The Tailwind

AMA Charter No. 704

MAY — DON LEWIS, EDITOR — 2016

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, May 19 – Be There!

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

Meeting Minutes

The meeting was called to order by L. Perkes at 7:15.

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

The March minutes will be published in the April Tailwind the week of the fly-in.

L. Perkes presented the Treasurer's Report (detailed below). D. Lewis moved to approve; B. Pruner seconded; passed unanimously.

Old Business

- Mower covered and inspected:
  - Both front tires need to be replaced
  - L. Perkes will take mower to his house for servicing
  - L. Perkes will look into places to repair the trailer
- Training to begin on 4-28. L. Perkes and B. Pruner will service training equipment.
- Fly-in:
  - D. Tonan and D. Palmer have distributed the flyer to the MTRCCA mailing list.
  - L. Perkes will take flyers to the car show on 4-22 to pass out.
  - Food will be pizza and drinks
  - B. Pruner and C. Tackett will tape around ends of field with as many stakes as we have.
  - Tents – L. Perkes and B. Pruner
  - Tables, rules, wrist bands – D. Lewis
  - Ice and cooler – D. Lewis to ask T. Anderson

New Business

- L. Perkes went to Hendersonville car show. He will coordinate with car show management on weeks we plan to attend.
- L. Perkes will make some round discs with "TUIT" on them (a round TUIT) to give out at the car shows as tokens for free flight training.
- L. Perkes reviewed an article from Model Aviation about growing a club.

There being no further business, D. Lewis moved to adjourn at 7:57; seconded by C. Tackett; passes unanimously.

Treasurer's Report

Opening balance	$ 1,178.77
Income	0.00
Expenses	(8.94)
Closing balance	$ 1,169.83

How to Make Fiberglass Landing Gear

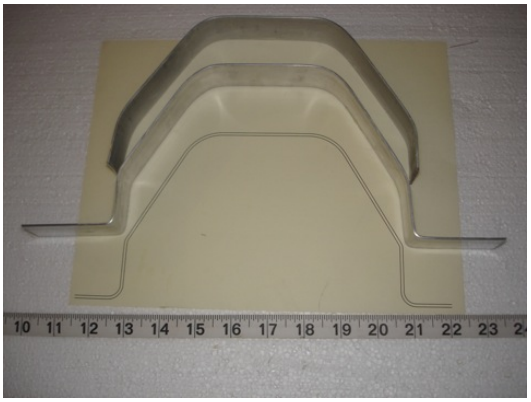
By Chris Batcheller

Why fiberglass landing gear? They're tough, easy to make and won't permanently deform as a result of a hard landing. The same technique can also be used to make high-tech, carbon-fiber landing gear, but you will have to experiment with the number of plys (layers of cloth) to use. The fiberglass gear described works great on profile, trainer and other RC aircraft. You can easily make these in an afternoon or a lazy weekend. All of the needed materials can be found at your local hobby shop and hardware store.

Tools and supplies needed (from left to right):

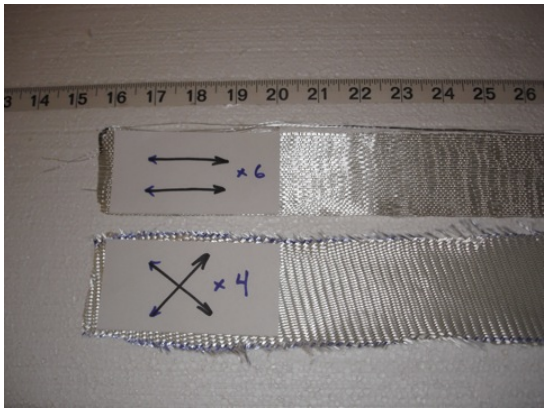
-Tin snips for cutting aluminum bar
-Vice grips or vice for forming aluminum bar
-Clamps for securing form
-Mold-release wax (paste car wax works too)
-Fiberglass (four pieces at 45 degrees, six pieces at 0 degrees)
-Sharp, but not expensive scissors
-Waxed paper
-Polyester fiberglass resin
-Disposable bristle brush and mixing container
-Acetone
-Latex (or similar) gloves

Not shown:
-1/16x1 1/4 inch-wide flat aluminum bar stock
-Dremel tool with cutoff wheel
-Drill and drill bits
-Paper towels or rags for cleanup



First, draw a pattern for your gear. You will use this as a template to form the bar stock. Form the bottom so that you have some "ears" to clamp to the table.
Tip: If you want your landing gear to have any special angles (like toe-in), now is the time to put them in.
Tip: A good design practice is to make the width of your gear (viewed from the front of the airplane) a minimum of 25% of the wingspan. For trainers I would use 30%. A 60-inch model would have gear that is 18 inches wide, if it were 30% of its span (60 x 0.30 = 18).

Next, form a second piece to fit on top of the first. Lay the fiberglass up on the piece that has the "ears" and then clamp the top piece on so that both sides of your finished part are smooth.



All your fiberglass strips should be 1 inch minimum longer than the gear. They should be wider than your finished gear by at least 1 inch. This will make placement a lot less critical. When the resin has cured, you will cut the excess away.

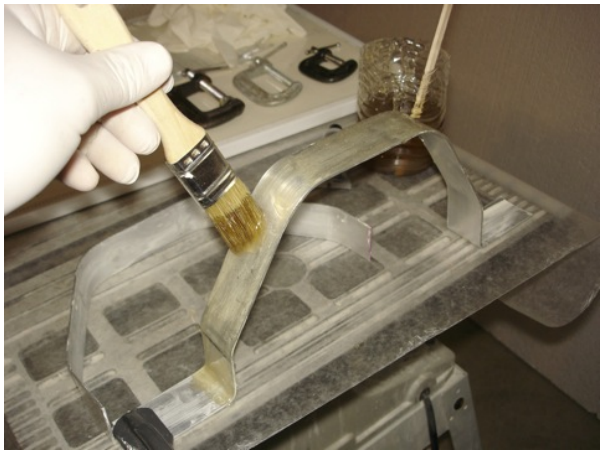
Cut your fiberglass so you have six pieces with the fibers running parallel to the long edge of your gear. This will give the gear strength in

bending under hard landings. The more plys you add here, the "stiffer" the gear will be. You can add more if you model is heavier, or less if it's lighter. With six plys in this direction, this gear will easily support a 5-pound model. These pieces will end up in the middle of our layup. Next, cut four pieces so that the fibers are running 45 degrees to the long edge of the gear. This will give the gear strength in "twisting." These layers will form the outside of our layup with two pieces going on first, and two pieces going on last.

Next, put a piece of waxed paper down and clamp the form to your work surface. Wax both the upper and lower forms, and don't forget the edges. The wax will keep the fiberglass from getting stuck to the form. You should apply at least three coats of wax. Let each coat dry before applying the next.

Next, prepare your work area. Once you mix up the fiberglass resin, you will have only 15-20 minutes of working time. Make sure your fiberglass is laid out and you have extra gloves available.

Mix up your fiberglass resin thoroughly according to the directions on the package. For this small layup, I used 5 oz. of resin.

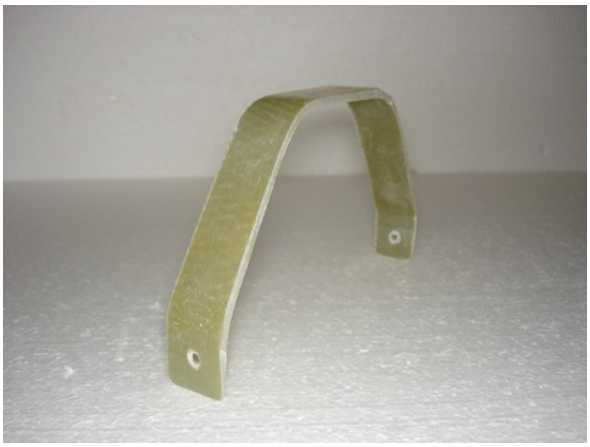


Tip: When applying resin, don't use brush strokes. This will distort the fiberglass and make it hard to do a good layup. Instead, dab the brush with short, quick motions.

Dab the resin onto the form and put your first 45-degree layer down. Dab resin until it's nearly saturated. If you see air bubbles, use your brush to dab them away. Then put the next 45 degree layer down and saturate it with resin. Now lay your "0" degree layers down. Repeat until all 6 "0" degree layers are on. Finish the fiberglass layup with the two remaining 45 degree layers. Make sure that all the layers are on the form and there are no air bubbles.

Put the top form on the layup and very lightly clamp it to the bottom form. Stop clamping when you squeeze just a little resin out. Make sure that all the clamps have about the same pressure and that the top and bottom forms align. You don't want to squeeze all the resin out!
Caution: When using power tools, always use safety goggles and other protective equipment!

When the layup cures (6-12 hours), use a cut-off wheel to remove the excess fiberglass on either side. A sanding bar is helpful to get all the edges even.



Next, drill holes for the axles. You can use bolts from the hardware store or the hobby-shop variety. Be sure to use a lock washer or lock nut for the fist nut if you are not using hobby shop axles.

Last, drill the holes to attach the gear to the airplane. I have used 1/4-20 nylon bolts for this task. The nylon bolts shear in a crash, but hold up well in hard landings.

Electric Motors 101

By Vic Walton

If you're like me, you sometimes use technology that you just don't know that much about. Take electric motors—how do they work really? I knew it had to do with magnets and electromagnets, and something about brushes, but I hadn't taken the time to figure out how they all worked together.

And now we have "brushless" motors—how do they work? So I did a little reading and have shamelessly cobbled together this primer from various Internet sources.

In a typical "brushed" DC motor, there are permanent magnets on the outside and a spinning armature on the inside. The permanent magnets are stationary, so they are called the stator. The armature rotates, so it is called the rotor. Clever, eh? Picture a big horseshoe magnet. Now take a big nail and drill through the middle cross-wise, and put a wire through the hole; now the nail can spin head-over-heels. Wrap some wire around it, and then attach it to a battery. You have an electromagnet right?

Now this particular arrangement isn't that useful; the nail just sits there. Of course, if you were to reverse the current, it would flip around, right? And if you were really clever and fast, you could reverse the current again, just as the nail was flipping, and it would flip back. This is what the brushes in a brushed motor do. They make contact with terminals on the rotor (called the commutator) and as it spins, at just the right spot they break contact and reconnect on the other side, causing the electric field to reverse, spinning the motor around another half-turn (or one-third turn, since most electric motors have three coils for efficiency). The horseshoe magnet is your stator, the nail the rotor.

This setup works and is simple and cheap to manufacture, but it has limitations because of the need for the brushes to press against the commutator:

• It creates friction.
• At higher speeds, brushes have increasing difficulty in maintaining contact. They may bounce off the irregularities in the commutator surface, creating sparks. This limits the maximum speed of the machine.
• The current density per unit area of the brushes limits the output of the motor.
• The imperfect electric contact also causes electrical noise. Brushes eventually wear out and require replacement, and the commutator itself is subject to wear and maintenance.
• Having the electromagnet in the center of the motor makes it harder to cool.

So in comes the brushless DC motor. In this design, you put the permanent magnets on the rotor and you move the electromagnetic to the stator. Think about that. The electromagnets are on the stator—they are stationary. That's a problem because now you need something even more clever than a commutator and brushes to flip the polarity of the current at the right moment. This very clever thing is the microcontroller in your ESC.

What it does is sense the position of the rotor (utilizing something called the EMF feedback through the main phase connections, which I have decided I don't need to understand) to switch the field rapidly at just the right moment to pull the permanent magnets on the stator around at the RPM that you have requested. This system has all sorts of advantages:

- There is no sparking and much less electrical noise. A happy situation for our radios, particularly as the motors get bigger.
- There are no brushes to wear out.
- With the electromagnets on the stator, they are easier to cool.
- You can have a lot of electromagnets on the stator for more precise control.
- The timing of the pulses sent to the electromagnets on the stator can very precisely adjust the speed of the motor.

So that's how it works. But one more thing: what's an inrunner and what's an outrunner?

An inrunner is a brushless motor with the permanent magnets rotating inside the electromagnets; in an outrunner this situation is reversed, with the permanent magnets on the casing of the motor and the windings of the electromagnets inside. Outrunner motors generally have some torque, but spin somewhat slower. This makes them better for spinning large propellers, which our airplanes need. Inrunner motors spin a lot faster but with less torque; this means that in order to get the same torque, you have to put the inrunner in a gearbox, adding weight, complexity, and most importantly, cost. However, if you can afford it, this is the most efficient setup for any given size motor.

By the way, airplanes aren't the only things that use brushless motors. Computer hard drives, CD drives, and hybrid cars are some of the other uses. It's only a matter of time before someone takes the brushless motor out of a Pruis and uses it in an airplane.

Celebrating Flight

Beechcraft Model 17 Staggerwing

As Detailed in Wikipedia

At the height of the Great Depression, aircraft executive Walter H. Beech and airplane designer T. A. "Ted" Wells joined forces to collaborate on a project many considered foolhardy — a large, powerful, and fast biplane built specifically for the business executive. The Beechcraft Model 17, popularly known as the "Staggerwing" was first flown on November 4, 1932, setting the standard for private passenger airplanes for many years to come. It was considered, during its time, to be the premier executive aircraft flying, much as the Gulfstream executive jets are considered in contemporary times.

The Model 17's unusual negative stagger wing configuration (the upper wing staggered behind the lower) and unique shape maximized pilot visibility while minimizing the tendency to stall. The fabric-covered fuselage was faired with wood formers and stringers over a welded, steel tube frame. Construction was complex and took many man-hours to complete. The Staggerwing's retractable conventional landing gear, uncommon at that time, combined with streamlining, light weight, and powerful radial engines helped it perform significantly better than other biplane designs.

In the mid-1930s, Beech began a major redesign of the aircraft, to create the *Model D17 Staggerwing*. The D17 featured a lengthened fuselage that improved the aircraft's landing characteristics by increasing the leverage generated by the elevator. They relocated the Ailerons to the upper wings, eliminating any interference with the air flow over the flaps. Braking was improved with a foot-operated brake synchronized to the rudder pedals. These modifications enhanced the Staggerwing's performance, which was soon put to the test under wartime conditions.

Sales began slowly. The first Staggerwing's high price tag (between US$14,000 and US$17,000, depending on engine size) scared off potential buyers in an already depressed civil aircraft market. Only 18 Model 17s were sold during 1933, the first year of production, but sales steadily increased. Each Staggerwing was custom-built by hand. The luxurious cabin, trimmed in leather and mohair, held up to five passengers. Eventually, the Staggerwing captured a substantial share of the passenger aircraft market. By the start of World War II, Beechcraft had sold more than 424 Model 17s.

The Staggerwing's speed made it popular with 1930s air racers. An early version of the Model 17 won the 1933 Texaco Trophy Race. In 1935, a British diplomat, Capt. H.L. Farquhar, successfully flew around the world in a Model B17R, traveling 21,332 miles (34,331 kilometers) from New York to

London, by way of Siberia, Southeast Asia, the Middle East, North Africa and back across Europe.

Louise Thaden and Blanche Noyes won the 1936 Bendix trophy in a Model C17R Staggerwing. Thaden also won the Harmon Trophy for her achievement. Jackie Cochran set a women's speed record of 203.9 mph, established an altitude record of over 30,000 feet (9,144 m), and finished third in the 1937 Bendix Trophy Race, all in a special Model D17W Staggerwing. The aircraft made an impressive showing in the 1938 Bendix race as well.

In 1970, due to a dispute with the T-6 racing class, the Reno National Air Races invited five Staggerwings to perform a demonstration race. Two G models and two D17 models raced. The five pilots were Bryant Morris, Bert Jensen, Don clark, Noel Gourselle, and Phil Livingston the only pilot to have prior racing experience in the T-6 Class. The race was flawless with ABC Wide World of Sports Coverage but protesting T-6 racers prevented the class from future competition with allegations of safety issues.

As World War II loomed, a number of Model B17L were pressed into service as bombers by the forces of the Second Spanish Republic during the Spanish Civil War. China ordered a number of Staggerwings to use as ambulance planes in its fight against Imperial Japan. Finland had one B17L as a liaison aircraft between 1940-1945. On October 2, 1941, Beech shipped a special camouflaged D17S to Prince Bernhard of Lippe, who was in exile in London after the Germany invasion of The Netherlands. He used it for refugee work in and around London.

The **Beech UC-43 Traveler** was a slightly modified version of the Staggerwing. In late 1938, the United States Army Air Corps purchased three Model D17S to evaluate them for use as light liaison aircraft. These were designated **YC-43**. After a short flight test program, the YC-43s went to Europe to serve as liaison aircraft with the air attachés in London, Paris, and Rome.

Early in World War II, the need for a compact executive-type transport or courier aircraft became apparent, and in 1942 the United States Army Air Forces ordered the first of 270 Model 17s for service within the United States and overseas as the **UC-43**. These differed only in minor details from the commercial model. To meet urgent wartime needs, the government also purchased or leased (impressed) additional "Staggerwings" from private owners including 118 more for the Army Air Force plus others for the United States Navy. In Navy service the planes were designated as **GB-1** and **GB-2**. The British Royal Air Force and Royal Navy acquired 106 "Traveller Mk. I" (the British name uses the UK double "l" spelling) through the Lend-Lease arrangement to fill its own critical need for light personnel transports.

The production UC-43 differed in minor details from the service test YC-43. Two distinguishing external features of the UC-43 are the circular ADF antenna mounted between the main landing gear and landing lights near the lower wingtips. They were all powered by the 450 horsepower (336 kilowatt) Pratt & Whitney R-985 engine.

After the war's end, Beech immediately converted its manufacturing capabilities back to civil aircraft production, making one final version of the Staggerwing, the Model G17S. They built 16 aircraft, which they sold for US$29,000 apiece. Norway sold one D17S to Finland in 1949, which the Finnish Air Force used from 1950 to 1958.

The lightweight V-tail Beechcraft Bonanza, a high-powered four-passenger luxury aircraft, soon replaced the venerable Staggerwing in the Beech product line, at about one-third the price. The Bonanza was a much smaller aircraft with much less horsepower, but carried four people at almost exactly the same speed as the Staggerwing. Beechcraft sold the final Staggerwing 1948. It left the factory in 1949, the last of 785 Staggerwings.

In March 2003, *Plane & Pilot* magazine named the Staggerwing one of its Top Ten All-Time Favorite aircraft.

In the April, 2007 issue of AOPA Pilot magazine it was reported that the Staggerwing was voted by nearly 3000 AOPA members as the Most Beautiful Airplane. "Members said it's the perfect balance between 'muscular strength and delicate grace,' and rated it highly for its 'classic lines and symmetry.'"

Editorial

Safety Communication

Here is an old excerpt from the President to President monthly letter that AMA President Dave Matthews used to publish each month:

"*An incident occurred April 16 when an AMA member who was flying a 450-size electric helicopter in a Tampa, Florida, public park lost control of the model and injured a young woman walking in the park. It appears that after calling 911, the pilot and his friends stayed with the injured person until EMTs arrived, then picked up their equipment and left. The local authorities will probably cite the men for ignoring a local ordinance against flying in that park.*

This is an unfortunate incident that casts a cloud over what we do as model aviation enthusiasts. The local FOX News affiliate picked up on the story and ran a piece that included video that, by most standards, could be considered pretty graphic.

The potential for collateral harm to all of us as a result of this incident is significant. I've been asked a number of times whether or not the pilot and his friends involved were AMA members. In the end I'm not sure it matters. The news piece didn't say, "Park visitor injured by AMA member (or non-AMA member) flying a model helicopter." It said, "Park visitor injured by toy model helicopter."

The non-modeling public that watched that news story will now have a negative perception of model aviation and question the safety of our models. To complicate matters further, the incident occurred in a major metropolitan community park system that already had a ban on flying models.

This incident will reverberate throughout the country and, no doubt, will become a topic of discussion with authorities of other park systems. AMA has many chartered clubs that have operated safely for years in local parks, and we are watching closely to make sure that we do what we can to support our members and clubs that may be challenged now as a result of this incident.

However, what follows is the reason I decided to write this column. I've been a modeler for a long time. In all of those years, other than regarding the frequency reallocation issue a couple of decades ago, I don't think I've ever seen the aeromodeling community come together as it has with this situation.

AMA has an internal response plan for incidents like this. We were notified of the accident by an officer of the International Radio Controlled Helicopter Association (IRCHA), one of AMA's Special Interest Groups. This triggered our response, which included working with IRCHA to identify a local responsible, articulate, RC helicopter pilot, Rolando Perez, who could speak on camera.

AMA's public relations manager spoke with Mr. Perez to go over significant points that should be made regarding AMA's Safety Code and record. In addition, our PR manager spoke directly with the FOX reporter, by phone about model aviation and all of the positive aspects of modeling. A statement was issued by AMA.

At the same time, modelers from 33 states and 14 countries – some AMA members and some not – came together on popular Internet forums to express their concern over the incident and what had happened to this young woman. An initiative was even launched to generate donations to help her offset expenses. Members of the local RC helicopter community made the effort to ensure that the local media were made aware of all of the positive aspects of model aviation and the value we bring to communities. As a result, in a short follow-up piece FOX News spoke about the positive

"groundswell" of reaction from the "national modeling community" and the concerns expressed by modelers. Go to www.myfoxtampabay.com/dpp/news/local/hillsborough/422-police-interview-model-craft-operators to see this coverage.

The mother of the young woman expressed gratitude for the outpouring of support she has received from concerned aeromodelers.

Sometimes it takes something like this to make everyone realize that the common denominator between all of us is model aviation. It doesn't matter what type of model we fly, or maybe even whether or not we are all AMA members. While it was a terribly unfortunate incident, it provided us with the opportunity to show that the majority of us are responsible, safety-conscious individuals, and that we are protective of what we do as model aviators. And this is why I wrote this column.

Out of a bad incident came a lot of good. The public has now had the opportunity to see the positive in what we do and that we are a caring, concerned group. The efforts by everyone here will pay some dividend somewhere. It was a good job by all. And because of the actions of everyone involved in reacting to this accident, I think I've maintained my string of writing about the positive things that aeromodeling has to offer."

It is not a bad thing to stress the need for safety – especially when you can show the positive results that emphasis has had. If, God forbid, someone were to get hurt by an aircraft in flight, it would put a very poor light on the club if we had kept the knowledge of these hazards to ourselves. We have an outstanding record at our field, and I think that open and honest communication is the best tool for keeping it that way. Knowing the hazards and enforcing the safety measures guarding against them, in my opinion, carries a much lower risk of loosing the field than putting our heads in the sand and keeping our fingers crossed that nothing happens.

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

Handy Hemostats

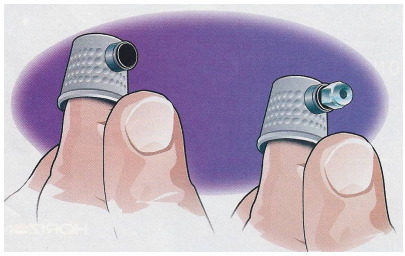
By Brian Winch

Hemostats are often used to route silicone fuel tubing and to pinch the line to stop the engine. A hemostat's sharp teeth can puncture the tubing without your knowing it, and this cause all sorts of engine problems. To avoid this, cut two pieces of high grade heat-shrink tubing to the appropriate length, and slip them over each of the hemostat's jaws. Heat the tubing until it shrinks, and then keep the hemostat tightly closed until the tubing has cooled down. The heat-shrink tubing will act as a protective cushion, and you'll be able to hold silicone fuel tubing without any risk of its being punctured by the hemostat's teeth.

Why Didn't I Think of That?

Helpful Thimble

Here's an easier way to install metal hardware in hard-to-reach areas inside your model. Drill a hole in a sewing thimble, and epoxy a miniature magnet into it. Place the thimble on your fingertip and the metal hardware item on the magnet. Now guide the item to that hard-to-reach spot and install it. Thimbles come in several sizes, and the new mini magnets are very strong and will hold nuts, screws and other metals securely. This is also ideal for retrieving small screws and nuts that fall deep into the model.



Easier Glow Plug Removal

When installing glow plugs in an aluminum engine head, you can use a very small amount of Anti-Seize (available at most automotive parts stores) on the threads of the glow plug. This product prevents the threads from binding due to extreme temperature changes in the engine head. It's also a good idea to use this product anytime aluminum threads are involved.

Pioneers of Flight

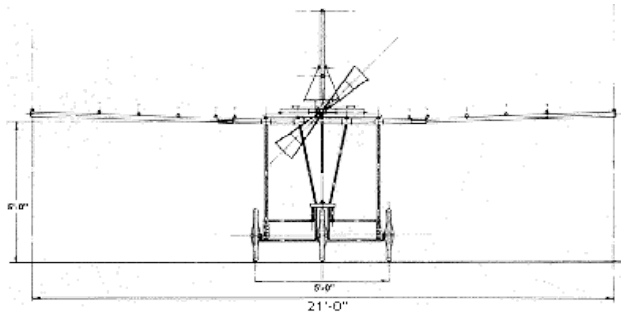
Richard Pearce (1877 - 1953)

From Century-of-Flight.net

Richard Pearse's first patented invention, dating from 1902, was an ingenious new style of bicycle, bamboo-framed with a vertical-drive pedal action, rod-and-rack gearing system, back-pedal rim-brakes and integral tyre pumps.

But flying, not cycling, was his dream. Through *Scientific American* Pearse kept in touch with experimentation overseas. There is evidence he was working on ideas for powered flight from 1899 and had built his first two-cylinder petrol engine by 1902. He then constructed, using bamboo, tubular steel, wire and canvas, a low aspect ratio monoplane.

Of prophetic design, it closely resembled a modern microlight aircraft in appearance. After considerable taxiing on his farm paddocks Pearse made his first public flight attempt down Main Waitohi Road adjacent to his farm. After a short distance aloft, perhaps 50 yards, he crashed on top of his own gorse fence. No details were recorded, by Pearse or onlookers, of this tentative flight. In two letters, published in 1915 and 1928, the inventor writes of February or March 1904 as the time when he set out to solve the problem of aerial navigation. He also states that he did not achieve proper flight and did not beat the American brothers Orville and Wilbur Wright who flew on 17 December 1903. However, a great deal of eyewitness testimony, able to be dated circumstantially, suggests that 31 March 1903 was the likely date of this first flight attempt. (The year 1902 also has its advocates.) Pearse continued his flying experiments, achieving several further powered take-offs or long hops, most of them witnessed. None of them, in terms of length or control, was a true flight by any strict definition. In July 1906 he patented his aircraft.



Whether or not Pearse flew in any acceptable sense, and regardless of the exact date, his first aircraft was a remarkable invention embodying several far-sighted concepts: a monoplane configuration, wing flaps and rear elevator, tricycle undercarriage with steerable nose wheel, and a propeller with variable-pitch blades driven by a unique double-acting horizontally opposed petrol engine.

Sometimes You Just Have to Laugh…

I was in Starbucks yesterday when I suddenly realized I desperately needed to pass gas. The music was really, ***really*** loud, so I timed my gas with the beat of the music.

After a couple of songs, I started to feel better. I finished my coffee, and noticed that everybody was staring at me...

Then I suddenly remembered that I was listening to my iPod.

Product Review:

Great Planes ZLIN

By Geoff Barber

As America emerged from WWII, a new breed

of private, single engine aircraft was born. Designed by a team led by Ralph Harmon, the model 35 Bonanza was one of the first modern high-performance personal aircraft. It was fabricated using all metal construction, featured retractable landing gear and signature V-tail, which made it both efficient and the most distinctive private aircraft in the sky. The prototype 35 Bonanza made its first flight on December 22nd, 1945, and the first production aircraft in 1947. During the late 1970's a conventional tail design started showing up as the V-tail had been shown to be dangerous in high turbulence situations. In 1982, the V-tail design had been retired, and the Bonanza's on the market today with the V-tail bring high dollar.

E-flite has just released their version of this classic aircraft. This new plane boasts sleek styling, many optional parts, and a very convenient size that makes transport easy!

The Bonanza arrived on my door step in a colorful, nicely decorated box. Upon opening the box, I found the packaging to be up to E-flite's normal shipping standards. All the pieces were in individual bags, and taped together to prevent shifting during shipping.

As I removed each piece from its bag, I found a beautiful looking airplane that had a fiberglass cowl painted to match the red, white, and blue covering scheme on the fuselage, wings and tail.

A few of the items that caught my eye were the large top hatch for battery access, the sturdy fixed landing gear, and the flap linkage system (more on this later).

E-flite also sent me a set of their new electric retracts to install in the Bonanza. After installing and using them, I can say without a doubt that they are extremely easy to install and are very reliable!

The manual included with the Bonanza is probably the best manual I have seen to date! The written instructions are clear, and the illustrations are very informative. One of the coolest things is the included instructions for all of the optional accessories!

You can get an optional polished aluminum spinner that looks great.

The cockpit kit is a very nice feature, and installation takes just a few minutes (if you don't count canopy glue drying time).

SPECIFICATIONS

Name: E-flite Beechcraft Bonanza 15e ARF

Price: $179.99

Wingspan: 48 Inches (1220 mm)

Weight (w/ battery): 4.2-4.5 Pounds (1.9-2.0 kg)

Length: 41.9 Inches (1065 mm)

Requires: Minimum 5 Channel Radio and Receiver (6 if using retracts), 7 Mini Servos, Electric Motor and ESC of Appropriate Size, and Battery

Channels Used: 6 total - Elevator, Aileron, Rudder, Throttle, Flaps, Retracts

The maiden flight of the Bonanza was done on a bright, clear day in early March. The winds were fairly calm, but there was a 5-7 mph crosswind. My normal runway was still covered by two feet of snow, so I opted for a very quiet, paved road on the outskirts of town.

Since this plane has two tail options, I flew both in the same day, so they could be compared in the same weather conditions. It takes just a few minutes to switch the conventional to the V-tail, and can be done at the field. I found no performance differences between the two versions.

Time for take-off! The throttle was advanced, and the Bonanza took off very scale-like and climbed out nicely. Once in the air, I cruised around at half-throttle, and pulled in the landing gear. This airplane looks REALLY nice with the gear up! The Bonanza will do almost anything you ask it to. It can fly very fast, and with a little finesse, it will fly quite slow as well. When it comes to aerobatics, it'll do almost anything. Loops and rolls are beautiful, and Cuban eights look great- although straight and level is pretty much what its full scale sibling does

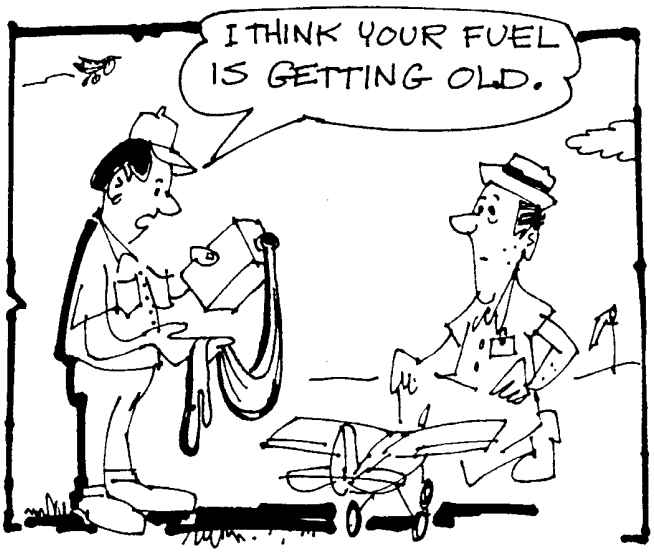
most of the time.

Landings are easy, and the flaps really help to slow the plane down and provide a little extra lift. The landings you'll see in the video are a little on the rough side due to the crosswind and the large snow drifts right beside the temporary runway. Flight times are reasonable with a 3200 MAh LiPo battery. I flew for 6-8 minutes, changed from the conventional tail to the V-tail, and then flew another 6 minutes on one charge!

With its scale lines, flaps, and optional parts, the Bonanza really looks great sitting on the ground and even better in the air. From start to finish, I couldn't find any faults with this Beech, and I think I'll enjoy many more flight with this one! If you like scale civilian aircraft, you've got to have this one (complete with optional retracts, spinner, and cockpit kit)in your hangar.

For the complete review and videos, go to:
http://www.rcuniverse.com/magazine/article_display.cfm?article_id=1226

The Lighter Side of R/C



You Might Be An R/C Modeler If...

By Bill Atkins, Byron, GA

- ... You have a dog-eared Tower Hobbies catalog in your bathroom.
- ...You know what the term "Dumb-Thumb" really means.