

George Meyer's Little Toot

WHEN THE LATE George W. Meyer designed his Little Toot biplane in the mid-1950s, modern homebuilding was in its infancy. Back in those days, there was no way to order up a kit of prefabricated materials and put an airplane together. Kit airplanes didn't exist and materials had to be scrounged from wherever you could find them. The best you could hope for was a clearly-drawn set of plans and a bill of materials you could use for a shopping list. Everything was scratch-built, using proven methods applied conservatively.

Meyer wanted a single-seat aerobatic biplane, one strong enough for him to teach himself all the maneuvers he desired. At the outset, he had no intention of offering plans for sale; he only wanted to build an airplane for

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*The Homebuilt Biplane
That Won't Quit*

Text and Photos By **LeRoy Cook**





CustomPlanes



A two-ship formation of Toots with Tommy Meyer in the lead with his 125-hp airplane with the wing position flown by Leo Janssens in his 180-hp Brute Toot.

his own enjoyment. There wasn't anything readily available that suited his purpose so he proceeded to put together his idea of what the plane should be while his young son Tommy watched. Before long, a racy-looking miniature open-cockpit biplane was taking shape, and on Feb. 5, 1957, it took to the air for the first time. A young Tommy Meyer stood proudly by as his father flew around the field, knowing that someday that airplane, dubbed the "Little Toot" after a Disney cartoon character of the day, would be his to fly.

He never gave up the dream, even after his father sold the prototype. Because the first airplane was constructed without blueprints, Tommy helped draw and redraw the set of plans that were being offered for customers who wanted to build their own airplanes. By popular demand, these drawings were made available after the Meyer Little Toot was shown in 1957 at the Rockford, Illinois, Experimental Aircraft Association fly-in, which had become the site of a then-huge (several thousand attended) national gathering.

Many, many Little Toots were constructed in the years to come, built

from the \$50-per-set plans offered by Meyer Aircraft. As many as 30 are still flying today and, thanks to the efforts of Tommy Meyer and Joy Meyer Kelley (George W. Meyer's son and daughter), a good number are under construction, more than 40 years after the prototype flew.

The Composite Toot

The Little Toot is of truly composite construction; the wings use wood spars and wooden ribs covered with fabric, the fuselage frame is a fabric-covered steel-tube truss from the firewall back to the rear cockpit—again fabric-covered—while the aft fuselage changes over to riveted-aluminum sheetmetal attached to aluminum formers. The later cowlings were made of fiberglass, giving builders experience in all three major types of construction.

Even so, George Meyer believed in giving his builders plenty of options. The wing ribs could be built as plywood webs with spruce cap strips or as the more complex stick-and-gusset truss-type rib. The rear fuselage and empennage could be built in a choice of two styles; the original airplane,

and many plans-built examples, were constructed of riveted aluminum sheet carrying a set of cut-down Luscombe fins, rudder and elevators. Meyer responded to requests for a less labor-intensive method of construction by offering a steel tube and fabric fuselage and a conventional fabric-covered empennage of roughly similar area and profile. Both techniques work well.

The main landing gear was another shortcut, using flat steel gear legs taken from a Cessna 120. Because Steve Wittman's inspiration worked so well, Meyer saw no need to reinvent the wheel, so to speak.

As seen from the side, the Toot had a decidedly camel-back appearance, derived from its raised cockpit. Meyer didn't like to sacrifice forward visibility, always the first thing to go in a landing biplane so he fitted his seat to maintain seven degrees of forward view below the horizon during taxi. It probably also improved framing of aerobatic maneuvers.

Meyer was a metalsmith by trade, thus his choice of a rolled-and-riveted semi-monocoque aft fuselage made sense. He also formed the first cowling by hand, tightly enclosing the C-90 Continental in a neat aluminum cocoon. Eventually, of course, he wanted more performance, so he retrofitted a 160-hp O-320 Lycoming, changing to a more-expedient fiberglass cowl. Today, Tommy offers exact copies of his dad's cowling, made from a plug taken off the original airplane. The assembly comes in four parts, an upper and lower section plus a left and right cheek cowling. Meyer also offers a fiberglass duplicate of the original aircraft's turtledeck and headrest.

The Toot's design load factors, verified by independent stress analysis, are 10 G +/- . This rugged construction served Meyer well in his aerobatic experimentation. Using a NACA 2212 airfoil, the two 19-foot wings offer 123 square feet of area; the lower wing has 2.5 degrees of dihedral, while the two-piece top wing has none. On the other hand, the upper wing has eight degrees of sweepback, both to improve cockpit access and to enhance snap-roll entry. As with the Pitts, a set of V-shaped cabane struts was used to transfer fuselage loads to the upper wing, with no center section. Single I-struts brace the outer wings, while doubled landing and flying wires of 5/16-inch width are fitted, stabilized by a nice javelin pole at their crossover. Ailerons are only installed on the lower wings, where they can remain effective even in the stall,



The basic VFR panel of N62TR is shown in this shot.

which is initiated by the upper wing.

The fuel system consists of a gravity-feed fuselage tank aft of the firewall, holding 18 gallons. A 12-gallon tank in the upper wing was optional, installed primarily for ferry purposes when the larger Lycoming engines are fitted.

The Real Thing

We were privileged to fly a 125-hp Little Toot under the careful tutelage of Tommy Meyer. His dad's restored original airplane was yet to fly when we stopped by his base at Northwest Regional Airport, near Dallas, but he had obtained and restored a similar airplane so he would have something to fly while he worked on the old prototype, which is on track for an appearance at EAA AirVenture Oshkosh in the

summer of 2000. Meanwhile, Meyer's current airplane, N62TR, turned heads in the aerobatic lineup at AirVenture '99, taking home the Paul Poberezny Founder's Award For Classic Homebuilt. The airplane's sharp red-and-white paint design belies its age; it was original-

ly built in 1971 by Jack Routh in Kingman, Kansas.

N62TR is constructed in the classic original George Meyer style, using a riveted tailcone and Luscombe tail feathers. Up front, the O-290D Lycoming is snugly cowled and turned a polished aluminum prop with a large spinner. Despite their low-drag profile, the main gear legs are equipped with streamlining fairings, and the fat 6.00x6 tires were enclosed in a sleek set of wheel pants.

Fully equipped for night flight, the airplane has wingtip strobe lights and a set of landing lights in the leading edge of the lower right wing. The magnetic compass is mounted under the upper wing's center section to save panel space and avoid interference from the cage of steel around the cockpit. The pitot/static head is under the lower left wing. For show purposes, the upper wing and tail surfaces carry a red-and-white sunburst

BELOW LEFT AND CENTER: Tommy Meyer is rightfully proud of "Little Toot," an original design by his late father, the great George Meyer. Tommy cleverly incorporates the famous logo everywhere applicable—on shirts, jackets and even on seat cushions. "Little Toot" was one of very first small sport biplanes to become popular. **BELOW RIGHT:** "Little Toot's" airframe can handle any of a number of different four-cylinder Lycoming engines. Choose one according to your wishes and, of course, the size of your bank account.



Meyer's Toot, with its Lycoming O-290D engine, shows off its lines.

design, while the lower surfaces are a checkerboard pattern.

The 18 gallons of fuel forward of the cockpit is sufficient for about two hours of endurance, Meyer said. By then, you would need a stretch from the cramped cockpit, no matter how much fun it is to fly an open-cockpit biplane. A rotating fuel quantity indicator is built into the filler cap. A neat little baggage compartment behind the seat, reachable through a locking

rant and vernier mixture were on the left, along with the trim. Avionics included a venerable Northstar M-1 Loran, mounted vertically to fit into the available space, along with a mount for the GARMIN 95 portable GPS receiver. A compact ICOM ICA21 transceiver provided the communications and a Terra TRT-250D transponder did the squawking. The 12-volt battery was down on the floorboards.

Operationally, the single fuel tank,

the mags and lifted the starter's toggle switch to crank the Lycoming. Once it was running, the mixture went to rich and then was screwed back about 3/4-inch where the engine ran smoothly.

That done, the taxi out and run up were uneventful. Positive steering and toe brakes gave excellent directional control and the tall seat position kept even the narrow taxiway in view. Like all open-cockpit airplanes, the view of the traffic pattern was wonderful.

Controls were easily checked, altimeter and G-meter were zeroed, trim was set and the five-way harness was confirmed tight. No more excuses.

I lined up with the centerline and cautiously added power, but I encountered no hidden swerves and the controls came to life almost immediately. Because the tail sits rather heavily when at rest, we held the stick forward until the tail started rising at 40 mph or so. Holding the tail low, we were off the ground at 50 mph in a few hundred feet and quickly settled into an 80-mph climb with just over 1,000 fpm on the up scale, drawing 2,300 rpm on the tach with wide open throttle.

Leveling off at 3,000 feet AGL, we maintained 2,300 rpm as the Toot accelerated and saw 115 mph indicated, a normal cruise setting. Backing off to 2,200 rpm, the IAS dropped to 110 mph, still not bad for a draggy biplane with a relatively small engine. Of course, high-speed cruise is not what the Little Toot is about. This is a fun airplane, and the responsive controls begged to be used as an extension of one's desires. Pull and bank, and a lazy eight was drawn in the sky. Regain cruise speed and a three-G pull-up brought a perfect loop to life with plenty of control for



Tommy Meyer in his Little Toot over the north Texas plains.

door on the right side of the fuselage, is good for 30 pounds of takealongs.

A solid-rubber Maule steerable tailwheel is under the tailcone, and the adopted Luscombe trim tab was on the left elevator. A ground-adjustable tab on the rudder allowed for final rigging to hands-off flight.

I stepped up onto the right wing-walk and slithered into the deep cockpit, finding plenty of space for comfort, although I added cushions to maximize forward visibility. The throttle quad-

fixed-pitch prop and sparse panel weren't going to present much challenge. However, we needed a careful cockpit leather edging checkout from Meyer just to identify all the switches and memorize the starting procedure. Because the Lycoming was fitted with a throttle-body fuel injection system, we would leave the mixture in idle cut-off until the engine fired. We began by pumping up some fuel pressure with the hand wobble pump beside our left knee, then flipped on



LEFT: Tommy Meyer's Little Toot is seen here undergoing restoration in his father's original workshop. The airplane first flew in 1957. Note the welded steel cockpit truss with semi-monocoque tailcone, with many rivets bucked by a young Tommy Meyer. RIGHT: The Little Toot was redone to match his father's original paint scheme from the 1950s.

a Cuban 8 transition. Roll rate at cruise is about 180 degrees per second, which is quite enough for exhilaration without bruises. We could imagine the excitement George Meyer felt when he was teaching himself aerobatics in this strong, powerful little machine.

To learn what to expect about the landing while still at altitude, we set up slow flight at 60 mph and had plenty of control left, so Meyer's recommendation for an 80-mph final approach seemed valid. We cut the power to feel out the stall, finding no surprises when it broke cleanly around 58 mph. With power retained, we kept the airplane flying down to about 55 mph.

Regrettably, we had to find our way back to the field and prove our landing skills in front of an audience. We could see Meyer and his friends lined up along the runway, no doubt making bets on my chances. Because of the aircraft's great visibility, I used a squared pattern with 90 mph and could see the runway until deep into the flare. I didn't anticipate the long gear of the Toot, however, and



Meyer Aircraft Little Toot

PRICE

Plans, full-size	\$300 + \$5 s&h
Plans, reduced size (11x17 book)	\$75 + \$5 s&h

SPECIFICATIONS

Wingspan	19 ft.
Wing area	123 sq. ft.
Length	16.5 ft.
Height	7 ft.
Wheel track	6 ft.
Airfoil	NACA 2212
Primary Structure	Wood wing, steel tube or aluminum fuselage
Seats	1
Maximum gross weight	1,350 lb.
Empty weight, standard	914 lb.
Useful load, standard	436 lb.
Wing loading	10.97 lb./sq. ft.
Power loading	10.8 lb./hp
Fuel capacity	18 gal. standard, 30 gal. optional
Baggage capacity	30 lb.

Engine

Lycoming O-290D, 125 hp at 2,600 rpm

Propeller

McCauley two-blade aluminum, fixed pitch, 72-inch diameter with 57-inch pitch

PERFORMANCE

Maximum speed	135 mph
Cruise speed, 75% power	125 mph
Range, 75% power, 18 gal./30 gal.	260 s.mi./475 s.mi.
Stall speed	55 mph
Rate of climb, sea level	1,600 fpm
Service ceiling	16,500 ft.

For More Information

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"Little Toot" titles are clearly marked all over Meyer's prized project.

touched a bit early, so I pinned the stick forward and wheel landed successfully, just as if I meant to do it that way. Taxiing back for another launch, I arrowed up into the pattern and tried again, flaring a bit higher this time so I could make the three-point touchdown. The Toot sits fairly level on the ground, so there is no need to tuck the tail way down in order to make it land; just a small flareout at the right height does the trick.

As we parked, we reflected that George Meyer would be proud of his son's and daughter's efforts to keep the 40-year-old design alive and kicking. Now that the prototype airplane is getting back into the air and there's renewed interest in the Little Toot, there may be a whole new generation of builders putting them together. Some things are just meant to go on, and on, and on...

