



# The Pietenpol Air Camper

*An antique recreational vehicle for the homebuilder*

BY PETER M. BOWERS

The Pietenpol Air Camper's antiquity is largely responsible for the homebuilt's popularity today. You have to go back a long way to find such structural simplicity, low cost and docile, reliable performance in a two seater. If you can approach this 1928 design with a 1928 frame of mind and accept low speed, limited climb, short range, spartan simplicity and downright discomfort as the price for getting airborne, you can have a wonderful time with an Air Camper.

In 1928, Bernard H. Pietenpol of Spring Valley, Minnesota, was just one of many pilots who wanted to own an airplane but could not afford to buy a suitable one. Surplus World War I Jennies were still available and inexpensive on the third- and fourth-hand market; but the big and clumsy aircraft were clearly near the end of their service lives and a terrific maintenance headache. Pietenpol wanted something smaller and simpler, so he designed his own airplane.

What he came up with could almost be regarded as an enlargement of the 1927 Heath "Parasol" (January *Pilot*, p. 69) into a tandem two-seater. This of course required more power than the Parasol's converted Heath-Henderson motorcycle engine could supply. The only suitable small American airplane engine at the time was the 55-hp Velie M-5 radial, but it was far too expensive for Pietenpol's purse. He then turned to what was readily available—a used automobile engine. This was the four-cylinder, water-cooled Model A Ford. With 200 cubic inches, it delivered 39 horse-



*First built in the 1930s from magazine plans, Bower's Air Camper was restored in 1968.*

power through a war-surplus propeller from a Breese "Penguin" ground trainer.

The major change to the Ford engine, other than turning it around to mount the propeller on the flywheel flange, modifying the pan and replacing the cast-iron valve-mechanism covers with sheet metal, was to replace the battery ignition system with a single magneto. As with all water-cooled designs, placement of the relatively large radiator was a problem. It ended up in the simplest location, between the wing's leading edge and the top of the fuselage. Although this would seem to be the worst possible location from the pilot's point of view, it was never a serious problem and was actually beneficial at times—it warmed the air that reached the cockpit and blocked out enough of it so a windshield was not needed. The original radiator was from a surplus World War I aircraft and cut in two with the halves rejoined at

the back. Other builders have used various automotive radiators.

The wing was built as a single unit, with the spruce spars spliced in the center—a procedure distinctly nonstandard for aircraft. Many latter-day builders made a three-piece wing to simplify assembly and disassembly of the airplane by having the center section and its struts, fuel tank and radiator stay in place when the outer wing panels were removed.

The spars were lightened by an ingenious method of routing using a table saw. Ribs were built up in the traditional stick-and-gusset truss and used a low-speed, high-lift airfoil of Pietenpol's own design.

Access to the rear cockpit, where the pilot sat, was a problem. To simplify entry, the early models had a flap that hinged upward. Access could have been simplified, and has been by some builders, by incorporating a permanent cutout, but this sacrifices a few square feet of wing area. A 10-gallon fuel tank, soldered from common galvanized sheet metal, was carried in the center of the wing.

The fuselage was made as short as it could be and still accommodate two tandem seats and is a tight fit for average-size people. Dual stick controls are provided, with a rudder bar for the pilot and pedals for the front-cockpit occupant. The rear cockpit is not too hard to climb into, but entry up front is strictly an acrobatic feat. To provide access, the crossed-wire bracing was eliminated from the left center-section struts. Some builders have made a significant improvement by eliminating the



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wires entirely and adding a diagonal strut from the top of each forward center-section strut down to the front of the fuselage. This allows the occupant to project his head and shoulders over the right side of the fuselage while folding his body down into the cockpit during standard entry from the left side.

The landing gear on early models used wooden V-struts, steel-tube spreader bars and a straight-across axle, secured by rubber shock cord. The wheels were readily available World War I surplus with wire spokes, clincher tires and no brakes. The tail skid was a spring leaf from an automobile. The upgraded 1933 model changed to rigid steel-tube gear with divided axles and Goodyear Airwheels for shock absorbing, and the tail skid was redesigned. Most latter-day builders use smaller aircraft wheels with either mechanical or hydraulic brakes and have added rubber ring shock absorbers such as those used on the Piper Cub. The purists who want old-fashioned wire wheels have to build them up from motorcycle rims.

How the name "Air Camper" originated is an interesting story. In 1929, the editor of *Modern Mechanics and Inventions*, a magazine that was boosting homebuilt aircraft in spite of their being illegal at the time, printed an editorial stating that converted automobile engines would never be suitable for aircraft. Pietenpol took exception to this, of course, and wrote in to tell the editor of his successful use of the Model A. The editor still had his doubts, so Pietenpol decided to show him. Since the offices of the magazine were in Minneapolis at the time, only about 130 miles from Spring Valley, Pietenpol and a friend flew a pair of his airplanes to Minneapolis.

Needless to say, the editor was impressed and promptly arranged for publi-

cation of the plans in the magazine. A set of shop-size drawings was available through the magazine for \$7.50 and included details of the Ford engine conversion and an alternative steel-tube fuselage. The latter found little acceptance. The plans were consolidated in the 1932 issue of the same publisher's annual, *Flying and Glider Manual* (which has been reprinted by the Experimental Aircraft Association).

It was the enthusiastic editor who decided that the airplane needed a catchy name and dubbed it "Air Camper." Publicity pictures were taken of the airplanes in typical camping scenes, with tents pitched alongside, but the scenes were hardly realistic. The amount of gear shown could hardly have been stowed in the airplane along with two people. (With no built-in baggage compartment, all baggage goes in the cockpits. Quite a bit can be carried in an empty front cockpit, but when two are aboard, it is a case of seating the people first and then stuffing the baggage on and around them, taking care not to jam the controls. The front seat is enough of a flying straight jacket; additional cramping from baggage can be real torture.)

In spite of the design being unlicensed, and therefore illegal, quite a few Air Campers and other amateur designs were built and flown in significant numbers through the early and mid-1930s. These were supported by several magazines and a small industry that provided the necessary hardware and materials. The present Experimental category, which makes amateur designs legal, dates from late 1947. The first airplane to be certificated under the new rules was a prewar Pietenpol built by Russ Stuart of Springfield, Oregon.

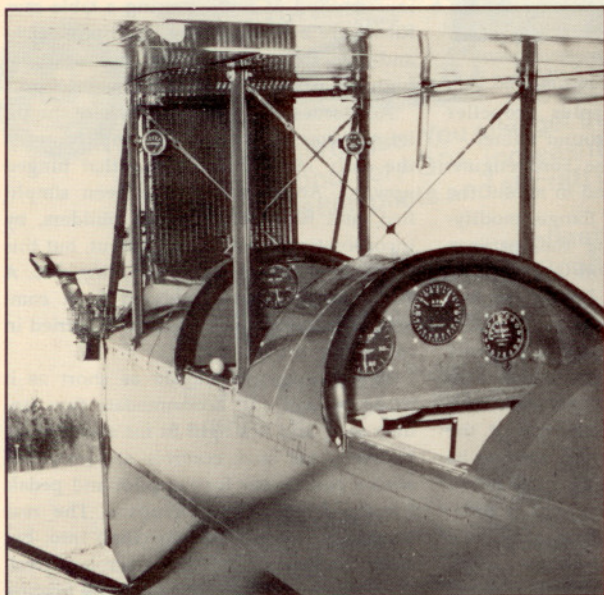
Of course, much modernization has been undertaken by individual builders, some to such an extent that the airplanes

are hard to identify as Pietenpols. The most common alteration in recent years is to replace the Ford engine with a later 65-hp air-cooled airplane engine such as the Continental A-65. Because of the air cooling, this engine is much lighter than the Ford with its associated plumbing, so it is necessary to lengthen the nose to maintain proper balance. The longer nose, coupled with a too-short fuselage and small tail surfaces, sometimes produces propeller-torque problems from abrupt throttle work on takeoff. This gave one builder/pilot so much trouble that he converted his Air Camper to tricycle landing gear.

Others seek performance and control improvements through wing fences, a lengthened rear fuselage and balanced controls. The expected benefits are hardly noticeable. Others try to improve access by raising the wing a few inches, adding a trailing-edge cutout or both.

One change that is almost universal, at least for those who fly from paved runways, is to replace the tail skid with a steerable tailwheel. Skids are banned on most airports, not because they dig up the turf or scratch the pavement, but because on hard surfaces they can slide sideways as well as forward. A gust of wind can swerve a taxiing tail-skid airplane into a parked airplane or other obstacle quite easily. Brakes, too, are a popular modern detail and are used in conjunction with divided-axle or tripod landing gear. They do not go with the old straight-across floating axle secured with rubber shock cord. Very few pilots can manage without brakes in average traffic; such technique is practiced today by a relatively small number of dedicated antique aircraft pilots.

For Air Campers equipped with brakes and tailwheels, the major problem in operating in a busy pattern is lack of speed.



This restoration is equipped with few instruments, as in the good old days. The oil-pressure and water-temperature gauges are mounted on the struts for easy reading from both cockpits.

#### YESTERDAYS • WINGS

##### PIETENPOL AIR CAMPER

1929 - 1933 model	Specifications	1965 model
Ford Model A	Powerplant	Chevrolet Corvair
39 hp @ 2,200 rpm	Wingspan	60 hp
28 ft 2 in	Length	29 ft
17 ft 3.5 in	Wing area	18 ft
140 sq ft	Wing loading	145 sq ft
7.7 lb/sq ft	Power loading	7.4 lb/sq ft
27.7 lb/hp	Empty weight	17.6 lb/hp
625 lb	Gross weight	622 lb
1,080 lb	Performance	1,070 lb
75 mph	High speed	110 mph
60 mph	Cruising speed	80 mph
35 mph	Landing speed	38 mph
-	Initial climb	500 fpm
140 sm (no rsv)	Range	380 sm (30 min rsv)





The revised 1933 Air Camper featured a new steel-tube landing gear and minor fuselage changes. This one was rebuilt in the 1960s with smaller main wheels and a steerable tailwheel.

Modified Air Campers are not uncommon. Note the longer nose here, which was to balance a lighter engine, and the modified Piper Cub landing gear.



Pietenpol built this Air Camper in 1965. It has an air-cooled Chevrolet Corvair engine, Piper Cub landing gear and a lengthened rear fuselage. The front cockpit is covered for solo flight.



The Air Camper has two 65-hp Continental engines, one above the other, driving co-axial propellers. It was used to test the award-winning engine design.

Flying at only 60 to 70 mph, the following traffic catches up quickly.

Most airplanes in the Air Camper's class operate without radio. Some later-day pilots who have never flown without radio are appalled at the thought of an airplane being out of sight of its homebase without a radio. A friend and I once flew my Nordo and Air Camper homebuilts 800 miles to an antique fly-in. We stopped at a small-town airport where the chief instructor at the field looked the Air Camper over. He was not bothered by the straight-axle landing gear with rubber-cord shock absorbers and no brakes, a water-cooled engine and minimum instrumentation, but he was jolted by the absence of a radio.

"Where's your radio?" the instructor questioned my friend.

"Home in the living room, where it belongs," was the reply.

As the restrictions on unlicensed aircraft were enforced in the late 1930s, Pietenpol became inactive as a producer of plans and airplanes (a few "factory built" aircraft were sold). When the postwar boom in antique airplanes and homebuilts started to roll in the 1950s, he began selling Air Camper plans again in response to the demand. Still boasting the economic advantages of automobile engines for sportplanes, he built himself another Air Camper in 1965 and powered it with a six-cylinder air-cooled Chevrolet "Corvair" engine. This was practically a bolt-on unit straight from the car—it retained not only the original battery ignition system, but the cooling fan and shroud as well. With a little modification to reduce weight, the Corvair had great promise as a sportplane engine; homebuilders were greatly disappointed when General Motors discontinued the engine.

With all the progress in aircraft design during the past 54 years, one would assume that this relatively crude and old-fashioned design would have been eclipsed by later models and forgotten. Not so. Pietenpols are still being built today, either from reprints of the old magazine plans or from updated drawings from Pietenpol himself. There are probably more Pietenpols flying today than in the airplane's heyday of the early 1930s.

The FAA shows approximately 8,000 airplanes registered today as amateur-built, and gives actual numbers for some models. The 1981 listing shows 187 Pietenpols (up from 92 in 1975), but many more actually are flying because their builders either have made enough modifications to justify giving them their own name or have combined the Pietenpol name with their own, such as Jones-Pietenpol XYZ.

Whatever the actual number, it is high enough to be a remarkable tribute to a truly outstanding amateur effort that is holding its own against the best professional competition 54 years after it appeared in the air. □