza Aérea de Guatemala acquired seven P-26s ostensibly by the US government smuggling them in as "Boeing PT-26A" trainers to get around restrictions of sales to Latin American countries. The last two P-26s in service were still flying until 1956 with Guatemala's Air Force, when they were replaced with P-51 Mustangs. The P-26's last combat operation was with Guatemala's Air Force during a 1954 coup.

The P-26 was the last Boeing fighter to enter service until Boeing acquired McDonnell-Douglas with production and continuing support contracts for the F/A-18E/F Super Hornet in 2002. Between those aircraft, Boeing did produce the experimental XF8B in 1944 as well as the prototype YF-22 in 1991.

General characteristics

- Crew: 1
- Length: 23 ft 7 in
- Wingspan: 28 ft
- Height: 10 ft 0 in
- Empty weight: 2,196 lb
- Loaded weight: 3,360 lb
- Powerplant: 1× Pratt & Whitney R-1340-7 "Wasp" radial engine, 600 hp

Performance

- Maximum speed: 234 mph at 6,000 ft
- Combat radius: 360 mi
- Ferry range: 635 mi
- Service ceiling: 27,400

Armament

- Guns: 2× .30 in M1919 Browning machine guns
- Bombs: 1× 200 lb bomb

Editorial

Random Thoughts

The flying season is fast approaching. The weather is getting better, daylight savings time is in force, and the grass is starting to grow. The field is going to be getting busier than it has been all winter. Our new club sign survived the winter. Now it's time to put up our new rules sign.

Ah the rules sign. We wrote it. We ask everyone not familiar with the club to follow the posted rules. Please help by gently reminding anyone violating the rules that they are there to make sure everyone is safe and that we keep the field.

As I said, the grass is starting to grow. We had a great response to the call for volunteers for mowing last year. I hope that we can get a similar response this year, even though we are getting a late start on the list. I believe that the club mower is ready to go.

One last thought… it's time to get your dues paid for 2017. Not much of a penalty if you don't, but I'm sure that the rest of us would sure like to have everyone back this year (and any new members you can bring with you, too).

I hope that I see everyone at the meeting Thursday!

That's my opinion – it oughta' be yours! ☺

Letters To The Editor

Need to get something off your chest? Want to solve all of the club/s problems? Write a letter! I welcome anyone (member or not) to submit an opinion in writing so long as it is civil in its expression (I reserve the right to make that determination). You can email your letters to the editor to me at Don_Lewis@comcast.net, or just give them to me at a club meeting.

Novice Nuances

Multi-blade Propellers

Three-bladed model airplane propellers are less efficient than two-bladed propellers. In fact, the more blades that are added, the less efficient the propeller becomes. The only advantage of a multiblade propeller is a smaller diameter.

Multiblade propellers are used with full-scale airplanes when ground clearance is an issue. World War II fighter planes are a good example. For this reason, many pilots use multiblade propellers on their scale model airplanes to make it look more like the full-scale airplane.

Twin-engine airplanes often use multiblade propellers because the smaller diameter is needed for the propeller to clear the fuselage. This is true of full-scale airplanes and often the case with twin-engine model airplanes as well.

Evolution Engines offers a three-blade propeller to be used with a trainer. The inefficiency of the propeller "tames" the engine a bit for the beginner by allowing the airplane to fly slower while maintaining the thrust needed for easy takeoffs and climbs. The extra blade also helps to slow the airplane down when landing. After the beginner becomes comfortable flying the airplane, he or she can tap into the rest of the engine's power by changing to a more efficient two-bladed propeller.

Why Didn't I Think of That?

The Pinch Test

By Unknown

If you pinch the fuel line and the engine speeds up, it is on the rich side of the adjustment. HOW MUCH is speeds up shows how close you are. If it speeds up a lot, you are rich. If it speeds up just a little, you are just right.   If it doesn't speed up, you are just going lean. If it slows down, you are LEAN

This test temporarily starves the engine for fuel ,and is reliable to test for a too-lean condition. At full throttle, quickly pinch the fuel supply line.   The engine should momentarily increase RPM's before starting to die. It it starts to die immediately, then it's already too lean and should be adjusted.

Air Bleed Screw

By Unknown

When adjusting air-bleed carburetors (the ones with the little hole in the front), a good rule to remember is the word "richen". Split this word in half (rich-en), and when you want the carburetor **rich**, turn the screw **in**. Of course, leaning the carburetor would be turning the screw out.

Thou Shall Not Steal

By Don Nix

However, I'm afraid I'm going to have to break that commandment this month. We've been on the road RVing for several months and at the moment are in Quebec City, Quebec, trying to make ourselves understood when conversing with the French-speaking citizens. That can be especially challenging when one has a heavy Texas accent.

As a result, I haven't had much time to give a lot of thought to this column, so I'll have to resort to a little literary theft.

Actually, the first part was given to me by Charlie Castaing of New Iberia, Louisiana. I've known Charlie for quite a while, and we were able to renew our friendship while guests of Ronnie, Liz, and Marie Segura during our visit with them in New Iberia in late April.

The Seguras treated us with an authentic Cajun crawfish boil—35 pounds of crawfish, plus corn on the cob, boiled potatoes and onions; all this for seven people. If you've never had the experience, I can assure you that you won't wolf down your meal. Peeling the crawfish and eating all that food is an all-afternoon experience.

Charlie offered several suggestions for the column, so I'll just quote directly (Charlie speaking):

"One of the problems I have noted is that in training beginning pilots, they tend to want to fly either directly over the runway or worse yet, directly overhead. Sometimes over the pit area, the pavilion or even the parking lot! In addition to causing strained neck muscles, it's almost impossible for the student to recognize the attitude and positioning of the model. I usually stress (demand!) that the student fly a considerable distance beyond the runway. The result is a much better perspective of the model in flight. (This same thing was also mentioned in an issue of *Hi-Sky R/C Flyer* edited by Lewis Jordan, location unknown).

(Charlie speaking again) "At our flying field, we have a couple of benches in the pit area on which the model is placed for starting, performing adjustments, etc. It allows old-timers like me to more comfortably attend to the models. Even the younger guys can more easily adjust the engines. I personally have no problem squatting down to start or work on the models, but getting back up is the problem!"

Charlie also mentions the problem of bees and other stinging insects. This same problem was mentioned in some club's newsletter that was forwarded to me by Jim Rice, District VIII VP, but I can't remember the source. In that newsletter, the writer suggested putting the model into a number of tight loops while trying to deal with the critter du moment, holding it in position with one hand while taking care of the situation with the other. Might work … and is better than having the model fly off out of range. Obviously, the pilot should yell for someone to take over if any one else is nearby.

Quoting again from an issue of *Hi-Sky R/C*, the writer cautions against subconsciously pointing the antenna directly at the airplane, especially when near the ground. As most know, this can cause a "cone of silence" at the receiver, resulting in a delay in response. Keep that antenna up during landing, which is usually the most critical time.

Someone suggested that servos are a poor place to save money, especially on larger aircraft, or even smaller ones which will be subjected to heavy loads during aerobatics. The writer says the only place he uses "standard" servos is on the throttle. That's no doubt good advice, since better servos will not only hold up under high loads but will last a lot longer as well.

Origin of Common Expressions

In the heyday of sailing ships, all war ships and many freighters carried iron cannons. Those cannons fired round iron cannon balls. It was necessary to keep a good supply near the cannon.

However, how to prevent them from rolling about the deck? The best storage method devised was a square-based pyramid with one ball on top, resting on four resting on nine, which rested on sixteen. Thus, a supply of 30 cannon balls could be stacked in a small area right next to the cannon. There was only one problem...how to prevent the bottom layer from sliding or rolling from under the others. The solution was a metal plate called a "Monkey" with 16 round indentations.

However, if this plate were made of iron, the iron balls would quickly rust to it. The solution to the rusting problem was to make "Brass Monkeys." Few landlubbers realize that brass contracts much more and much faster than iron when chilled. Consequently, when the temperature dropped too far, the brass indentations would shrink so much that the iron cannonballs would come right off the monkey. Thus, it was quite literally, "Cold enough to freeze the balls off a brass monkey." (All this time, you thought that was an improper expression, didn't you.)

History of Flight

The Wright Brothers

From Century-of-Flight.net

By the first decade of the twentieth century, interest and work in the field of flight had reached a fever pitch. As highly publicized efforts by engineers and scientists to

develop an airplane capable of carrying a person were underway in Europe and America, two brothers from Dayton, Ohio, were quietly, doggedly, and methodically teaching themselves everything there was to know about flying, and inventing all the rest as the need arose. What exactly drove the Wright brothers to embark on the odyssey that led them to Kitty Hawk is not at all clear, and even definitive biographies like Tom Crouch’s The Bishop’s Boys have trouble penetrating those two inscrutable minds. And that’s just the way they would have wanted it.

Wilbur was born in 1867, and Orville four years later the third and sixth of seven children born to Milton and Susan Koerner Wright. Milton was a minister in the United Brethren Church, an evangelical Protestant denomination, and the family moved frequently until Milton was named a bishop in the church and the family settled in Dayton, Ohio. In childhood and throughout their lives, Orville and Wilbur were constant companions (in ‘Wilbur's words, the brothers “lived together, played together; worked together, and, in fact, thought together”) and displayed many of the Yankee characteristics of their parents and forebears: an inner-directed spartan strength and a clear-eyed, determined outlook on the world and on life. Neither brother finished high school. though they were both insatiable readers and tinkerers. The Wright brothers tried their hand at several enterprises, including publishing newspapers and running a printing shop, hut without success.

In 1892, America was in the midst of a bicycle craze and the brothers established a bicycle shop in Dayton that proved financially successful. They manufactured some bicycles under their own brand name, including one they called the Flyer. During 1896, the Wrights read about the death of Otto Lilienthal and they became intensely interested in the question of flight. They collected all existing information on flight, writing to Octave Chanute and Samuel Langley at the Smithsonian, beginning an active correspondence with these men that was to last for years. Chanute (who regarded himself as a kind of international clearinghouse of information about flight) was particularly generous.

The Wrights designed a glider, strongly influenced by Chanute's design, and decided that their aircraft would not be as difficult to fly as Lilienthal's glider, but neither were they going to be passive passengers on a an inherently stable aircraft. They devised a method to control an aircraft in flight that involved twisting a Chanute design in a technique called "wing warping."

There are many stories about how the Wrights came upon wing warping, but the fact is that the technique was not new, and at least one American experimenter, E. F. Gallaudet, made use of it in kite tests near New Haven, Connecticut, in 1898. With their customary thoroughness, the Wrights also wrote to the U.S. Weather Bureau to find out the best place to test aircraft. On the basis of that information, they selected the Kill Devil Hills sand dunes outside Kitty Hawk, North Carolina, a fishing village on the Outer Banks, a thin peninsula that jutted out into the Atlantic and enjoyed strong and relatively constant winds.

In 1899, they tested a scale model of a glider in Dayton, and by the late summer of 1901 they were ready to test-fly their first full-size glider at Kitty Hawk. The trips to Kitty Hawk were arduous; a great deal of material had to be brought along, some in pieces that would be reassembled on site. The conditions were difficult and the pair's resolve and fortitude were tested to the limit by heat, mosquitoes, storms, cold gale-force winds, and isolation.

The locals liked the Wrights and the Wrights liked them, but the brothers' natural reticence caused some people to regard them as secretive—some believed that was why Kitty Hawk was chosen as a test site in the first place. But at this stage, the Wrights were not at all hesitant to share their findings with fellow researchers. In fact, in the midst of their experiments, Wilbur accepted an invitation from Chanute to report on his and his brother's experiments at a meeting of the Western Society of Engineers in Chicago, and many of the people Chanute kept bringing to Kitty Hawk to assist them were, the Wrights well knew, doing research of their own. The craft "flew" (it actually glided) well enough, but with thirty percent less lift than the Wrights had calculated.

They returned to Dayton and built a larger craft with a front horizontal rudder (called a "canard"), and returned to Kitty Hawk in July 1901 to test it. The performance was improved and the control bugs were worked out, but the Wrights were perplexed about why their calculations were still off. Their response to this was unique and would he reason enough to regard the Wrights as the first to fly. They constructed a wind tunnel in the rear of their bicycle shop and conducted precise tests of different wing sections. The tunnel was only six feet long by sixteen inches square, with a glass window in the top panel to allow observation. A steady fan driven by a small gas engine blew air through the box at a steady twenty-seven miles per hour), and inside, balance and spring scales measured lift and pressure on a variety of airfoils. In these experiments, the Wrights raised aviation experimentation to the level of serious engineering (and were thus more firmly in the tradition of Cayley and Langley than anyone else had been for over a century).

These tests were made in November and December 1 901; they collectively represent one of the most important phases in the early history of flight. The Wrights discovered that much of the published data on airfoils was incorrect or had ignored important elements of an airfoil in flight. They arrived at a clear idea of how the centre of pressure moves about an airfoil in relation to the angle of attack and as a function of the camber. And they knew what the control surfaces would need to be able to do if the flight was to be controlled by the pilot. After testing two hundred different wing surfaces, the brothers used their newly gained information to design Glider Number 3. It was equipped with a forward elevator wing and a rear fixed double fin that was later made adjustable, with its controls connected to the wing-warping controls for the main biplane wing section.

They returned to Kitty Hawk in September and tested their new machine in more than one thousand glides. It not only performed well, it performed as predicted. It was only now that the Wrights felt they were on the verge of succeeding in creating a powered airplane. They filed for a patent in March 1903, and turned their attention to the last hurdle: turning their glider into a flier.

The decade from the December 1903 flight of the Flyer at Kitty Hawk to the outbreak of World War 1 in August 1914 was an extraordinarily busy one in the development of aviation. Looking at the aircraft being built in 1913 and comparing them to those built in 1904, it is difficult to believe that only a decade had passed. Airplanes like Louis Bechereau's Deperdussin Racer and Geoffrey de Havilland's B.S.1, both produced in 1913, were built with enclosed, metal fuselages that used "monocoque" design: instead of just the frame, the entire fuselage supported the plane's load. These planes are recognizable early versions of planes produced thirty and forty years later, while the spindly frames of the Wrights' airplanes and the early flying machines were by that time only relics.

The Wright brothers had clearly uncorked a torrent of industry and creativity that had simply been waiting for some indication that the prospect of flight was not hopeless. But if the Wrights were the spark that ignited the enterprise, there were other forces at work that drove it to a fever pitch. One was the giddy optimism that characterized the opening of the new century. True, the twentieth century's ambivalence about technology was born in its very first decade, but in the face of the many advances from 1900 to 1914, it really began to look as if technology could and would make just about anything possible.

The Wrights played a large part in the forming of this attitude: the remoteness of their experiments gave fuel to the claims made by such prestigious publications as The New York Times and Scientific American that their flights were a hoax. One can imagine these publications being much more careful afterward in their scepticism about any scientific and technological claims.

Yet, there was the equally powerful sense that a war was coming, and that one result of the industrialisation of Europe would be an improved ability to conduct armed conflict. What role aviation would play in the theatre of war was not clear even to the most visionary planner but there was no doubt that aircraft (both heavier and lighter than air) would be exploited by combatants to the fullest and that command of the sky could possibly be a decisive factor in any war. Military strategists who prepared for possible invasions across natural barriers such as the English Channel or the Alpine mountains had to rethink their defences in the light of aerial warfare of unknown effectiveness.

Behind all the hoopla of the races, the feats, the records, the stunts, the glamour and derring-do—all the romance of early aviation—were calculating minds fully aware (or aware enough to take anxious notice) of the military potential of flight. In the decade between Kitty Hawk and the outbreak of World War I, one can summarize the history of aviation very simply: while the Wrights and Curtiss were slugging each other senseless in court, the Europeans slowly took the lead in aviation. The Wrights won many of their court battles, but lost the war for supremacy in the air.

They enjoyed two crowning moments in the decade following Kitty Hawk: their exhibition in France and their test for the Army at Ft. Myer. But they allowed many opportunities to slip by: while Curtiss was winning prizes for aviation feats he was performing years after the Wrights had passed that level of technology, the brothers were too proud or secretive to claim any prize; while Curtiss was winning races that the Wrights could have won handily, the brothers would not consent to enter any contests; while Curtiss was gaining fame participating in aerial exhibitions and air shows, the Wrights regarded them as circuses unworthy of their talents; while Curtiss was forming productive and useful alliances with a wide range of people—from Bell and the Smithsonian to August Herring, Octave Chanute's old assistant to Henry Ford and his high-priced patent lawyers—the Wrights steadfastly rebuffed any offer of collegiality (including from Curtiss) and preferred to go it alone; while Curtiss developed new technology as quickly as it became available—he abandoned wing warping when it became clear ailerons were a superior means of lateral control; he developed wheeled undercarriages when they were shown to be preferable to skids; and he experimented with different engines and configurations

The Wrights never strayed far from the basic design configuration they inherited from Chanute; and while Curtiss developed the entire field of naval aviation, developing seaplanes that could consider attempting to cross the Atlantic Ocean, the Wrights entered the field belatedly and half-heartedly.

But for a moment, the Wrights were alone at the pinnacle of the mountain, and their country and the world paid them homage. Wilbur died of typhoid fever in 1912, but Orville lived until 1947. Orville was honoured late in his life for the contribution he and his brother had made to flight, but he certainly must have wondered what might have been had Wilbur lived. Publicly he blamed Curtiss and the Smithsonian for everything (even Wilbur's death), but Curtiss retired from active involvement in aviation in 1921 and turned to real estate speculation in Florida until his death after an appendectomy in 1930. So it was hardly the case that it was all Curtiss' fault. Typically, Orville never voiced any regrets for letting the dominion of flight slip through his fingers. Still, one wonders.

Kill Devil Hill, December 17, 1903

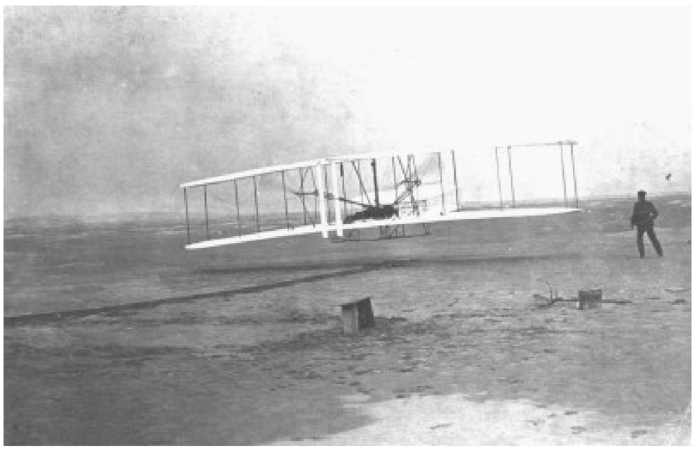
After the Wright brothers' successful glides in the summer of 1902, it was time to add an engine and propellers to the machine. Typically, however, the Wrights did not simply add a power plant to their glider; they redesigned the entire machine and integrated the propulsion system in a technically well-designed machine. The added weight of an engine meant they could increase the camber (which would result in the centre of pressure behaving about the same as it did for the glider), and enlarge the wing to a forty-foot wingspan and a surface area of 510 square feet for the two wings combined.

The machine—which they called the Flyer I (only later was its name changed to the Kitty Hawk)—retained the glider's front canard-design elevator and the movable rear rudder. The plan was to place the engine on the lower wing, next to the pilot who would, as was the case with the gliders, lie prone on the lower wing. The propellers would be "pusher" (meaning, pushing the machine from behind the wing, as opposed to "tractor," which means pulling the machine in front of the wing) and would turn in counter-directions. As they had done with the wings, the Wrights had tested and perfected the propellers in their wind tunnel and greatly improved their efficiency. Unlike the gliders, the Flyer could not be launched by leaping from a dune or by running down a hill; it would then be only a powered glide and not a real flight. They designed a launch mechanism that consisted of a single track on which ran a simple flat car that the aircraft was placed upon.

The car would be propelled by the aircraft's propellers, and when take-off speed was attained, the airplane would simply lift off. The Wrights calculated that they would need sixty feet of track (and that is what they brought). The Wrights had put off the question of the engine, hoping that the strides being made in the automotive industry would produce a light and powerful engine they could use. But no such engine was forthcoming and finally they attacked the problem head-on and designed their own engine with the help of their machinist, Charles Taylor. The engine just barely met their specifications, but they decided not to postpone testing it. They did not arrive at Kitty Hawk that year until September 26 and were not ready to test their machine until winter was already setting in.

It was too cold even for Chanute, who had waited patiently as long as he could. After many delays and repairs, on December 14 the Flyer seemed ready. The brothers, aware that they were about to make history, tossed a coin to see who would have the honour of the first flight. Wilbur won. On the first attempt, however, the elevator was set low and the craft ploughed into the sand at the end of the track, damaging the aircraft. After three days of frantic repairs and threatening weather, the Wrights were ready for a second try. They raised a flag signalling the crew of the lifesaving station that they were ready, and when a small group arrived, Orville took his turn on the lower wing. At 10:35 A.M. on December 17, before several witnesses from the weather station, the Flyer took off into a twenty-one-mile-per-hour (34kph) wind. Wilbur ran alongside the aircraft, keeping the right wing from dragging in the sand but being careful not to assist the plane down the track; they wanted this to be an unassisted take-off.

Sensing that they would be successful on this day, they had set up their cumbersome glass-plate camera and aimed it at the end of the track. They instructed one of the witnesses, John T. Daniels, to snap the shutter as the plane left the end of the track. Daniels took one of the most famous photographs in the history of aviation, possibly in the history of all of technology. It shows the Flyer lifting off with Orville aboard, and Wilbur off to the side having just run down the track alongside. The Flyer flew for twelve seconds and landed in the sand 120 feet away.



The first flight by man with a motor driven, heavier-than-air machine, at Kitty Hawk, NC, December 17, 1903.

The brothers quickly placed the Flyer on the launching car for another flight. This time Wilbur piloted the craft and it flew almost two hundred feet before landing gently in the sand. In all, they conducted four flights, alternating as pilots, with the best flight the fourth: 852 feet in fifty-nine seconds. After the fourth flight, a gust of wind overturned the aircraft and damaged it beyond quick repair. The brothers knew they would be returning to Dayton. They ate a leisurely lunch, then went into Kitty Hawk, called a few friends to report on their success, and sent a telegram to their father: "Success four flights Thursday morning all against twenty one mile wind started from Level with engine power alone average speed through air thirty one miles longest 57 seconds inform Press home Christmas. (signed) Orville."

Contrary to legend, the reaction of the press to the historic flight was not a deafening silence. The Dayton Evening Herald reported the flight the next day on the front page, and the Virginian-Pilot was careful to point out in a sub-headline that no balloon had been attached to the aircraft. Garbled accounts appeared on the front page of the New York Herald, but there was little follow-up and many of the sporadic reports that appeared during the first two years after Kitty Hawk ridiculed the Wrights' claim by adding facetious exaggerations to the account. The first full, serious, and accurate account of the Wrights in flight appeared in the January 1, 1905, issue of Gleanings in Bee Culture, an apiary journal, written by the publisher, Amos I. Root. But the Wrights were not people to waste time. On their return to Dayton, they immediately set to work on the Flyer 2. incorporating all that they had learned in the Carolina dunes. It looked like the first machine, but had a smaller wing surface and a gentler camber. Most importantly, it had a more powerful engine.

The brothers rented a ninety-acre (36ha) farm outside of Dayton that became known as "Huffman Prairie" (after the owner) and tested their new machine there. On September 20, 1904, Wilbur flew the Flyer 2 in a complete circle and returned to his starting point and landed. This was the flight Root witnessed and described, and in the minds of some aviation historians, this flight and the others conducted at Huffman (and not the four Kitty Hawk flights) deserve to be considered the beginning of the age of flight. (Others point out, however, that these take-offs were not unassisted: to compensate for the lighter winds, the Wrights launched their aircraft at Huffman with a weight-and-derrick launcher.) The best flight of the season, four circles of the field, lasted over five minutes.

In the summer of 1905, the Wrights tested an even more improved machine, Flyer 3, as always, in full view of onlookers and inviting the press to important tests, which they rarely attended. The aircraft had an even smaller wing surface but the same camber as the 1903 machine. This time the machine flew beautifully, and many of the more than forty flights conducted were limited only by the amount of fuel the aircraft could carry. The plane could take off and land with minimal adjustment, and the elevator and rear rudder, pushed out farther from the wings, gave the pilot almost complete control of the aircraft in flight. The longest flight of that summer was over a half hour, and the aircraft could circle and fly figure eights easily. This aircraft, the Flyer 3, is often referred to as the first practical aircraft in history.

In 1905, the brothers sensed trouble when their patent application of two years earlier was delayed. The U.S. War Department was unenthusiastic about their proposal to build airplanes for the Signal Corps, and they kept hearing rumours that competitors were copying their designs. The patent (for wing warping) was granted eventually in 1906, and the U.S. government eventually came around, but the challenge from rivals—one in particular: Glenn Curtiss—proved to be one hurdle too many.

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Sometimes You Just Have to Laugh…

A tough looking group of bikers were riding when they saw a girl about to jump off a bridge so they stop.

The leader, a big burly man, gets off his bike and says, "What are you doing?"

"I'm going to commit a suicide," she says.

While he did not want to appear insensitive, he didn't want to miss an opportunity he asked, "Well, before you jump, why don't you give me a kiss?"

So, she does and it was a long, deep lingering kiss.

After she's finished, the biker says, "Wow! That was the best kiss I have ever had. That's a real talent you are wasting. You could be famous

Why are you committing suicide?"

"My parents don't like me dressing up like a girl......"

You Might Be An R/C Modeler If…

By Bill Atkins, Byron, GA

- ...You introduce your wife as your co-pilot.
- ...You consider a quality evening with the family consist of gluing and sanding.

The Lighter Side of R/C