



PM'S AVIATION EDITOR pre-flights *Jeanie's Teenie* before test

Build This 'Flying Volkswagen' For Less Than \$600!

By KEVIN V. BROWN

JUST WHEN THE LAST breakthrough seems to be broken through someone else comes along and does it again.

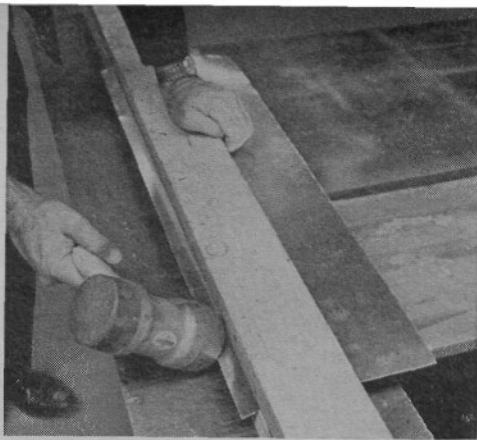
It's just happened in the field of amateur-built airplanes. A good general-average minimum for homebuilts has been about \$1000, and this for basically wood-and-fabric aircraft. Now a new design, from the unlikely place of Daphne, Ala., boasts a maximum cost of \$600, and this for an all-metal airplane that a rank beginner can build. Its major features are:

- A Volkswagen engine, the paragon of dependability and low cost.
- All-metal construction, and with over-the-counter parts and tools.
- Easy-to-build design, a one-man operation with no complicated equipment or techniques.

● Easy-to-fly, not swift, but sporty.

All of this grew from the efforts and imagination of Calvin Parker, chief engineer for a Mobile radio station. He lives near the station's tower at Daphne, and some of the early construction and taxi tests were done around the tower.

Parker, who learned to fly in 1946, built a few airplanes from other men's designs, but always felt there ought to be a simpler way to do it. While working for a large West Coast aircraft manufacturer, he enlisted the aid—after working hours—of office friends who were good with figures. He wanted to know what were the lightest metals it was possible to use and still build a safe aircraft. When they'd run through the figures and produced answers, he doubled everything



SIMPLE CONSTRUCTION technique uses plastic hammer to bend metal, eliminating jigs and brakes



CALVIN PARKER drills rivet holes in leading edge of wing, which is held in place by plywood template



VOLKSWAGEN ENGINE was key around which plane was designed. Tricycle gear uses three go-kart wheels

Here's a remarkably easy-to-make, all-metal airplane you can put together with simple tools and a minimum of experience. Full plans available

Technical Art by Fred Wolff

and then began the design of *Jeanie's Teenie* (for Jeanie, his daughter, who helped him with preliminary construction, and Teenie for what it sounds like).

I visited Parker at his radio tower, and he told me how *Jeanie's Teenie* came to be. Later I flew the first model.

"I designed it around the Volkswagen engine," he said, while showing me home movies of the *Teenie* in action, "and I believe this is the first time it's ever been done in metal. A few homebuilts have been adapted to the VW, but I started with the VW in mind. It's light, it's dependable and it's relatively inexpensive.

"Also, several conversion kits make it easily adaptable to airplane use."

The metal, as any amateur builder

(Text continues on page 124)



JEANIE'S TEENIE has removable wings which can be stowed in station wagon while the plane is towed



SIMPLE COCKPIT layout has basic instruments, off-set stick, rudder bar and push rods to controls



LEWIS LONG, original test pilot, tilts Teenie up with one hand in a demonstration of its light weight

knows, can be both a blessing and a curse. An all-metal airplane, theoretically, should last forever, while a wood-and-fabric job has a limited lifespan unless it receives exceptional care. However, metalworking is not everyone's cup of tea. Complicated equipment and expensive tools are usually necessary, plus some experience in learning to live with the idiosyncrasies of metal. Parker solved most of these problems by designing his plane around metals that can be easily purchased as stock items in any metal-products shop, and also can be cut and shaped with tools as simple as a plastic-headed hammer and tin snips.

Most of the fuselage and wings, including the spars and bulkheads, for instance, are built from standard 2024-T3 aluminum sheets, .020 and .040 inches thick. (The thicknesses, incidentally, are double what Parker and his friends figured out years ago as the minimum safe strengths for an airplane.) The one-piece push rods for the control surfaces—one of Parker's major innovations, eliminating pulleys and cables—and various extrusions for strengthening and mating some of the parts are also stock items.

A minimum amount of advanced workmanship is required. The landing gear and rudder bar, for instance, need some welding, and the propeller hub needs machining, but these, Parker says, can be farmed out at minimum expense to a local metalworking shop. For the rest, Parker demonstrated how most of the parts were formed.

"You don't need a jig or brake," he said, sliding a sheet of aluminum between 2 by 4s and tightening them with C-clamps.

About an inch-wide strip protruded, and he began hitting it softly with a plastic hammer. "I just start at one end and go down the line. If you hit it too hard, it will crack or rip, so you have to go over it easy about three times to bend it safely."

Larger bends, such as the leading edges of the wings or tail-assembly pieces, are made simply by laying the pieces on the floor, clamping wood boards to the center, bending them over and standing on them. The wing ribs take special treatment. Cuts are made in the edges because the bends will be made around a curve. A template is made from plywood to form the ribs; then the remainder of the plywood, which mates with the template exactly, is

(Please turn to page 176)

FLYING VOLKSWAGEN'

(Continued from page 124)

used to lock the leading edge of the wing in place while riveted to ribs and spar. "Pop" rivets, used throughout, eliminated more complicated conventional riveting.

I went through an estimated cost list with Parker. Like most homebuilts, costs vary with the individual's ability to scrounge parts, but here's an average:

Volkswagen engine.....	\$250
Aluminum sheets and rods.....	200
Instruments, basic group.....	50
Go-kart wheels.....	40
Special propeller.....	40

The biggest variance will be in the engine. Standard catalogs list rebuilt VW engines of up to 40 hp from \$160 to \$400.

As for specifications, at the time of my visit, the *Teenie* had only 12 hours on it, and a complete list was not available. But an estimated spec/performance chart goes something like this:

Engine	'57 Volkswagen
Horsepower	36
Maximum rpm	3100
Propeller	Heby special
Wingspan	18 ft.
Length	11 ft., 11 in.
Wing area	3 x 18ft.
Crew	1
Gross weight	550 lbs.
Empty weight	285 lbs.
Useful load	265 lbs.
Fuel capacity	7 gal.
Takeoff	40 mph
Takeoff distance	300 ft.
Rate of climb	1000 fpm
Maximum speed	85 mph
Range	3 hrs.
Landing distance	500 ft.

Parker claims the plane won't stall. He says it will sink fast, but with full control. I never got a chance to find out. On the day of my test flight, conditions were anything but ideal. Tornadoes had just passed through the area, and we had a stiff crosswind with gusts and a 1000-foot ceiling.

Even so, I learned enough to spot the two major problems that *Teenie* builders will encounter in the early flights. The VW engine, at best, is 40 hp, roughly half what the smallest standard aircraft engine produces, although it's well mated with the tiny *Teenie*. Even so there's not much margin for error. Also, because the plane is so light, unless you're used to it—and I wasn't—it's extremely sensitive on the controls. But most amateur builders would confirm this as characteristic of all homebuilts.

On takeoff, to compound the problem, I didn't get the throttle all the way to the firewall. It's a lock throttle—I'm used to friction throttles—and it locked about an inch from full power. Then, after I'd used about a third of the runway, I tried to pull it off the ground and it leaped 10 feet in the air. I pushed the nose down again, and porpoised violently a couple of times,

before I got smart and eased up on the controls. I passed the end of the runway before I noticed the throttle gap. Once corrected, the plane climbed smoothly and the rest of the flight was routine.

I stayed within sight of the field to make my turns, and whatever climbs and descents I could manage below 1000 feet, and found nothing unusual about any of the *Teenie's* flight characteristics. It responds immediately, and with commendably equal force, to all the controls, although Parker admits there was some trouble adjusting the aileron linkage in the early flights to match them up. This suggests each *Teenie* builder may have some small adjustments to make, too.

The open cockpit—my first—bothered me not at all, and I wasn't even wearing goggles. Parker thinks the plane could pick up 20 mph with a canopy, but, even so, it will never be a speedster, and some builders will prefer the sporty open-air atmosphere. Helmet, goggles, silk scarf and all that!

So the only real advice *Teenie* builders need in building is to take special care. Since the plane is almost entirely handmade, you won't have special equipment to compensate for sloppy work. A real premium will be placed on workmanship.

And the only real advice *Teenie* pilots need for the early nights is to use *full* power on takeoff and ride easy on the controls. We estimated I was trying to struggle into the air on 20 hp and making up the difference with muscle power.

Lewis Long, an Alabama school teacher, who helped build the first model, was its first test pilot and now owns it, certainly had no trouble with it. He flew it while I shot pictures (that's Long on the cover) and was rock steady on the controls throughout, on takeoff, in the air and on landing. It just takes some getting used to. And, if you're like me, you'll learn in a hurry.

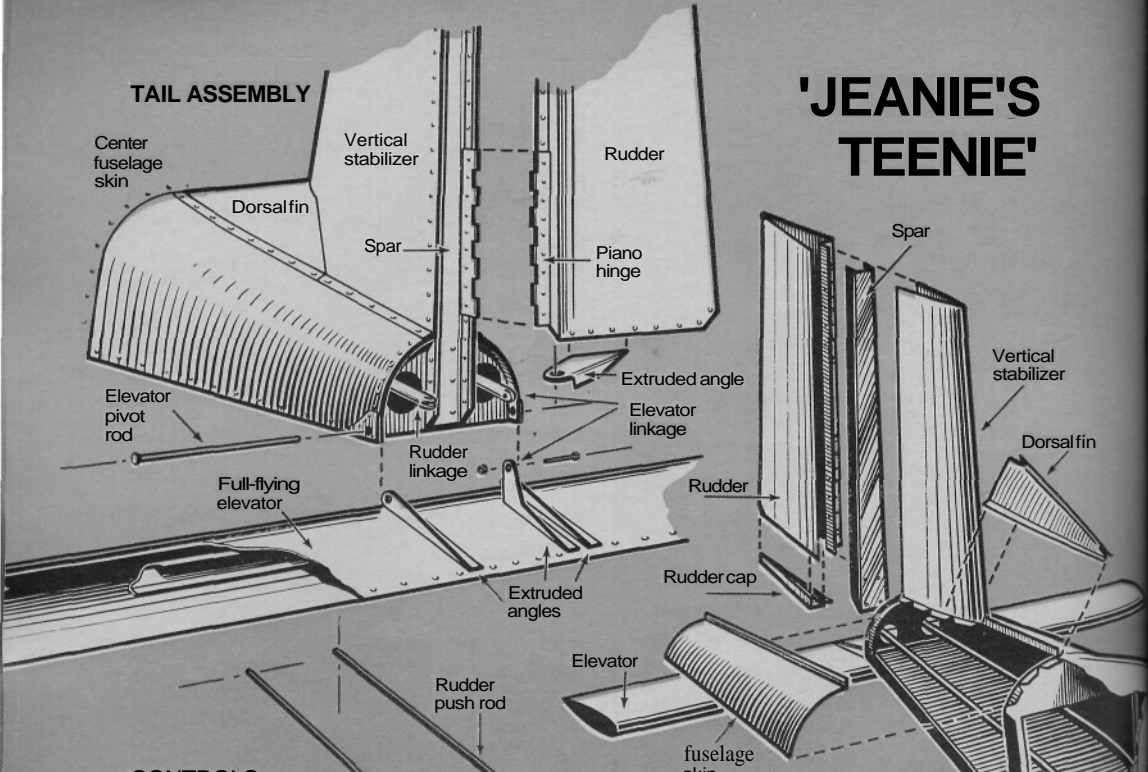
In fact, if you're a low-time pilot, you might want to enlist the aid of a more experienced pilot for the first flights to pick up any of your plane's individual characteristics. Most amateur pilots are happy to oblige. It's an adventure.

A word here about the Federal Aviation Administration. An FAA inspector must examine your plane before you can fly it. It's advisable to contact him early before you get too far down the road. The first *Teenie* passed the FAA exam easily.

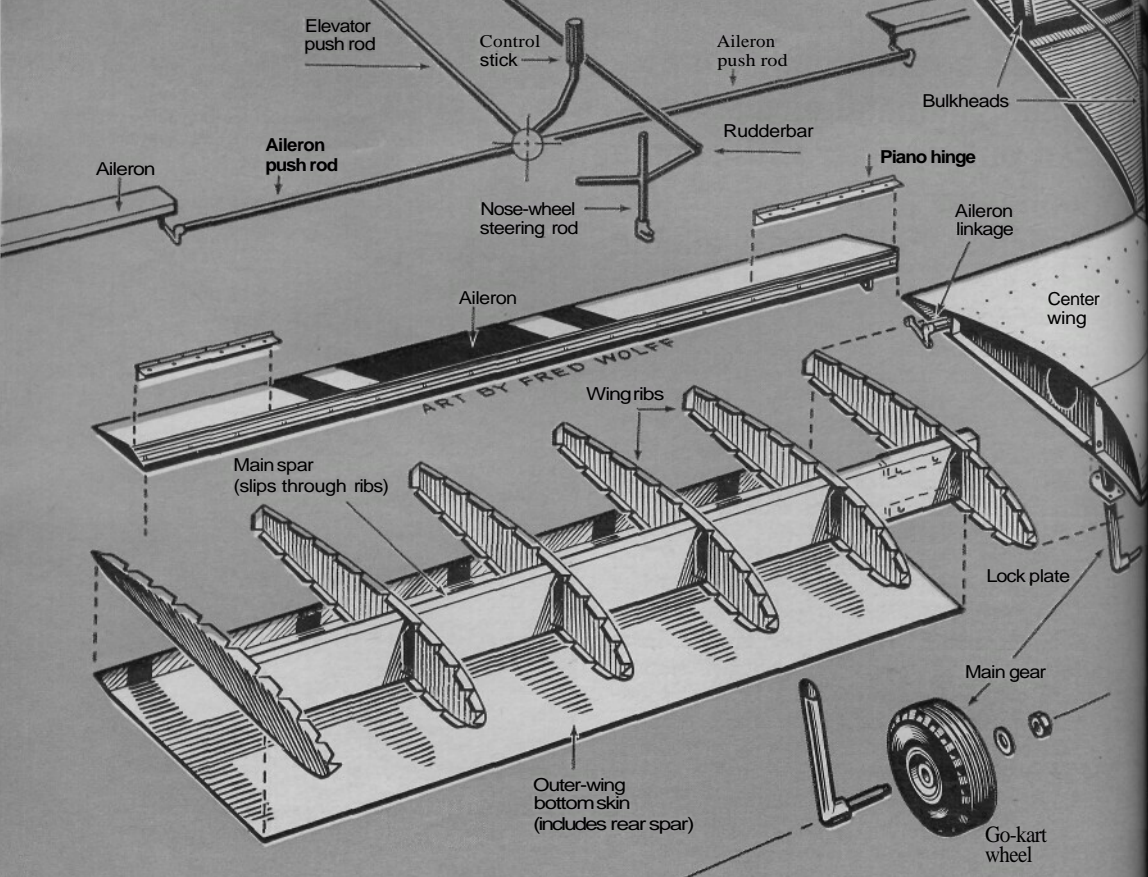
All in all, *Jeanie's Teenie* is a remarkable breakthrough in amateur construction. It's not a Bonanza, nor even a \$2000 homebuilt. But, at \$600, if you build it conscientiously and fly it intelligently, you'll get your money's worth. * * *

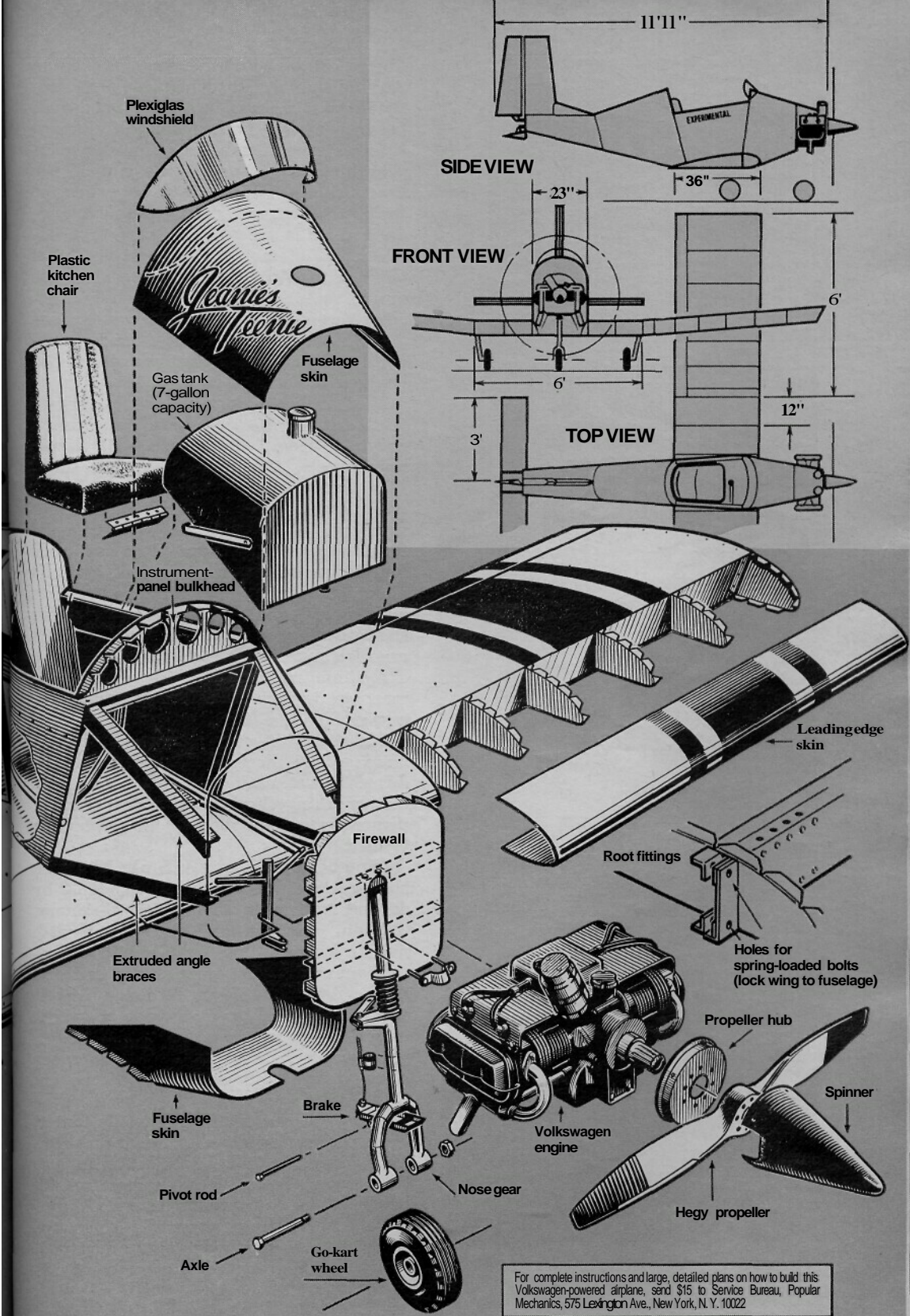
'JEANIE'S TEENIE'

TAIL ASSEMBLY



CONTROLS





For complete instructions and large, detailed plans on how to build this Volkswagen-powered airplane, send \$15 to Service Bureau, Popular Mechanics, 575 Lexington Ave., New York, N. Y. 10022