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From the Editor

Letters!

Please don't be afraid to take the survey

By Patrick Panzera, Editor – *Experimenter*, EAA 555743

It's time once again to go through the mailbox and answer a few letters, the majority of which are actually comments and questions posted in the survey we conduct in every issue, one I would encourage you to participate in. Please remember that when you click on the survey link, you won't be required to enter any personal information.

There's no logging in, no passwords to remember, no unexpected surprises at the end, and this isn't some stealthy method of gathering anything but your honest opinion. I read every comment in every survey and use that information to assure myself that we're delivering top-notch content in each issue. So with that, I would encourage you to read the letters and then participate in the current and future surveys.

When asked to answer the question, "Was there anything in particular you disliked about this issue of *Experimenter*?" one of our readers wrote the following:

"...there are too many pages wasted on social, political, or regulatory items. Leave that stuff in the Sport Aviation *magazine and stop repeating it in this publication."*

This newsletter is available to anyone, EAA member or not. Just before each issue is ready to "go live," we put together the most current articles we have on issues of concern to the homebuilder, many of which are political in nature, including issues that are of interest to flying homebuilts as much as building them. So although I'm glad to know that you're connected well enough to have seen some of this news before, many aren't, and it's important this info gets into the hands of everyone.

Along those same lines…

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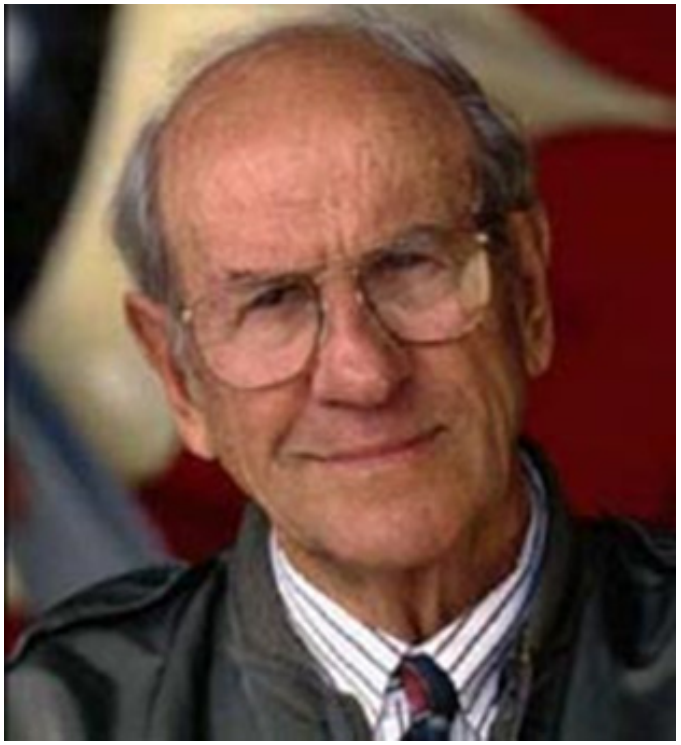
On the cover: The back cover image for Bruce Sturgill's newest book. See page 12

HINTS FOR HOMEBUILDERS

Each month we present the most recent "Hints for Homebuilders" videos as featured in *e-Hotline*since the last issue of*Experimenter*. EAA recently taped 25 new Hints episodes and they will be coming soon to *e-Hotline*and, in case you miss them, future issues of *Experimenter*.

- Drilling Acrylics
- Servicing Flush Fuel Caps
- Riveting 101
- Balancing Your Propeller



PAUL'S PICK

Have Things *Really* Changed?

There's a lot of great discussion and feedback out there on how EAA's focus and direction are changing. It's important to note that the inclusion of all things aviation has always been at the forefront of the organization. As Paul Poberezny wrote in November 1988, none of the EAA founding members ever dreamed that the stature of the organization within the aviation community would grow so large. Read Paul's Pick

We Need Your Help!

Experimenter is about you, the homebuilder. Whether you are building or flying an experimental aircraft, we need your story! If you don't think you have a story worth sharing, this short videomay help. While not every plane or project can be highlighted in the pages of *Sport Aviation*, your fellow readers still want to see your accomplishments, including any tips you may have to share, or tools you may have created along the way. All we need is 500-1500 words, 5-10 photos and a brief description or caption for each one. If you would like to write more, it is encouraged, and don't be surprised if we contact you to ask more about your project. The best stories come from you. And please remember to take our survey when you are done with

Project Patrol: LF-1.2

By Chad Jensen, EAA Homebuilders Community Manager, EAA 755575

Motorgliders aren't typically the first thing that comes to mind when we think of experimentals. While there are experimental motorgliders out there (great kits are available from Europa, Sonex, and other such companies), the idea of converting an old glider to a single-engine land airplane is something I hadn't given any thought to. Turns out this idea has been fairly popular (although the new 51 percent rule makes it more difficult now), taking an older model sailplane and giving it new life by adding an engine. And I found someone who had done just that, right here in Oshkosh.

This month's Project Patrol subject came about by pure chance, and I'm really glad it did. In a very short period of time, this project has proven to be very inspirational to me, and my hope is that it's inspiring to you as well. Between learning my new job at EAA, traveling back and forth to Illinois while we plan our move to the *Great White North*, and building another airplane, my social schedule is tight to say the least. Case in point, it was a beautiful but *windy* Saturday when I had overbooked my day, but I had to make time to attend my first EAA Chapter 252 monthly meeting. This particular meeting was the Fall Chili Cook-Off, and it proved to be a delicious and worthwhile stop that day, even if only for a few minutes.

There were picnic tables spread across the hangar floor, and choosing a place to sit was a matter of throwing a dart at the proverbial board (well, maybe not in my case since I typically can't even hit the board). The spot that I picked opened up an opportunity to write this article. Lyle Forsgren, EAA 79351, and his wife, Sandy, were sitting at the table that I chose.

I only had but a few minutes to polish off that wonderful bowl of chili and strike up a short conversation, but in doing so I discovered a man who has been designing, building, and flying his own airplanes for quite some time. Lyle is a longtime EAA member who worked for Boeing and Mercury Marine during his career. He and his wife have a beautiful piece of property with their own grass runway, and it's a great place to design and build airplanes. He owns an RV-6A that he built and has an RV-12 project in his basement, but the subject of this article is Lyle's LF-1.2, an airplane that began life as a Schleicher Ka-7 glider, popular in the late 1960s.The LF-1.2 was preceded by the LF-1, Lyle's first design, which is an award-winning single-place airplane with an outboard marine engine for a powerplant and was featured in *Sport Aviation* in October 1985. The LF-1.2 project is located in Lyle's large free-standing hangar—and it's a big hangar—big enough to accommodate the 52.5-foot wingspan of this airplane. The hangar is tucked away in the trees nicely and lends itself well to building airplanes.

Lyle Forsgren in front of his LF-1.2 homebuilt airplane, formerly a certified Schleicher Ka-7 sailplane

The LF-1.2 uses only the wings and the empennage from the original Ka-7. The entire fuselage is of Lyle's design, utilizing 4130 steel tubing. Mating the wings and tail to his fuselage took some accurate measuring, but that turned out to be the easy part. You see, the Ka-7 is a two-place glider, and Lyle has transformed it into a single-place airplane (single-engine land) using similar dimensions in overall length. To do this, he decided to position the engine behind the pilot, nestled in a spot under the wing, very near the CG, just before the fuselage begins to taper toward the empennage and where the rear seat would have been located on the two-place Ka-7.

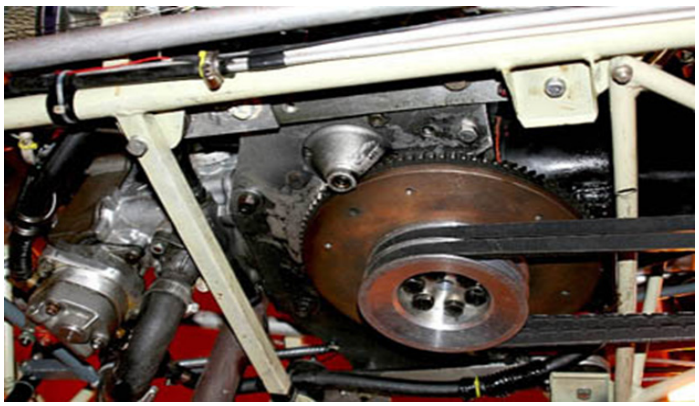
The Schleicher Ka-7 as seen just after its arrival at Oshkosh back in 2005

Lyle chose to power his homebuilt with a 1.0-liter, inline, three-cylinder, 60-hp, fuel-injected engine pulled from a Geo Metro automobile—one that was produced from 1989 to 1994. This engine has been proven reliable for experimental aircraft, and as a matter of fact, it's offered fully converted from Raven Rotorcraft and Redrives Inc. The reduction drive offered by Raven is something that Lyle didn't need; instead he chose to use a series of belts and pulleys to get the desired reduction ratio, according to the specs found on various websites for using this engine.

The belt system is comprised of two of the longest belts Lyle could find locally, which turned out to be 200 inches in length. The belts are rated at 30 hp each, so in order to meet his needs, a two-belt system was developed. It just so happens that it works nicely as a redundant system, though if he had a belt failure, landing as soon as possible would be necessary as the belt horsepower rating isn't high enough to continue on one. But then, of course, it *was* once aglider. The belts are looped through a series of aluminum pulleys (that Lyle turned on his lathe) and run along the bottom of the fuselage toward the front of the aircraft. At that point, they turn upward through another set of pulleys to one more double V-groove aluminum pulley that's attached to the propeller drive shaft, which finally turns the Warp Drive propeller. Sounds complicated? Perhaps to some, but it works!

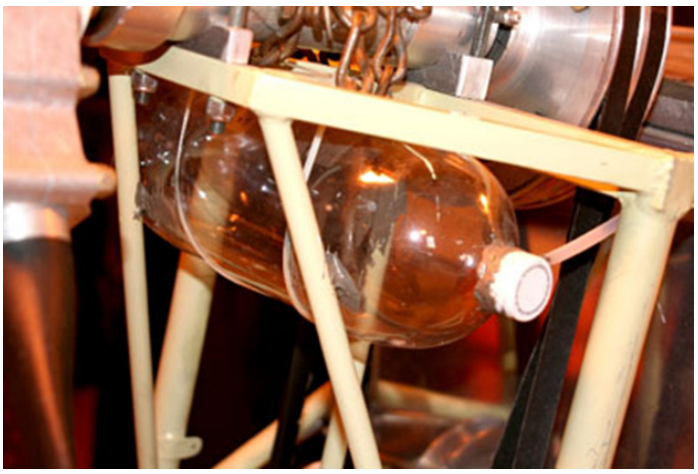
Lyle designed this system to the belt manufacturer's tolerance for twist and has had zero issues with it thus far. The belt's tension is adjusted by sliding the entire engine fore or aft on its mount. The mount is made of a series of trays stacked on one another to get everything aligned and tightened down as needed.

According to Lyle, the engine was purchased for "less than $100 with the car still attached," and he performed his own overhaul. He figures he has invested a few hundred dollars in the engine to bring it to the point of ready to run in airplane trim. Everything else he's needed for this project he found lying around his shop. He just has the tubing on hand for building airplanes—why wouldn't you?



See the entire belt system by clicking here.

The seat for the LF-1.2 came from an old car, the windscreen from a Rutan Quickie that he had stuffed away in the shop, and even the ambient pressure bottle (reservoir) for the variometer came from his refrigerator in the form of a 2-liter soft drink—with the cap now sealed. It's this kind of homebuilding that is so inspirational to me. Resourcefulness goes a long way to bringing an airplane to fruition that you've designed and built from scratch.



The ambient pressure vessel for the variometer is a standard 2-liter bottle, with the cap sealed with Pro-Seal. It's nestled under the propeller shaft. The chains in this image are used to support the airframe while the landing gear has been removed.

Speaking of fruition, the LF-1.2 is a certificated experimental amateur-built, fixed-wing, single-engine airplane and not certificated as a self-launch sailplane. You may not be able to tell from the photos in this article or the gallery, but in this configuration, this airplane has flown after having been signed off by Lyle's designated airworthiness representative (DAR), Joe Norris, a person we're all familiar with as EAA's former Homebuilders Community manager.

The first flight occurred in the late spring of 2010. It wasn't flown much after that, which is why it's back in the state you see in these photos. Early flight testing revealed two problems that Lyle has been working on solving, one issue being that of cooling the engine. Part of the cooling, or lack

thereof, is airflow through the radiator, the other is windage in the crankcase since the engine is installed vertical. He feels he has addressed the radiator airflow with a set of adjustable louvers on top of the fuselage between the wings.
The windage problem may have been solved by welding a bread pan to the bottom of the oil pan, creating a windage tray to enlarge the cavity around the crankcase.

The second issue Lyle had to deal with on the first few flights was tailwheel steering. Since the aircraft has only one main gear wheel, with tiny little wheels on each wingtip, once there was no longer enough forward speed for aileron control to hold the wings level, one of the wingtips came down to the ground. The ship then wanted to pivot from the drag of the lowered wingtip, but the castering tailwheel wanted to turn away from the down wing due to its pivot point being ahead of the wheel. This didn't allow it to be taxied in a normal fashion, that is, if dragging a wing while taxiing can be considered "normal." Lyle's answer to this is a tailwheel pivot on a shorter arm, and direct-coupled steering.

Other changes to the engine involved rotating the throttle body (fuel injection—no carburetor, hence no float bowl), removing the exhaust gas regeneration (EGR) circuit, converting the wet-sump oil system to dry-sump, and moving the oil scavenge pump and distributor to alternate locations because they simply wouldn't fit in the orientation chosen for the engine, which is vertical, flywheel down.

With the Geo distributor normally directly driven off and inline with the camshaft, Lyle had to adapt its operation from the side in order to fit everything within the confines of the fuselage. Larger view

With all these items addressed, Lyle hopes to have the airplane up and flying again soon. He can't tell us when that will be because conditions need to be perfect, and it will be a decision made on that particular day when all factors are considered to be optimal.

Controls

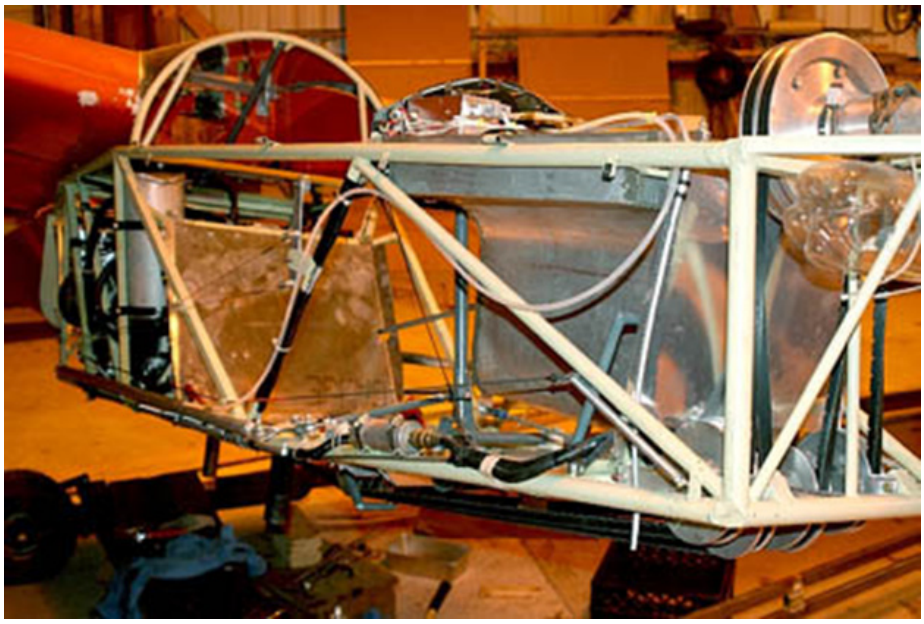
One area that presented a small problem in this new airframe was the controls. Originally as a glider, the controls had a straight path from the base of the control stick back to the bell cranks actuating the rods that control the ailerons and those that connect the elevator. With an engine now in the way, the entire control system back to those points had to be redesigned.

Both control inputs now had to make a trip down the sides of the fuselage first before heading aft. The ailerons are more complex, because not only do the rods have to make a turn toward the rear, but they also need to turn upward to the wings. And then turn, yet again, outward through each wing.

The elevator control is made from three different sections to make inputs properly, while the ailerons have six lengths of control rod action. Getting the angles and measurements right is critical, and Lyle has nailed it. The controls actuate very smoothly and are quite light and balanced. The wings from the glider still have the spoilers, and those are operated with a lever on the left side of the cockpit, using a locking mechanism put in place to keep them stowed when not needed.

As mentioned, the fuselage is Lyle's design, and while the aft section of the fuselage is fabric covered, the section from the nose to the aft end of the wing is covered by a fiberglass shell—call it a cowl if you will. This was made by modifying the fuselage from a Monerai self-launch glider that Lyle had acquired at one point. It was cut down the middle and spliced for the needed width to go around the tube structure he built. The fiberglass work is very nicely done, and it makes for a very unique-looking flying machine when installed. Lyle was just getting ready to put the covers back on the airframe on the day of my visit, perhaps to pull it out to fly it again soon.

The time invested in this project over the course of four years is estimated at 800 to 1,000 hours, although Lyle admits that keeping track of hours worked isn't on his list of priorities. "It's done and ready when it's done and ready," Lyle says.



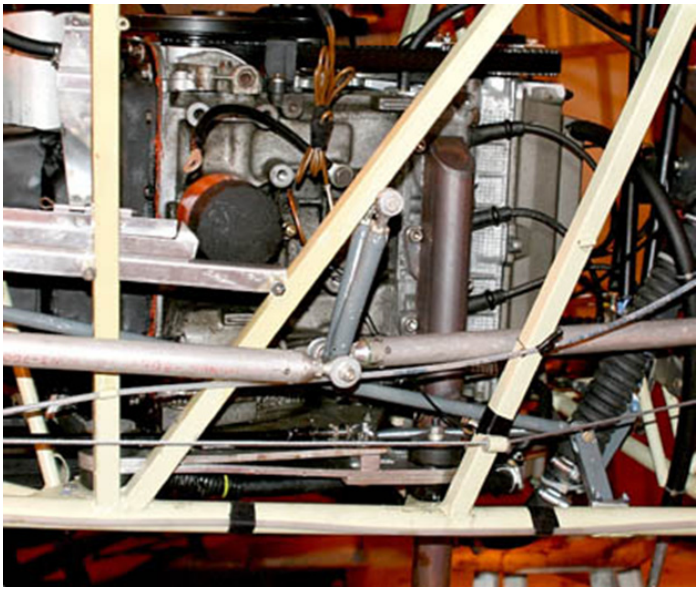
There are lots of details in this picture: custom T-shaped aluminum fuel tank, fuel delivery system, belt drive, cables, control rods, and ambient pressure bottle. Lyle's work on this airframe and systems is quite extensive.

gine can be shut off for glide for a while, or rather the pilot can leave the engine running and fly over for breakfast on a local grass strip.

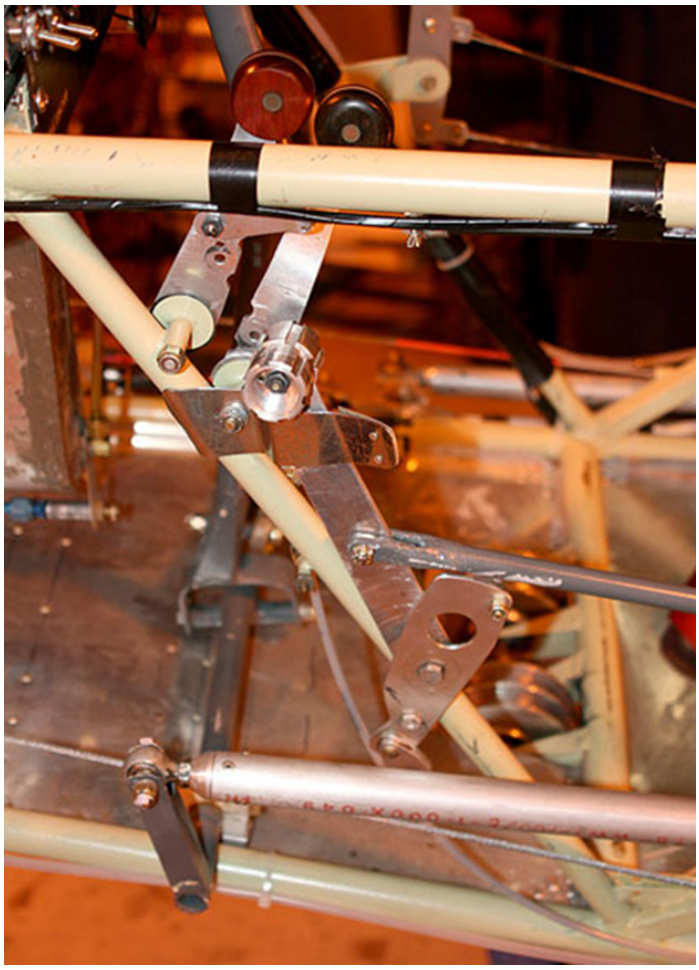
This design has really piqued my interest, and I found myself looking for a glider in need of restoration to create a motorglider of my own! As mentioned, Lyle won't tell us when the next flight will be, but when he has the bugs worked out, he will be more than happy to show off the airplane—a fine example of what a homebuilder can do with the freedom to create an airplane in his own garage.

We'll be certain to publish a follow-up report once Lyle's LF-1.2 is flying again. For more images, please see the gallery.

The LF-1.2 aircraft is designed as a simple, single-person, fun flying machine, and so far Lyle has enjoyed the process of getting it to this point. He says that once the airplane is rolling and the dragging wingtip is lifted from the ground, it's a lot of fun to fly. It carries about 5.5 gallons of auto fuel in a custom-made aluminum fuel tank that's fitted just in front of the instrument panel and between the pilot's legs, which is plenty of fuel for a gas-sipping three-cylinder engine to power the climb to altitude. Once there, the en-



The left side of the engine bay. Note the way that the elevator controls run outside of the airframe and then are neatly guided to the inside.



The spoiler lever also actuates the main wheel brake when pulled beyond the full open position.

Air and Its Majestic Role in Producing Lift

By the late Paul Lipps, for *Experimenter*

Paul Lipps was an extraordinary thinker with an innocent sense of humor. Known most for his work in the advancement of propeller efficiency, Paul's ability to see complicated things in simple terms had him question conventional wisdom in all aspects of his life, especially those used in aviation, a passion of his since his first flight in a Cub when he was just a teen. The following article was written in his usual tongue-in-cheek style that hopefully you'll find as fun to read as he intended. The topic is a bit controversial, but no matter your opinion, it will get you thinking about what's going on with your wing.

Caution!

What you are about to read has been known to cause a wide range of physiological and psychiatric maladies, ranging from delight and agreement to confusion and mild headache, nausea, dizziness, anger, rage, upset stomach, dyspepsia, and a whole raft of complaints and symptoms. If you're of a disposition that you might view any new concept in terms of popular orthodoxy which might cause you to reject other ways of looking at things, you would be better off clicking back to the main page to find another article in this magnificent e-publication. From this point on, neither the words, the author, this newsletter, nor the publisher will be responsible for any discomfort that you may experience! You have been warned! And make no attempt to contact the book police written about in the novel *Fahrenheit 451*! It will do you no good, as this particular article has been published on the Internet which fire cannot touch! It will persist till the end of time!

Air Is Busy

The sea of air surrounding us consists of a mixture of molecules which have well-known proportions of oxygen, nitrogen, and various other elements, in free form and compounds. These molecules are in a highly agitated state of rushing around and banging into one another and whatever gets in their way. The average or mean-free velocity of these molecules is about Mach 1.46; yes, on average, they're going faster than the speed of sound in all directions.

Often attributed to air are the concepts of pressure and temperature. Actually, these aren't intrinsic attributes of air, but only to the effects of their collision with an object that happens to be in their way. Whenever a molecule of air strikes a surface, it does two things. It gives it a little push, and it gives it more speed or agitation. The push is what we call pressure, and the speed is what we call temperature. All molecules in a solid are vibrating with a certain speed, which is its temperature in what we term *Brownian motion*. If we heat up the solid, its molecules go faster and faster and eventually they get going so fast that they no longer stick together, either turning into a liquid or gas.

So if the outside air temperature (OAT) probe on your airplane is sticking out into the free stream of air flowing past your airplane in flight, it gets pushed back, which is drag, and its temperature goes up relative to the actual temperature of the air outside the plane. When you were putting around in your Cub or Cessna 152 at their slow speeds, it really didn't matter much. But since the heating is a function of speed squared, as you go faster the error in your OAT goes up 2 percent for each 1 percent increase in true airspeed. You guys in your 200 mph to 300 mph planes are reporting erroneous temperatures when you give a pilot report to flight watch if you don't compensate for this temperature rise from speed. Typically your probe will have about 70 to 80 percent recovery of the stagnation heating for your true airspeed, which is 7.2 degrees at 200 mph, 11.3 degrees at 250 mph, and 16.3 degrees at 300 mph!

But I digress. If I place a large, deflated balloon on the ground, place an object on it that's 1 foot x 1 foot and weighs 1 pound, and then pump air into the balloon until it lifts the object above the ground, the air pressure inside the balloon will have to be at least 1 pound per square foot (psf). Are we on the same page with this?

In my bedroom I have a *Select Comfort* mattress resting on a platform on top of a structure with drawers in it. This mattress has a hose which connects to a pump below the bed and a solenoid -controlled relief valve. By toggling a switch in my headboard I can turn the pump on to inflate the mattress, or I can activate the valve to deflate it. When the air in it reaches a pressure that is my weight divided by the number of square inches of my body being supported on the mattress, the mattress will hold my body above the platform. In my garage I have a car which weighs about 2,400 pounds with approximately 600 pounds on each of the four tires.

What's the Point?
In each of these cases it is the air in these devices that is supporting the load. Agree? With each of them the support contact patch has an area which is the weight divided by the air pressure. If the balloon in the first example is restrained from bulging out to the sides, as more air is pumped into it increasing the pressure, the amount of area that the balloon surface makes with the object will decrease.

It's important to understand that any force acts in two places; this is usually referred to as action and reaction. You can't have one without the other! When a weight lifter holds a weight above his head, its weight passes down through his body to the floor below him. We often forget that we're constantly fighting the pull of gravity by our feet pressing down on the earth. Astronauts are well aware of this when they try to rotate a bolt with a wrench when in zero-gravity space. They must anchor themselves to take the reaction to their action. We on earth have gravity anchoring us.

On my mattress, when the pressure first starts to rise, lifting me up, the surface of the mattress will extend around my sides, increasing the contact area and making the mattress very soft. As I keep increasing the pressure, less and less of the surface will be in contact with my body, making the mattress stiffer and firmer. With the tires on the car, if they're radial tires with flexible sidewalls rather than bias-ply tires with stiff sidewalls, the contact patch area the tire makes with the ground will, again, be the weight on the tire divided by the air pressure. So with 600 pounds per tire, if the tire pressure is 30 pounds per square inch (psi), the area under the tire is 20 square inches, and at 40 psi it will be 15 square inches. In each of these cases it is the air within these objects that provides the support by pushing up on one surface and pushing down on the other: action-reaction.

Where Am I Going With This?
Recently I wrote the following in a thread on the Van's Air Force e-mail list:

A puzzler!
Here I am clipping along at just a couple of feet above 1,000 feet where the outside air pressure is 2,040 psf. Some instrumentation tells me that the average pressure on the bottom of my 63-series airfoil is 2,020 psf, while the average pressure on the top of this wing is 2,000 psf.

The wing, except for some ribs and spars, is basically hollow and is filled with air at the ambient pressure of 2,040 psf. Looking at a diagram of the pressure acting on the upper and lower wing surfaces, I see that there is 2,020 psf pushing up on the bottom surface and 2,000 psf pushing down on the upper surface.

But the air in the wing is pushing down on the bottom surface with a pressure differential of 20 psf, and at the same time it's pushing up on the top surface with a pressure differential of 40 psf.
So, could it be said that the wing's lift is really a result of the air in the wing pushing up on the top surface 20 psf harder than it is on the bottom? What say you? And please don't invoke the idea that there is a force called suction! Air doesn't suck—it only blows!

And yes, airfoils with curved lower surfaces have lower pressure than ambient in flight.

Well, I have to tell you, this little piece stirred up a lot of controversy. I had people intimate in a very nice way that basically I didn't know the first thing about aerodynamics and mass flow and downwash and the summation of forces acting all over the airplane and the Bernoulli effect and what if we put 1,000 psf inside the wing and what about a solid wing and so on. I, in turn, wasn't as politic in my responses since I felt that a lot of responses were condescending; I felt that the respondents were skating the issue and stated as much. There were even messages directed at the moderator that he should shut down any further discussion as I wasn't acting politely as a guest. It was intimated that I was like the people who said that a rocket wouldn't work in outer space because there wasn't any air for it to push against. Didn't I know that the air inside a hollow wing was pushing down on the bottom surface just as it was pushing up on the top, and so the effect was neutralized? In a way I can understand their upset at a concept which is seldom, if ever, addressed in aerodynamics. I place this at the feet of the abysmal teaching that I've seen in aerodynamics and electrical courses conducted at our colleges and universities.

As I pointed out in the previous three examples of the balloon, the air mattress, and the car tires, yes, the air is pushing out equally on all of the surfaces, and yet it's the air within each of them that is supporting the weight. So, why then is this different when in an airplane in flight? Probably because in each of the examples there was a hard surface below which supported them. But is an airplane in flight, then, different? What is it that is supporting the plane?

Occasionally the question is posed about a fly inside an airliner that is flying along. When the fly is sitting on the leg of a person sitting in a seat, obviously the weight of the fly is being carried by the wings of the plane; that goes without saying! But what happens when the fly takes off and starts buzzing around inside the plane? Has it now become disconnected from the airliner so that it is, as it were, a free and independent entity within the cabin? Did the gross weight of the plane change by the amount of the weight of the fly? The answer is no!

When anything is in flight, be it an insect, bird, or plane, its weight is still borne up by the earth below it. We fail to see that the air which is pushing up on the bottom of the wings of these flying objects is also pushing down on the earth below. Their flight through the air hasn't somehow become isolated from the ground but still exerts a force on it the same as if it is at rest. The support force for the plane, though it may be 20 psf at the wing, gets spread out over the earth below it so that when a jet flies over we don't feel a momentary impulse. It is similar to the effect that if you push down on a wooden plank of 10 square feet, equally supported on the ground, with a 1-pound force in the middle of the plank on 1 square inch, the force on the ground will be 1 pound but spread out over the 10 square feet, giving only 1/10 psf, assuming no flex in the plank.

The argument that the air in the wing is pushing down on the bottom surface as well as up on the top surface so that as a result the force is equalized and has no net effect disregards that the lower surface is basically resting on the ground, just like the balloon, tire, and mattress.

Let's look at the example of a fabric-covered wing, where there's little or no contact between the fabric and the wing spar except through the wing ribs. All of the flight loads are carried by the fabric. These loads are transferred from the fabric through the ribs and then into the wing spar and from it into the fuselage. In flight, the wing's bottom surface basically has a rigid structure extending from it to the ground by virtue of the air below it pressing up on it while at the same time it's pushing down on the ground, just as the air inside the wing, at outside static air pressure, is pushing up on the upper surface and holding it up by pushing down against the lower surface. So the load on the upper surface fabric is transferred by means of reinforcing tape and rib-stitching to the rib which in turn transfers it to the spar. The ribs are in tension, not compression!

Now as far as those who asked, "Well, what about a solid wing?" the answer is that the air takes the place of a solid supporting structure. The solid and the air do exactly the same job; they provide a means to convey the load from one side to the other, again, as with the balloon, tire, and mattress. So when looked at in its simplest terms, the load is conveyed from the top surface through the medium, air or solid, through the lower surface, through the air below the lower surface, and to the earth below, forming a rigid structure.

So, in the final analysis, what's the answer to the question initially posed on the forum? It's a resounding *yes!*

A two place Cavalier *experimental airplane using Cessna-style tip tanks*
Photo: Karl Walter

Tip Tanks: Design – Fabrication

For Designers and Homebuilders

By Michael C. "Mick" Myal, EAA 7978

Ordinary building materials like stucco, drywall compound, and 1/4-inch Douglas fir plywood are transformed into a simple fuel tank shape, following the full-size patterns outlined in a new publication by longtime EAA member Mick Myal. The end result is a two-piece fiberglass/vinylester tank that is sized by the builder to meet his mission/fuel needs. His book, *Tip Tanks: Design – Fabrication,* shows you how to create tip tanks for your aircraft and includes full-scale plans that help take the guesswork out of the design.

The piece of mind, comfort, safety, and aerodynamic benefits of a tip tank installation are well-known assets to owners of some general aviation aircraft that have them. Far too often ignored by designers and overlooked by homebuilders choosing a project is the fact that tip tanks can also be a homebuilder's time and money saver. Consider the cost of purchased composite wingtips and the amount of complex work involved with the installation of in-wing tank structures. Composite wingtips are usually specified by designers and are sourced from their shop or outside fabricators. That expense can be applied to homebuilt tip tanks with potential dollar savings. In-wing tanks can be complex structures that require specific attention to potential fuel leakage and maintenance. Tip tanks are relatively simple structures and completely accessible for inspection and maintenance.

Based on low-lift, low-drag arc airfoils and an elliptical master section, the design results in a clean, compound-curved surface via the provided patterns, and *Tip Tanks: Design – Fabrication* features an automated tank-sizing spreadsheet. Forty-two full-color pictures, 13 full-size patterns, and a step-by-step description of the mold-making process are included in the book.

Mick Myal is a licensed pilot, an engineer, and a homebuilder. His credits include several technical articles in Sport Aviation*; publisher of the* Alternative Engines *books; and he founded* CONTACT! Magazine *in 1990. Mick is committed to technical support of this unique builder and designer alternative. His website* www.TipTankPlans.com*invites* Experimenter *readers to consider the tip tank alternative first.*

Bruce Sturgill's *The Big Book of RV Aircraft*

A great holiday shopping idea

It's getting close to that time of the year again, thinking of what you'd like your spouse, kids, or significant other to get you for Christmas. An excellent gift that comes to mind (besides avionics or an engine) is one that can be enjoyed by you family, and friends, now and for many years to come. One such gift would be a coffee table book of airplanes—and not just any old airplane book, but one devoted only to RV aircraft. *The Big Book of RV Aircraft* is Bruce Sturgill's second coffee table book on a specific aircraft type. The first was *The Big Book of Canards*, put together using pictures taken by photographers, owners, and builders of canard aircraft from around the world, just like the RV book.

Why did Bruce decide to create a coffee table book? Well, as an avid photographer, he appreciates good photos and finds it challenging to share them in person with someone at his computer. Most computer workstations are designed for single-seat viewing, not side-by-side seating or tandem for that matter. Also, computer screens don't really do justice to the quality of some photographs, and there's nothing like the feel of a good quality book in your hands. So, with the large number of photographs available on the Internet, Bruce decided it was time to create a coffee table book, starting with canard aircraft.

Both *Canards* and *RV* books are hardbound, 10 x 12 inch, and full color, with photos from Russia to Twin Oaks Airpark, Oregon. The *RV* book has 86 pages with 121 pictures that range from the RV-3 to the RV-12. The*Canards* book has 80 pages and 147 photos of almost every kind of canard aircraft out there. The beauty and creativity of the pictures from the canard and RV community are amazing, and Bruce says that it's been a real joy to work with such outstanding photos.

"I have to say, for the first book, my learning curve was steep with the way they were produced," Bruce says. "It was quite an undertaking." With so many photos submitted and the dif-

The Canards book cover, front and back Larger view

ferent levels of quality, it did take some work to make everything look balanced. "The photos, as I like to say, were weeded and fertilized, some more than others." By this, Bruce means that they were edited, from taking out entire airplanes to just adding color correction so that the photos popped. "Overall, it was well worth the time and effort that went into creating these books, especially when I receive wonderful compliments from folks around the globe."

With today's easy-to-use software, Bruce encourages everyone to try his hand at creating a photo book. "It's not as difficult as it may seem," Bruce says. "Next month, I'll show just how easy it is to make your own photo book, something you'll be proud to pass among family and friends. We'll explore the process of a simple book for your project or aircraft." Bruce tells us that *Apple*, *Snapfish*, and *Blurb*, are just a few of the many companies that you can choose from to create a photo book, and all have easy-to-use templates ranging from drag-and-drop to *Blurb's* "full creative control" for more professional details. "This one's great for those of us that like to tweak till the cows come home, so to speak," he says.

With *Apple*, you'll need to use *iPhoto* software to create your photo book. With *Snapfish*, you create your book online without the need for extra software. With *Blurb*, you have three bookmaking tools to choose from. The easy-to-use templates allow you to create simple photo books using just the Internet—no software to download. For *Blurb*'s other two bookmaking programs, you'll need to download their software (Mac or PC) to your computer.

The RV book cover, front and back Larger view

Drop by Bruce's website, *www.PursuitofFlight.com*, and take a tour of both books to see if it's something you might want to pass along to your spouse or significant other for a possible Christmas gift. While there, enjoy some of the videos he's produced over the years for himself and friends.

What Our Members Are Building

Mike Studer's Corvair-Powered Cassutt

By Mike Studer

When considering his options for an aircraft to build, Mike Studer's goals were simple. He simply wanted a fun, fast aircraft that was reasonably inexpensive to build, own, and operate. That's why he opted to build the sport version of the Cassutt. The Cassutt is a small, single-seat, mid-wing experimental aircraft, made mainly for air racing. It was designed by Tom Cassutt in 1951 and can still be built today from plans as an experimental, amateur-built airplane. No kits have ever been available; this is a plans-only build. The aircraft is still active in the race scene today and used in the Formula One class competitions every year at the Reno National Championship Air Races.

The Cassutt is a very basic aircraft in terms of design. Ailerons, elevator, and rudder handle the three axes without the use of flaps. The undercarriage consists of fixed main gear, made from aluminum bar stock, and a spring steel tail wheel. The fuselage is made from tube steel, with wings from wood, all of which is covered in fabric; the wings are a Hershey bar design with a constant chord. Plans detail two versions of the airplane, a racing version and a sport version, with the main difference being the length of the wing. A 15-foot wingspan is specified for the racing version, with a 17-foot option for the sport version. Keep in mind that a Piper Cub has a 36-foot wingspan, making the Cassutt nearly half its size.

The Cassutt Special (as referred to by Wikipedia) **Specifications for the Cassutt III racer**	
General characteristics	
Crew	One pilot
Length	16 feet (4.88 meters)
Height	4 feet (1.22 meters)
Wingspan	15 feet (4.57 meters)
Wing area	68 feet2 (6.30 meters2)
Empty weight	500 pounds (227 kilograms)
Gross weight	850 pounds (386 kilograms)
Powerplant	1 × Continental O-200, 100 hp (65 kilowatts)
Performance	
Maximum speed	248 mph (400 kilometers/hour)
Rate of climb	1,500 fpm (7.6 meters/second)
Range	450 miles (725 kilometers/hour)

The Cassutt has been tested to 400 mph (corrected airspeed). It's rated to +/- 6*g*, although Tom Cassutt had seen over 12*g* in testing.

In general the above specifications are correct. However, when you talk race planes there are some wild variations, limited by the rules, of course. One of the big differences between racing versions is the wing. Many racers use the Grove tapered chord wing. I've seen the collection of Cassutts at Reno, and no two are alike. There are similarities, but everyone tries different things to go fast—that's racing.

New tailwheel steering

There's some good information in the Formula One racing rules, downloaded or reference. Some of those rules were learned the hard way.

As far as the provisions of FAR 21.191(g), where an experimental amateur-built aircraft is defined as an aircraft of which the major portion has been fabricated and assembled by a person(s) who undertook the construction project solely for their own education or recreation is concerned, building a Cassutt taught me every type of construction imaginable.

Welded steel, wood, fiberglass, aluminum, as well as cloth covering were all used in the construction of the plane. My fuselage had flown once before prior to my ownership; someone had tried to convert it for some sort of aerobatic mission—with recumbent seating. I took out the plans and my reciprocating saw and welder, then made the airframe match the plans.

In retrospect it probably would have been easier if I had started the build from scratch. Fixing things really adds hours to the project, which I found out again with the wing.

I inherited the wing in an unfinished state. Many ribs had come loose from the main spar, and it's only covering was years and years of spider webs. I'm guessing that the wing had been hanging around in various people's hangars for over 20 years. So I had to inspect and repair it, and since it was a race wing, I had to lengthen it. The main spar had a big crack in it; I had to make a new one. That's another lesson I learned: Don't leave unvarnished wood hanging around in the rafters for years on end. The wood dries out and cracks as it gets really hot out here in the summer (115°F in the shade). The only thing I kept from the original wing were the ribs, rear spar, and trailing edge. Splices were made per the procedures found in Advisory Circular 43.13 (Acceptable Methods, Techniques, and Practices). But I deviated a little by using structural epoxy and some carbon fiber here and there. It came out very nice.

Mike Studer trucked in his Cassutt and test-ran it outside to everybody's delight during the 2010 CorvairCollege atLivermore, California. Even with a mild Corvair, this aircraft is easily capable of exceeding 200 mph.

The long block installed before any accessories

The accessories and systems in place before baf-

Temporary cooling air plenum in place for initial test runs

The underside showing the oil cooler and updraft carburetor

Onto My Engine

Thanks to William Wynne, I've converted from scratch a Chevrolet Corvair engine for my project. The Corvair is an air-cooled, six-cylinder, horizontally opposed, 2700-cc (164-cubic-inch) automobile engine that's rated at 110 hp—derated to 100 hp when converted for aviation. Chevrolet produced the Corvair and all its variants from 1960 through 1969. It's since been proven to be well suited for aircraft use if converted properly. I've flown in aircraft using the Corvairs and can attest that the engines are very smooth running and intuitive to operate. I've built the basic stock version of this engine for now. I may build a second one in the future but with more horsepower, although I doubt I'll need it.

I designed and constructed several of the conversion parts myself for this engine, including my own rear starter system, and to date, everything works well. The system offered by William is mounted at the front of the engine and is beyond question in its reliability.

I use a Marvel-Schebler MA3SPA updraft carburetor. After pumping the throttle three times, the engine starts right up. I can taxi outside around the hangar to warm up the oil and everything performs as expected. I've noticed that it's much easier to navigate around obstacles without any wings installed on my fuselage—but the wing will be installed very soon.

Current Status as of October 1, 2011

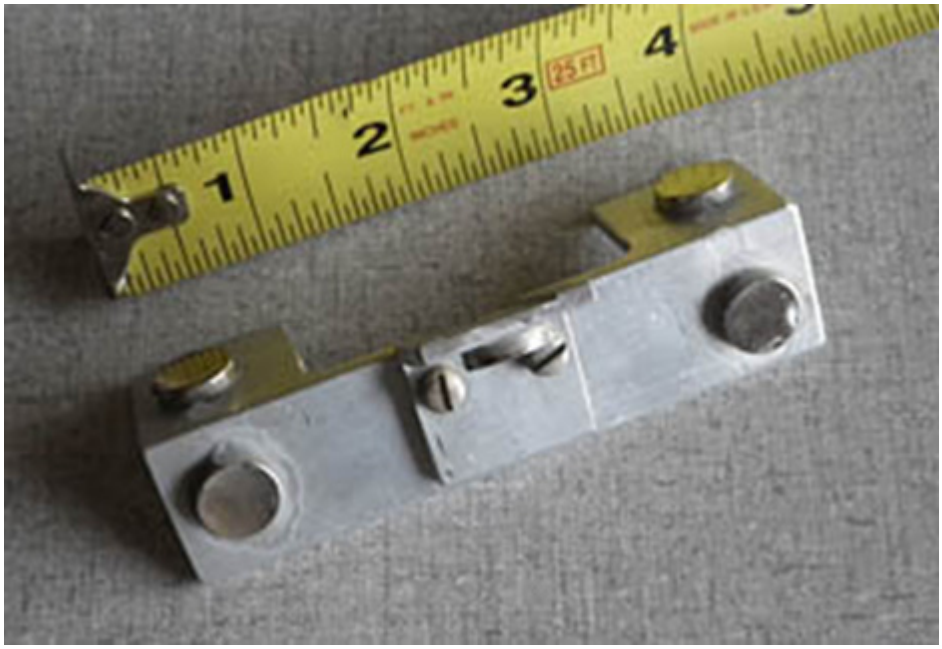
We conducted a preliminary weight and balance check on the plane the other day. It came out to 511 pounds with the unsheathed wing on the fuselage. That seemed a bit high. Then I remembered the fuel tank was three-quarters full! That accounts for at least 60 to 70 pounds. I feel better about it now.

The wing is currently under construction, and I'm in the process of sheeting it with 3/32-inch mahogany plywood. Next I have to build and attach the ailerons which are made from welded steel tubing covered with fabric. I also have to design, construct, and install some fiberglass wingtips. After those steps, I'll make a fiberglass cowl to cover the engine and the area in front of the pilot. Then I'll cover the fuselage, paint the whole thing, and get it signed off. For this project, I've been working on and off since January of 2001, but I hope to have it in the air very soon.

So look for a follow-up report in a future issue of EAA's *Experimenter* e-newsletter!

Tab-Holding Jig

A unique method to hold tabs while welding to round tube



By Mark E. Eminger, EAA 379500

Mark Eminger, a Christavia MK1 builder from Cloverdale, Indiana, sent us this very helpful construction tip. He's designed and built a very simple jig for holding clip-nut tabs while welding them to fuselage tubing, aiding the builder in such a way that could easily reduce setup time by at least 5 to 10 minutes per tab.

The problem I encountered while welding tabs to my fuselage was how to hold them firmly in place while I tack-welded them where they belong. My project has over 200 of these tabs to attach, so the time savings should really add up. The jig is made from common materials found at your local hardware store and can be quickly put together in about an hour.

The materials consist of a 1x1x5-inch length of aluminum angle, two #8 machine screws, 5 rare-earth magnets, and some Super Glue.

1. Cut the aluminum angle into two pieces, one 4 inches long and the other 1 inch.
2. Cut 2 inches out of the middle of the 4-inch-long piece, and deburr the sharp edges.
3. Take the 1-inch-long piece and slowly smash it between your vise jaws to increase the angle to greater than the original 90 degrees. This angle will be adjusted through trial and error to get just the right fit.
4. Next, drill two clearance holes in the 1-inch piece for the #8 machine screws and transfer these holes to the 4-inch-long piece and drill pilot holes. Then tap the holes for the #8 machine screws.
5. Glue the rare-earth magnets as shown in the photos above, and when cured, set a tab in place and check, adjusting the angle accordingly.

I wanted my tabs to be welded just below the top of the tubes so to leave room for the weld and the clip nuts. A channel can then be milled or filed to hold the tab perpendicular to the tube and firmly align.

When using on different diameter tubing, you can slot the two clearance holes to allow further adjustment of the tab location. Once tacked in place, the tab jig can be removed to provide full access for finish welding.

The finished jig appears to work very well at holding the tab firmly in place. For questions, I can be reached at tjemee@yahoo.com.

NEWS

Burt's 'Research Project'
Tinkering with the wing ship-seaplane idea

When we heard rumors that Burt Rutan, in retirement, is back at the drafting table, we thought we should go right to the source. In a private chat last week (November 9), he confirmed he is working on a new design, Model 372-3. "It is a combination wing ship and seaplane," Burt revealed about 372-3, inspired by a Soviet "ekranoplan" he learned about while on a trip to Russia nearly two decades ago. But he also made it clear we should not expect to see anything anytime soon. Read more

Sharpen Your Homebuilding Skills in Houston, December 10-11

If you've ever dreamed of building your own aircraft, or are currently in the process and want to perfect the techniques before applying them to your own project, don't miss your chance to sign up for the upcoming EAA SportAir Workshops in Houston, Texas, December 10-11. These two-day workshops cover a variety of aircraft building skills and techniques. Master the basics of aircraft sheet metal, find out how to properly cover an airplane with fabric, become confident with composites, excel in electrical systems, and more. Best of all, we provide the place, the expertise, and all the tools and materials. For more information on the workshops offered in Houston, or to register for a course, click here.

The Eagle Has Landed
For the last time

An important airplane that fueled the growth of the homebuilt kit aircraft industry arrived in Oshkosh last month, where it will take its rightful place in the EAA AirVenture Museum's aerobatics gallery. The prototype Christen Eagle II, Frank Christensen's powerful and nimble aerobatic biplane designed in the 1970s, flew a nine-leg journey from California with longtime builder and airline pilot Dick (Butch) Pfeifer, EAA 42135, at the controls. "Well, that's the last landing for this airplane," Pfeifer said as he exited the rear seat. Read the story and see photos

Cyber-Homebuilding Draws New Fans
Largest Wisconsin Daily Features cover story on DreamBuild-Fly.com

The story of two young men scratchbuilding a Bearhawk in a basement while a Web audience watches and comments in real time was Thursday's cover story in the Milwaukee Journal-Sentinel, Wisconsin's largest daily newspaper. Caleb Ihrig, an Oshkosh engineer, and EAA Multimedia Journalist Brady Lane are friends and building partners who wanted to use basic tools and their basic mechanical knowledge to show how accessible homebuilding can be. A baseball cap-mounted camera streams live video to the Web, which allows viewers to comment, offer tips, and learn along with them. Read the article | Photo gallery | EAA Radio interview

Thousands Enjoy Sun-Drenched Copperstate

About 500 aircraft and 5,100 attendees attended last week's 39th annual COPPERSTATE Fly-In & Aviation Expo at the Casa Grande Municipal Airport, Arizona. According to Fly-In Manager Jim McChesney, attendees enjoyed a wide variety of aircraft on the ground and in the air - from ultralights, to World War II fighter jets, to micro-jets and much more. "And, as always, we received many compliments on how family-friendly the event was," McChesney said. Read more

EAA Chapter 1 Hosts SportAir Workshops at Flabob November 19-20

Don't miss your chance to attend the upcoming EAA SportAir Workshops being held at historic Flabob Airport in Riverside, California, November 19-20. Hosted by EAA Chapter 1 at its hangar located on the airport, these two-day weekend workshops cover a variety of aircraft building skills and techniques. You could master the basics of aircraft sheet metal, figure out how to fabric cover an airplane, gain confidence with composites, excel in electric systems, or find out just exactly what's involved in kit building. We provide the place and all the tools and materials, so the only thing you need to show up with is a desire to learn! For more details on the workshops offered, or to register for a course, click here.

EAA, AOPA FAQ on Medical Certification Exemption Request

EAA and AOPA have joined in developing a Frequently Asked Questions sheet to answer the most common questions regarding the upcoming exemption request allowed expanded use of a driver's license in lieu of third-class medical certification. The two organizations in September announced their intention to file the request with the FAA shortly after the first of the year. The FAQ sheet also includes a link for EAA members and other to register for regular updates on this important issue for aviators. To see previous story, click here.

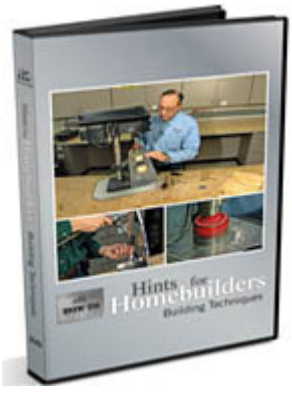
Virgin Galactic Unveils 'Gateway to Space'

First purpose-built commercial spaceport is here

Scores of enthusiastic future astronauts, celebrities, key government officials, and several EAA leaders were among the hundreds of invited guests on hand Monday to help dedicate Spaceport America, the world's first purpose-built commercial spaceport in southern New Mexico. Virgin Galactic Chairman Sir Richard Branson, who along with his children Sam and Holly will be the first commercial passengers on SpaceShipTwo, provided one of the day's highlights when they rappelled from the roof of the gleaming new 114,000-square-foot building proclaiming the terminal as the "Virgin Galactic Gateway to Space."

Read more and see the photo gallery

Experimenter **Subscribers Save on 'Hints for Homebuilders' DVD Combo Pack**



If you love reading about homebuilt aircraft but are apprehensive to begin your own project, EAA has a deal that could help you toward those first building steps. For one week only, *Experimenter* subscribers can pick up the *Hints for Homebuilders* DVD combo pack for just $19.95. Featuring demonstrations and narration by the experts at EAA, these "how-to" videos cover a variety of aircraft building skills and techniques, including the basics of sheet metal construction. You'll learn the tips and tricks - as well as the tried-and-true methods - of building your own aircraft. This offer is good through November 23, 2011. Enter the coupon code**EXPERIMENTER** when you check out to receive these special savings.Order now, or by calling toll-

Looking for more coverage of light-sport aircraft, trikes, and ultralights? Check out the pages of EAA's *Light Plane World*. The following articles are features found in the recent issue and are typical of

New Soaring Trike From North Wing

North Wing, manufacturer of weight-shift trikes and wings for trikes and hang gliding, has announced a new lightweight soaring trike will soon be available. The trike is lighter and more streamlined than the North Wing ATF trike and is powered by a four-stroke Bailey engine. The trike can fly with the North Wing Stratus XP wing, your hang glider wing, or a paraglider wing designed for power. Visit their website for more information, or call 509-886-4605.

Zenith and UL Power Announce Firewall Forward Kit

Zenith Aircraft Company and UL Power North America LLC announced the availability of complete firewall forward kits for the CH 650 kit aircraft. The firewall forward package includes the direct-drive, air-cooled, UL350iS aircraft engine. The 130-hp powerplant is a horizontally opposed, four-cylinder, four-stroke engine with FADEC. The full firewall forward kit includes everything builders need to install the engine in their Zenith airframe, including engine mount, oil cooler, fuel pumps, propeller and spinner, and fiberglass cowl. Read more

Flying in the Thunder Over the Valley Air Show

Mike Geddry Sr., CEO and curator of the Santa Maria Museum of Flight, Santa Maria, California, said that he would like me to fly in the August 2011 Thunder Over the Valley Air Show with my experimental gyroplane. I agreed without really thinking about it. Then I thought, what could a homebuilt gyroplane do in an air show that would be interesting? I felt it was an opportunity and vowed to make the best of it. At the very least it would make a good story for hangar flying. Read more

Q&A

Got a question? **Send it to us at Experimenter@eaa.org.**
Whether you're building, restoring, or just an enthusiast, we want to know what has you stumped.

Q. I just purchased a used Lycoming IO-360-A1B previously installed on a Type-certificated airplane. I'm assuming the engine is in fair to good shape, but I still would want to make some changes. Because I'm not an A&P mechanic, my question is, can I do this work on my engine since it's going in my experimental?

A. You absolutely can. Anything that is used as part of an experimental amateur-built aircraft becomes experimental as well, and you may repair, modify, alter, or maintain it in any way you see fit-it's your experiment.

Read more Q&As

AVIATION GLOSSARY

Confused by a strange aeronautical term? EAA's online Aviation Glossary can help.

VARIOMETER - also known as a vario, rate of climb and descent indicator [RCDI], rate of climb indicator, vertical speed indicator [VSI], or vertical velocity indicator [VVI]) is one of the flight instruments in an aircraft (mostly used in sailplanes, hang gliders, paragliders, etc.) used to inform the pilot of the near instantaneous (rather than averaged) rate of descent or climb in order to detect the presence of a thermal or other forms of lift for unpowered aircraft.

More glossary terms

FROM THE ARCHIVES

***Sport Aviation*, May 1980**
Gary Green's Award Winning Cassutt IIIM
By Gary E. Green, EAA 69220

It all started over a beer at the Dover Air Force Base, Delaware, officer's club in early 1971. A friend of an acquaintance mentioned he was building an airplane, and the conversation accelerated from there. He was talking about a machine called a Cassutt that was capable of speeds in excess of 250 mph. I couldn't believe it. I was a MAC C-141 pilot in the U.S. Air Force and had never heard of EAA or the homebuilt aircraft movement. Read the article

SURVEY

Please review and rate
this issue of *Experimenter* and its articles.

EXPERIMENTER MULTIMEDIA

Video of the Tail Wheel of a Mustang II on Landing
This video was shot to see if the standard tapered tail wheel spring shimmies left and right, causing directional instability after tail wheel touchdown. You'll see how the wheel actually spun to 90 degrees during the many spring bounces. The side springs and chains were shortened after seeing how loose they appeared in flight.
Watch the video | Visit the complete website

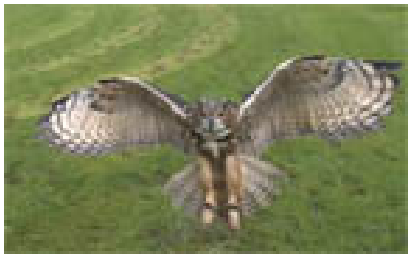
The Eyeballing Game
Yes, this is a game, but for those who build things with their hands and sometimes have to eyeball dimensions and alignments, this is a nice distraction. Read more

New Split-Cycle Engine Concept: The Doyle Rotary Engine
Check out an interesting new engine design that is similar to a radial rotary from a bygone era but does it without the use of a crankshaft. The pistons are oriented with their crowns toward the center of the engine. This four-stroke engine has no valves and instead uses chambers, similar to a two-stroke but located in the top of the head. Watch the video

Got Weather?
Look at some stunningly beautiful photographs of weather phenomena that, while breathtaking to witness from the safety of the ground, we don't think many of us would want to fly through any of it.
View the gallery

Surfing a River?
As the ocean tides come in and the river's flow of water to the sea reverses, a gentle tidal wave that the locals like to surf - for literally miles on end - is created. A troupe of microlight pilots captured this phenomenon on video. So if you like science, surfing, soaring, and scenery, you might like this video, too. Watch the video

An Owl Landing
This very detailed, slow-motion video of an owl coming in for a landing gives us a surprising view of the aerodynamics and airflow over the wing as he flares for a landing. Watch the video



Eric Clutton's FRED
For anyone interested in a simple, rugged, homebuilt aircraft for low and slow flying, maybe consider Eric Clutton's FRED. In this brand-new video by Mike Perkins, builder of G-PFAF, we see an early flight by this cheery yellow little homebuilt at Sutton Cheney airfield circa 1999.
Watch the video

HOMEBUILDER GALLERY OF THE MONTH

Brandon Jewett's Super Chub
In the November issue of *EAA Sport Aviation*, Brandon Jewett shared the story of his one-off original design, borne of a need for more space in the flight deck. At 6-foot-5 and 250 pounds, the only airplane Brandon ever flew comfortably was the Airbus he flies for his day job. His solution was to build a bigger Super Cub, made by modifying a Wag-Aero 2+2 frame, that he lovingly calls the Super Chub.
Watch the video | View the gallery | Read the *AirVenture Today* article

WEBINARS

Options for Building a Super Cub
Join Bill Rusk as he gives an overview of the options available for building a Super Cub, to include a brief look at the kits available, such as Cub Crafters, Legend Cubs, and Backcountry Cubs. Also included will be discussion on scratchbuilding Super Cubs from plans and a look at common modifications to this always popular workhorse.

Thursday, November 17: Options for Building a Super Cub with Bill Rusk
Tuesday, November 22: Building a Canadian Amateur-Built Aircraft with Jack Dueck

Tuesday, November 29: Fifty Years of Fly Baby with Ron Wanttaja

All webinars begin at 7 p.m. CDT unless otherwise noted. To find out more about upcoming EAA Webinars and to register, visit the webinars page.

EAA gratefully acknowledges the support of Aircraft Spruce and Specialty Co. for their generous sponsorship of our webinar programs.

INTERACTIVE

From the Experimenter Online Community
The following discussions can be found in the EAA Forums:

Can you help?
T-51 builders?
Which homebuilt do I want?
Looking for glider builders - Woodstock 13M or others?
RVs in D.C.?
Can you help me find this prop?

Join the discussion!
Robin ultralight
Building a Nieuport 11
Signing off on a homebuilt
Building an electric airplane in two days
Flight testing - airframe versus personal parachute

"Lots of overlap with other 'special' digests from EAA."

This is just an effort to make sure that the really cool stuff in the other newsletters which may be of interest to the homebuilding community is seen by as many people as possible.

"It's a shame that the publishing format doesn't allow more in-depth coverage of interesting themes."

We do the best we can, considering that not every reader has a high-speed connection. We're working on some ideas that may help, but nothing is set in stone yet.

"Remember in the '70s when the KR-1 came out of some unknown's garage - Ken Rand, now there was an experimenter*. I'm tired of articles on how to assemble some fully tested aircraft being offered as a kit. I want to know* how *to develop and test my own ideas for myself - to be an* experimenter*."*

Times have changed; these types of experiments are getting fewer between. But this is what's on my radar, things I'm constantly looking for to include in *Experimenter*. But to our defense, we've done a great job covering the Thatcher CX4, the Corvair Cruiser, Jack Bally's 1/3 Scale Replica B-17, the Snedden M7, Tom Aberle's Phantom, Ed Fisher's Lil Bitts Biplane, the Flitzer, Fun-Kist, Chris Christiansen's Savor as well as hisPeregrin XS-302, the Facetmobile, and many others, all of which can be found by clicking here. But the biggest difference between the 1970s and now is the Internet. Where in the past, the only way for the word to get out about a new design was via print publications, people now build websites and use e-mail groups to spread the word.

And as we print in every issue of *Experimenter*, **we need your help!** If you know of a project of interest, tell us about it. Or better still, prod the builder to write an article and send it to me; I've yet to decline an offer of an article that was relevant to homebuilders. In three years of editing this publication, I can't think of a single article I've turned down or one that I received that's not in the cache or has been already published.
When we asked, "Are there any topics or articles that you would like to see in future issues of *Experimenter*?" you answered with:

"I would like to see an article about building a set of floats from plans, also how to figure where to attach the rigging."

SWITCH ON! **Continued from page 3**

That's a rather specific request, but I'm putting it out there to see if anyone can help.

"I want to start welding, maybe an entire fuselage. I would like an article on this."

This might make for a rather long article, potentially a multiparter, but my advice would be to log on to EAA's Online Store and order one or more of the welding books they have in stock. One of my favorites that I bought from EAA several years ago is one written by Richard Finch, which seems to be missing from the EAA shelves. And although there's not much about welding in them, the books by Tony Bingelis are a must-have for any homebuilder.

"Articles on auto engines with the transmission used in aircraft."

There's only one successful use of an automobile transmission used in a homebuilt aircraft that I'm aware of, and that would be George Graham's E-Racer that used a Mazda 13b engine. Other than that, there have been some motorcycle engines (with transmission) used in ultralights and other very small planes, none of which have been successful to my knowledge. But I'd love to be proved wrong! Hopefully this note will cause someone to contact me with some information.

"No real information for sport pilots."
"Nothing on ultralights."

This is a recurring complaint about *Experimenter*, one that I thought I could cure by including a section in each issue on another great EAA e-newsletter, *Light Plane World*, and it seems to be working. The complaints have dwindled, but I still get them from time to time.

As a rule, there won't be much in the way of special light-sport aircraft (S-LSA; the $125,000 factory-built beauties) in the pages of *Experimenter*. For that type of reading, you need to subscribe to *Light Plane World*. That's not to say you won't find homebuilts that can be flown by a sport pilot. Every issue has at least one article on an experimental aircraft that qualifies - sometimes more than one. I consider this to be an essential part of *Experimenter*. But like I said, the S-LSA aren't found here; they're covered in *Light Plane World*. However, on occasion we may publish an article on an experimental light-sport aircraft, those kits offered by the manufacturer of an S-LSA such as the Van's RV-12, or any other kit/project that comes our way.

And for those who have been asking for more FAR 103 legal ultralight news, I have the same recommendation - subscribe to *Light Plane World*. Although you'll see from time to time articles on cutting-edge ultralights in*Experimenter*, like the Snedden M7, the Hummel UltraCruiser, or even thought-provoking concepts such as"Can a Long 'Longster' be built as a legal FAR 103 ultralight?" you won't find much in the way of factory-built FAR 103 information in *Experimenter* - but you *will* in *Light Plane World*.

"I would like more articles about the future of electric airplanes."

And so would I! Although this isn't everyone's cup of tea (we've recently had a few who complained that there's *too much* talk about electric aircraft), I think this is an exciting technology that will positively affect homebuilding at its core. Long before it catches on with certificated aircraft, the fertile mind of the experimenter will run with the technology at its every advance. Unencumbered with bureaucratic red tape in the same way that the 2008 Dr. August Raspet Memorial Award winner Randall Fishman took parts from an electric wheelchair to pioneer the current revolution, I can see the true advances being made through the experimental amateur-built ranks. So with that, you can count on *Experimenter* to be the resource for information on that type of garage technology.

As suspected, I could ramble on for pages and pages of text, but that might get me in trouble if the word-count soars. So I'll sign off with the following inspirational video, one that could hopefully encourage you to send me an article on your project or one that you enjoy. Click here to see the video.

One last thought. Many publications will print in their letters column the wonderful words of praise they receive each issue. I haven't bothered with that in this editorial as it's just a given. We get 90 to 95 percent more words of praise every issue than we do complaints, and we *fully appreciate* every word! Thank you! But I take the complaints, words of advice, and requests very seriously. That's why I published some of them here.

And don't forget to take the survey by clicking here!