



# Buttercup Reborn

**A reproduction  
gives Steve  
Wittman's  
classic  
sportplane  
new life**

JACK COX

**O**ne morning in May 1989 Steve Wittman stomped into my office at EAA and barked, “Cox, you’ve got me in a lot of trouble!”

I wasn’t intimidated, however, because I could see that sly little grin that always gave Steve away when he was trying to pull your leg. The “trouble” he was referring to was the flood of calls and letters he was getting as a result of an article I had written on his Buttercup for that month’s issue of *EAA Sport Aviation*.



LEEANIN ABRAMS

I knew it would happen. I knew that when EAAers read about what I always jokingly referred to as Steve's best-kept secret, many of them would beg for plans. I was, in fact, one of his worst tormentors: I had been bugging him for years, along with many others, to produce and market plans for the Buttercup.

"Who *wouldn't* want a Buttercup?" I'd ask him. Here was

an ultra-simple, relatively inexpensive little two-place, side-by-side sportplane that could slow fly with, say, a Taylorcraft, yet outrun it by 40-45 mph on the same power. It was made for small grass strips, yet was fast enough to really go places. Steve and his first wife, Dorothy, flew their Buttercup all over the United States and Mexico and to the Bahamas, from the late 1930s

through the 1960s.

Yes, the 1930s!

Steve designed the Buttercup in 1937 as a direct response to the new 50-hp Piper, Aeronca, and Taylorcraft lightplanes that were taking general aviation—such as it was in those Depression years—by storm. He had flown them all and thought they simply were not getting the performance they should

for the horsepower. He also thought they were too difficult to get in and out of and were unnecessarily lacking in both cabin width and height.

Another motivation involved the leaf spring landing gear he had invented and patented. Although obviously superior to the landing gears in use at the time by the various lightplane manufacturers, Steve could not sell manufacturing rights to any of them.

In 1937 Steve was a successful designer, builder, and pilot of racing aircraft, so his response to the industry rebuffs was predictable: He would design and build his own 50-hp, two-place, side-by-side lightplane that would have more room and more performance than the competition—and would be the means of proving the superiority of his new landing gear.

That airplane was the Buttercup. Initially flown in 1938, it met all of Steve's expectations, and, in fact, was a bit of a surprise in one respect. "It's the only airplane that I've ever built that was a little faster than I thought it would be," Steve always maintained.

Buttercup was shopped around during the late 1930s and early 1940s, and ultimately, Fairchild contracted to put a 65-hp version in production. Unfortunately, World War II was on the horizon, and the company had to cancel production of civilian aircraft and devote all its manufacturing capacity to military trainers. The prototype Buttercup thus settled into the role of a parts chaser for Steve's fixed-base operation in Oshkosh, a support plane for his racers, and an economical means of zipping around the country.

It would also serve as the guinea pig for Steve's many new ideas. Over



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LEANN ABRAMS

the years, Buttercup was fitted with several different wings, four different engines ranging from 50 to 100 hp, two different fuel tanks, a switch from wire-bracing to a cantilever tail section, and countless propellers. In the late '40s, Buttercup was used to develop and patent the tapered rod landing gear. Both of Steve's patented landing gears—the leaf spring and tapered rod types—were ultimately sold to Cessna for use on its certificated lightplanes.

Needing a faster support plane for his midget racers, *Buster* and *Bonzo*, Steve designed and built his Flying

Carpet—soon renamed the Tailwind—in the early 1950s. In many respects a high-wing, two-place cabin version of what we call a Formula One racer today, the original Tailwind was much faster than Buttercup and effectively pushed the design into the background. Most of Steve's subsequent design work was devoted to Tailwind improvements, although he did develop a manually deployed, full-span leading edge slat system for Buttercup. This provided even better short-field/slow-flight characteristics for the airplane.

Steve was a racer, however, and in his mind the speed of the Tailwind outweighed the low-end performance of the Buttercup. Plans for the Tailwind had been put on the market shortly after its introduction in the early 1950s and had always sold well, so who needed or wanted a Buttercup?

A lot of people, it turned out. For a variety of reasons, many pilots began moving to little private airstrips during the 1970s and 1980s. Ironically, at the same time a lot of new homebuilt

designs not well suited for short grass runways were being introduced. Initially, the private strip folks could make do with Cubs, Champs, Taylorcraft, Luscombes, and various Cessnas, but when the antique/classic hobby interest pushed their prices to unprecedented heights, there were those who would have liked to have had a simple, relatively inexpensive, two-place airplane they could build themselves that would provide good short-field performance and a usefully fast cruise on just 85 to 100 hp...in the classic high-wing cabin

configuration of the airplanes in which they had learned to fly.

Something like a Buttercup.

Steve Wittman was 85 when my article on Buttercup appeared in the May 1989 *EAA Sport Aviation*. Still in excellent health and an active pilot, he was pleased with the interest in his 52-year-old Buttercup—but he just couldn't bring himself to spend a lot of time and effort looking backward to an old design, no matter how appropriate it still was for the present day. He was simply more interested in developing new designs like his O&O Special. He did install his new "clipped triangle" wingtips on Buttercup in 1992, which shortened its takeoff run, increased the rate of climb, and increased its cruise speed above 8,000 feet. But no plans were ever drawn up for the homebuilder. Then, Steve and his second wife, Paula, died in the April 1995 crash of their O&O Special, and that appeared to be the end of the line for the Buttercup.

**Y**ou can't keep a good airplane design down, however. Aircraft Spruce became the source of plans, materials, and components for the Tailwind—and then there was Earl Luce and the Buttercup. How Earl came to build a reproduction of the airplane and why he did it tells us most of what there is to say about the Buttercup's place in today's sport aviation world.

Both Earl and EAA were born in 1953—EAA in Milwaukee and Earl in Brockport, New York, just west of Rochester. While in high school he worked part time as a TV repairman, and then after graduation he opened his own television and electronics retail store. Always interested in aviation, he joined a local EAA Chapter and learned to weld and do aircraft woodwork.

"I didn't know a torch from a hammer or a table saw from a band saw, until my friends taught me those skills," he recalls. "Now I'm

an EAA SportAir Workshop welding instructor. I've welded somewhere in the neighborhood of 30 fuselages, and I've helped with 30 or 40 different projects. I've done five aircraft projects of my own."

Earl learned to fly in a Cessna 152 and obtained his private certificate in 1983. He got into homebuilding by helping a friend build VW engines for his Volksplane, and

then Earl built a Sorrell Guppy that he flew for about four years. Next came a J-2 Cub restoration, ownership of a Taylorcraft, and the construction of an ultralight Skycycle.

Because it had a welded steel tube fuselage and wood wings—his areas of expertise—the Wittman Tailwind had long fascinated Earl, and finally, in 1989 he decided to build one. By the time he got around to order-

ing tubing, three friends wanted to get in on the purchase, so Earl quickly found himself welding four Tailwind fuselages. He finished his 150-hp Lycoming O-320-powered version in 1995 and absolutely loved the airplane. Soon, however, he found himself unexpectedly impaled on the horns of a dilemma.

"I had always been a grass-roots pilot, flying my Guppy, Cub, and



**Above, the long, hanging hinges from the leading edge slats present a head-banging hazard, but the longer landing gear helps. Right, Earl Luce is obviously pleased with his Buttercup reproduction.**

Taylorcraft around to all the little grass strips in the area—many of which were too short for the Tailwind. Everybody would say, 'There's Earl going by at 200 mph,' but I couldn't stop and visit. I'd lost all those little runways I used to land at. That's what got me to thinking about the Buttercup."

After building four Tailwinds, Earl was thoroughly into Steve's design philosophy of simplicity and light weight, so how difficult could the similar Buttercup be?

"While at Oshkosh in 1997, I visited the Wittman Hangar at Pioneer Airport and really went over the Buttercup, taking pictures and lots of measurements," Earl says. "With additional information provided by [Jack Cox] and Joe Schumacher at EAA headquarters, plus your 1989 article, which I had at my bedside for years, I was able to draw up some



LEEANN ABRAMS

PHIL HUGH (2)



plans and get started on my own Buttercup."

Once Earl began the project, notices and pictures were printed in "Hotline," which brought calls and letters from friends of Steve's who had flown the original Buttercup or had been around the Oshkosh airport and remembered a lot about it. These folks helped to answer several questions Earl had about the airplane.

With no documentation on the earlier versions of the airplane, Earl

set out to build a reproduction of the Buttercup as it exists today in the collection of the EAA AirVenture Museum—with a few custom touches of his own.

■ Steve had a 100-hp Continental O-200 in Buttercup for a short time, but when he began racing *Bonzo* again in the 1960s, he removed that engine for use in the racer and installed the C-85 that is in the airplane today. Earl chose to use an O-200.

■ Steve did not use a carburetor heater or air filter, so he was able to have a very close-fitting nose bowl on Buttercup. Earl installed both systems on his airplane, so he had to use a blunter nose bowl—a stock item from Aircraft Spruce.

■ Steve started out with a 19-gallon fuel tank in Buttercup, but replaced it with a 29-gallon tank in the early 1960s. Earl chose to use a 20-gallon tank because he believed it would be adequate for the type of flying he planned to do in his Buttercup.

■ Steve used cables to actuate his elevators, but Earl decided to use a push/pull tube—purely a personal

preference. He also used the newer Tailwind W-10 flap handle and control stick.

■ Earl used stock RV-6 landing gear legs, primarily because they were readily available, but also to make the airplane sit a little taller than Steve's Buttercup. Steve's one complaint after installing the leading edge slats was that he regularly banged his head on the long, hanging hinges. The taller RV-6 gear helps some, Earl says, but the hinges are still a hazard to be avoided. (Interestingly, Steve purposely made the original Buttercup sit close to the ground so his aging mother could easily get in and out of the airplane.) An RV-6 full-swivel tailwheel was used on Earl's Buttercup, which he really likes. It allows him to attach a rope around his waist and the tailwheel and simply walk the airplane backward into his hangar.

Earl made one change he intends to correct: "I overdid the camber in the bottom longerons aft of the cabin. I don't care how large your workshop is, you can't step far enough back to see differences like that. I didn't notice it until I had the finished fuselage outside for the first time. I've changed the dimensions on my drawings to make the fuselage taper exactly like Steve's original."

Earl's Buttercup was covered with Dacron and was painted in the same dark green and yellow Steve used the last time he rebuilt the original airplane. (It was "opalescent green"—silver with just a touch of green—when completed in 1938.) Although current regulations allowed Earl to use small numbers, he chose to go with the 12-inch fuselage numbers Steve had been forced to use by the then-new FAA in the early 1960s. Buttercup's N-number is N18268. Earl was able to get N18263 for his airplane.

Earl says he did commit one cardinal sin against Steve's "simplicate and add lightness" credo: He installed comfortable, expensive leather seats.

One of the Buttercup stories he has heard is that Steve intentionally built his seats as light, simple, and *uncomfortable* as possible, because it helped keep him awake on long cross-country flights. "I don't want to sit in mine for five or six hours, so that's why I put in the smaller fuel tank. I still want to be comfortable, though, even on shorter flights."

When completed, Earl's

Buttercup had an empty weight of 819 pounds, which is thought to be very close to that of Steve's original when it had a Continental O-200 installed. The airplane was flown early last year and has been found to perform essentially the same as the original Buttercup. It gets off in still air in about 300 feet, lands in less than 200 feet, indicates around 135 mph at 2700 rpm, and lands at 40.

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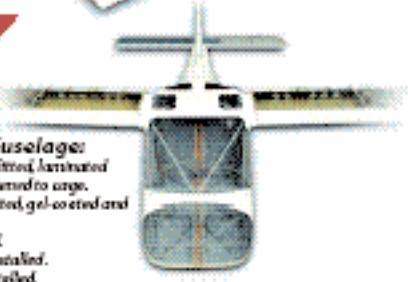


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Sport Aviation 65

Currently, a 66-by-55 wood propeller is installed, which does not allow the engine to rev up as high as Steve ran his engine. Steve attained his 145 mph at 2900 rpm when Buttercup was equipped with a C-85 and a metal propeller.

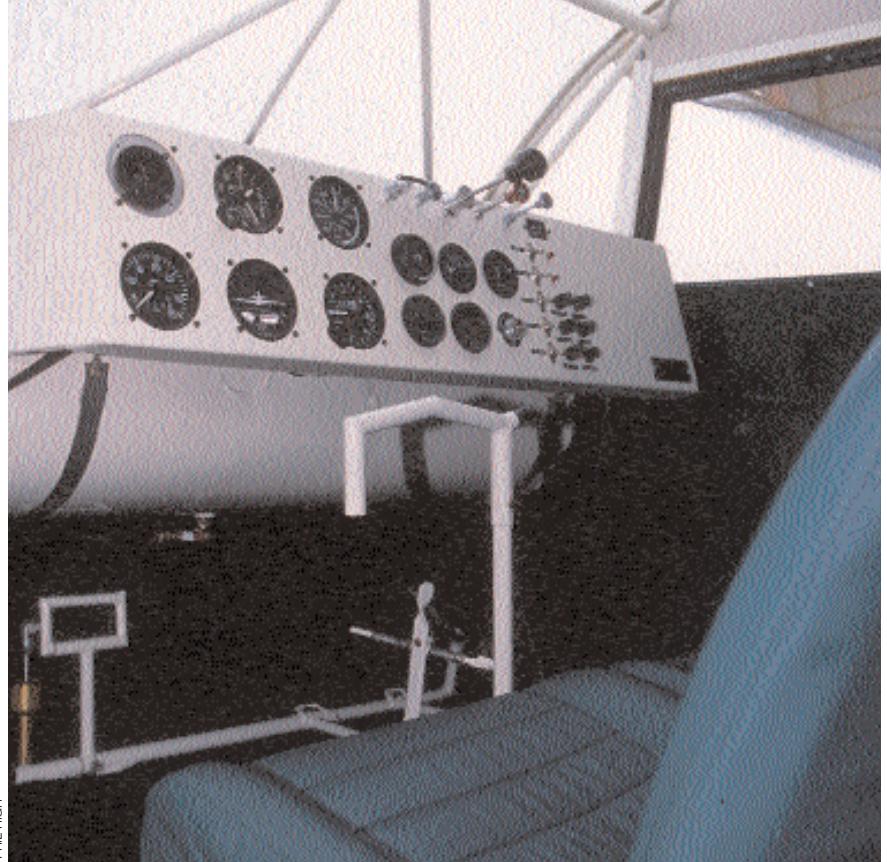
Earl has purchased a 71-by-48 metal prop he will try when the snow melts in Brockport this spring.

Once the word got out that Earl was building a Buttercup, he began getting the requests for plans Steve once received. Initially, the airplane was to be just for his own use, but, eventually, he decided he would provide plans and offer fuselages in various stages of completion. He sold his electronics businesses early last year and now has the time to devote to such an endeavor. He has started a company, LuceAIR Inc., and is actively promoting his plans and welded components.

Last summer, Earl and his wife, Laura, flew the LuceAIR Buttercup to EAA AirVenture 2002 and were mobbed all week by EAAers wanting to know more about the airplane. A number of sets of plans have already been sold, and welded fuselages have been delivered to customers, so additional Buttercups should be turning up at fly-ins in the next few years.

In talking to interested EAAers, Earl tries to emphasize just what the Buttercup is and is not. It is just what Steve Wittman intended it to be in 1937: a better performing, roomier competitor for the Cubs, Aeroncas, Taylorcraft, Luscombes, and the like—aircraft that are still around today in large numbers and are now highly prized as antiques and classics. It is not a competitor of present-day RVs, Lancairs, or even its sibling, the Tailwind. It is an air-

**The inimitable Steve Wittman and the original Buttercup circa 1988.**



plane that can be scratch built by those with the necessary welding and woodworking skills for a relatively low cash outlay.

Earl says he has about \$12,000 in his basic, VFR Buttercup, which includes \$5,000 for his engine, a low-time Continental O-200. Of the \$7,000 he has in his airframe, about \$1,000 went for steel tubing, \$1,500 for wood, and another \$1,500 to \$2,000 for fabric and finishing materials. The rest was for landing gear, wheels, tires, instruments, upholstery, glass, and other items.

For his \$12,000 and labor, Earl has an airplane he can use to revisit those small airstrips, that he can land almost anywhere in case of an engine problem, and that he can fly

**As a nod to comfort, Luce installed leather seats compromising on the weight a bit.**

to Oshkosh, Sun 'n Fun, and other aviation events at a better-than-Cessna 172 cruise speed on a Cessna 150's fuel burn. All this, plus the prestige of owning and flying an airplane designed by one of the great legends of air racing and sport aviation.

Earl says he is not about to get rid of his Tailwind, however. He still has a need for speed and thoroughly enjoys blasting around the countryside in it, but admits to being more relaxed in his Buttercup—a feeling shared by his wife.

"I don't want to hurt your feelings," Laura told Earl after her first ride in the Buttercup, "but I don't care if I never fly in the Tailwind again." That statement reveals a lot about Steve's "best-kept secret."

For more information on the new Buttercup, contact LuceAIR Inc., 35 Beverly Drive, Brockport, NY 14420; phone: 585/637-5768; e-mail: [earl@luceair.com](mailto:earl@luceair.com). 