THE ORIGINAL LIGHT TWIN

Piper's first little Indian—the Apache

BY MARK M. LACAGNINA

PHOTOGRAPHY BY ART DAVIS

continued

APACHE

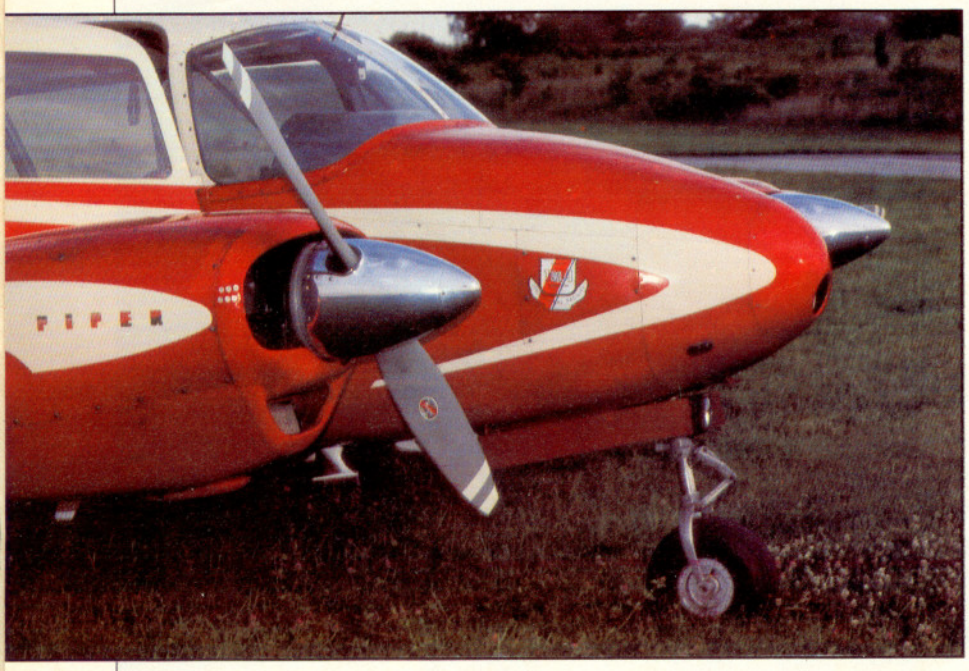
With both engines running properly, it's a pleasure to fly.

If general aviation awarded distinguished service medals to airplanes, the Apache's bulbous nose cone surely would be brimming with ribbons. During the past 27 years, many thousands of pilots have earned multi-engine ratings in Piper's stalwart light twin.

Today, however, the Apache appears to have reached a major crossroads in its career. It has been out of production for more than 15 years and just may have outlived its usefulness as a multi-engine trainer. Flight schools, en masse, are abandoning the Apache and adding new-generation light twins to their training fleets. The Piper Seminole, the Beech Duchess and the orphaned Gulfstream American Cougar are at least as economical to operate and offer better performance than the Apache.

The net result is that many Apaches are showing up on the used-aircraft market at prices that are very attractive. The $10,000 to $20,000 price tags for used Apaches add greatly to the appeal and the perceived benefits of owning and operating a twin.

An Apache costs as much as some used, high-performance singles; but the purchase decision should not be influenced by emotion. The aura of owning and flying a twin—the macho image—does exert a strong pull on many pilots. And, for the unwary, it could be a siren song. The Apache *is* a good airplane, but, like other light twins, it does have limitations, especially in its single-engine performance. The Apache's limitations should be weighed carefully against the attractiveness of its moderate price tag.



The Apache flies like an angel, with both engines running. Its single-engine performance characteristics, however, have earned it the reputation of a homesick brick. When it comes to an Apache, pride of ownership must be tempered with strict discipline: the willingness to maintain proficiency in emergency operations and the presence of mind to be ready to cope with any emergency from engine start-up to shutdown.

It is important to note that it would be very hard, indeed, to find an Apache like the one pictured on these pages. The handsome airplane, N4014P, has enjoyed private ownership since it rolled off the assembly line in Lock Haven, Pennsylvania, in 1958. This Apache also has been highly modified.

The proud owner of the Apache is James Wedding, AOPA 140268, of Gaithersburg, Maryland. Wedding bought the airplane from a North Central Airlines captain in 1963. Shortly before Wedding purchased the Apache, it had been modified by a fixed-base operator

in Wichita according to a supplemental type certificate obtained by Doyne Conversions (now defunct). The modifications consisted of the replacement of the Apache's 160-hp engines with 180-hp Lycoming O-360-A1As and the addition of both a dorsal fin and another window in the fuselage.

Wedding said his airplane cruises at 140 knots, indicated, while burning a total of about 108 pounds (18 gallons) of fuel per hour. Although he has not experienced an engine failure while flying his Apache, Wedding said the 180-hp engines and the dorsal fin offer good handling characteristics and a comfortable margin of safety during single-engine proficiency operations.

Wedding is a certificated A&P mechanic as well as a pilot, and he has paid a lot of attention to the Apache's panel. He changed the locations of the basic flight instruments into the standard T configuration and equipped the airplane with a full panel of digital King Silver Crown avionics and a Narco Centerline I DME.

While preparing to photograph Wedding's Apache, several *Pilot* staffers commented on the remarkable condition of the airplane's paint and interior. And Wedding threw us a good curve: The Apache, indeed, was repainted and given a new interior—not recently, as we had suspected, but in 1962. Hangaring and ample application of tender loving care have kept this cream puff from going stale.

Wedding said he is very pleased with his Apache. He said the airplane is not maintenance-intensive, but does require constant attention to repair cracks that form in its cowling. He also noted that, in recent years, the number of airworthiness directives (ADs) issued against the Apache has increased.

Overall, however, there have been surprisingly few ADs issued against the Apache, and they appear to be related mostly to normal wear and tear. For instance, the bulk prescribe actions to detect and repair cracks in various control surface components, the landing-gear selector lever and the supporting frame of the entrance step. Other ADs have targeted the Apache's fuel valves and combustion heater.

Apache N4014P is not for sale at present, but Wedding admits that he often is tempted to trade it in for a Twin Comanche. However, he said that, each time this thought nags at him, the excellent handling qualities and the comfort of the Apache's cabin weigh heavily against the extra speed offered by a Twin Comanche. "The Apache is a good ol', docile airplane," Wedding said. He noted that, if he were to put his airplane on the block, he would begin negotiations at $35,000.

For this report, I flew a 160-hp model that a fixed-base operator had purchased for $12,500. This Apache is typical of one that can be bought for that price. Its paint is chipped and faded, and there are dents and ripples all over the wings and fuselage. (An employee of the FBO informed me, however, that the airplane is scheduled for some cosmetic work.)

The panel also is typical of those found in used Apaches. Compared with the panel layouts in most modern lightplanes, the arrangement of instruments and gauges in most Apaches appears to be the product of whimsy rather than logic. In the airplane I flew, the correction card for the directional gyro showed variances of up to seven degrees for certain headings. The "radio compass" (automatic direction finder) and one of the old Narco Mark 12 transceivers were not working.

The flight instructor assigned to give me a check-out in the Apache shrugged and stated the obvious: "This is not an instrument airplane."

My reservations about the airplane were compounded when I emerged from the preflight inspection covered with grease. The fuel-tank sump drains are located behind little trap doors under the engine nacelles. These compartments appear to be collection points for engine residue.

Checking for water in the fuel is especially important when preflighting an Apache. The fuel-cap hatches are not vented and collect water. Unless you use a kitchen baster or turn the airplane upside down to get rid of the water, there is no way to keep it from running into the tanks when you remove the fuel caps.

In addition to the sump drains, there is a valve that can be opened to drain fuel from the fuel crossfeed lines. The valve is opened by turning a knob on the fuel-control panel box, located between the front seats. When opening the valve, it helps to have someone

outside the airplane to tell you whether or not the system is draining properly.

Most of the controls and switches are easily within the pilot's reach. It takes some bending, however, to get at the master switch and generator switches, which are located below the power quadrant. The circuit breakers are behind hatches under the bottom of the panel and must be checked by touch rather than by sight.

Engine starting procedures are straightforward. The brakes in the Apache I flew felt a bit thin, but it was easy to maneuver the airplane along narrow taxiways and in tight turns.

On takeoff, as instructed, I held the Apache on the runway until it accelerated to 67 knots. After rotation, the drill is to hold the airplane a few feet above the runway and wait to climb until it accelerates to its best-rate-of-climb speed, 87 knots. The landing gear is left extended until there remains no chance of making a power-off landing on the runway.

Takeoffs are critical. At 87 knots, the Apache is very close to its best single-engine-rate-of-climb speed (Vyse), 83 knots. The landing gear—as well as the flaps, which are not used on takeoff—are powered by a hydraulic pump on the left engine. If this engine failed after there was no more runway remaining for a power-off landing, the pilot would have his hands full. To get the gear up, he would have to give about 40 good strokes on the emergency hydraulic-pump handle, located below the power quadrant and between the flap and gear selectors. Unless there is someone in the right seat to help the pilot perform the emergency engine-out procedures quickly and precisely, the pilot's best bet might be to pull the power off and land straight ahead.

Even when the emergency procedures *are* performed quickly and precisely, the Apache's single-engine performance is marginal, at best. I sampled its performance during my check-out. With the airplane cleaned up and trimmed properly during single-engine work—and with the airspeed indicator pegged at Vyse—the Apache climbed reluctantly at about 100 fpm. Granted, it was a hot day; but the Apache was loaded well below its gross weight.

Pilots with experience in flying an Apache equipped with 150-hp engines say its single-engine performance is not marginal—it is abysmal. One pilot said Vyse in this airplane should be considered as the minimum single-engine-rate-of-*sink* speed.

The maximum extension speeds for landing gear and flaps on early Apaches are uncomfortably low. The gear extension speed is 109 knots, and it takes 10 to 14 seconds for the gear to retract or extend. The flap speed is 87 knots, and the pilot needs to give the yoke a healthy push to keep the airplane from pitching up during extension. Some relief came in 1960, when Piper boosted the Apache's gear speed to 130 knots and its flap speed to 109 knots.

With both engines running properly, the Apache is a pleasure to fly. The controls are relatively light and well-balanced. Noise levels are rather high, but visibility over the sloping nose and the small nacelles is excellent.

The Apache *is* a docile airplane. I performed stalls with a variety of gear and flap configurations. With the yoke held back, the airplane would tremble, drop its nose, gain airspeed, raise its nose, tremble, and so on. The airplane would recover eagerly from these maneuvers with application of power.

The Apache is a milestone in Piper's history. In the 1940s, the decision to develop a twin was made with some reluctance by Piper, whose engineering and production experience had been limited to simple, tube-and-fabric singles.

Piper considered a number of existing designs, including Ted Smith's Aero Commander, before buying an obscure airplane, the Bauman Brigidier, that had been built in California. The

APACHE

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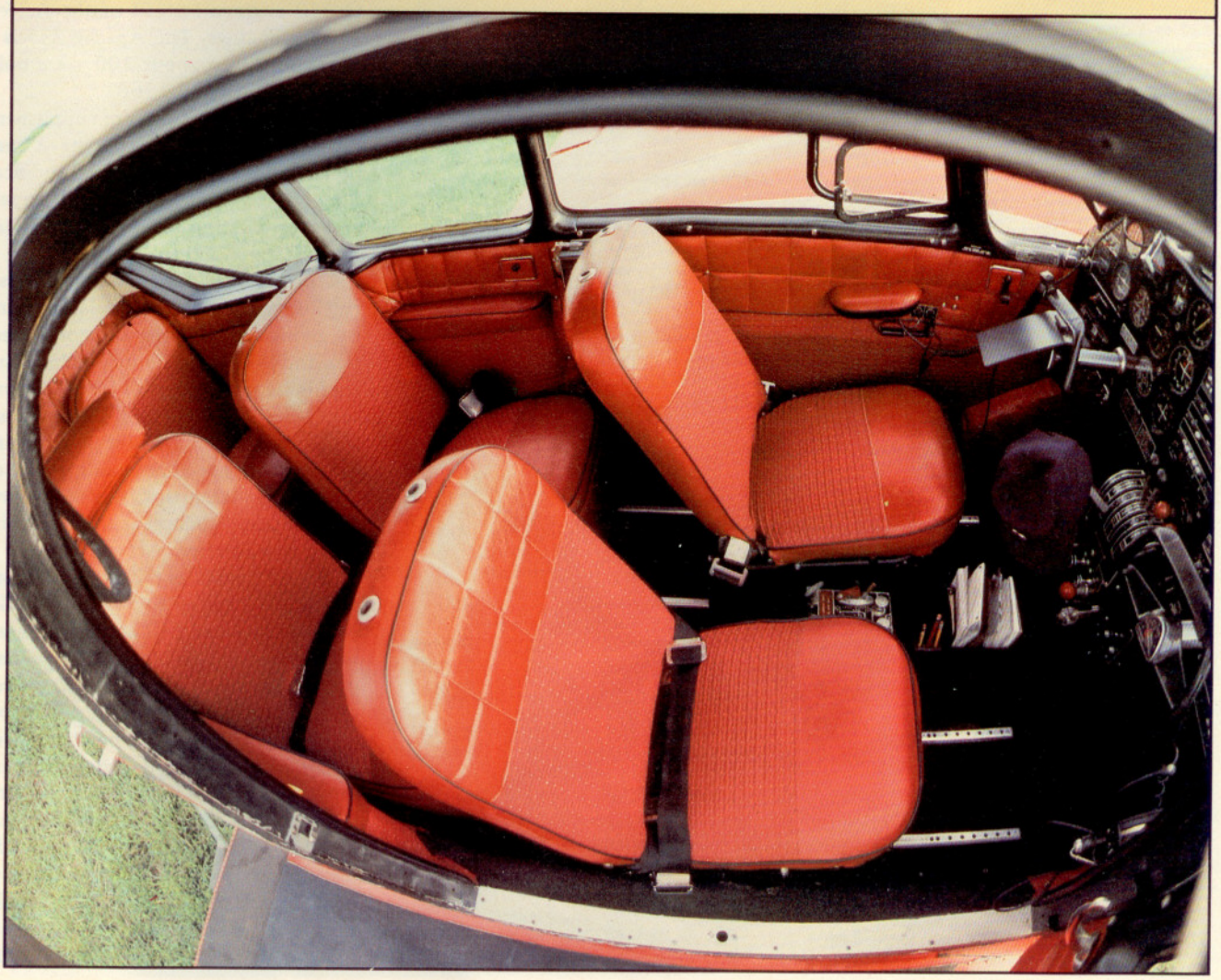

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APACHE

	PA-23-150 1954-1957	PA-23-160 1957-1961	PA-23-235 1962-1965
Price new	$32,500 to $34,990	$35,990 to $36,990	$44,990
Current market value	$9,000 to $15,000	$10,000 to $21,000	$17,000 to $26,000
	Specifications		
Powerplants	Lycoming O-320-A1A 150 hp @ 2,700 rpm	Lycoming O-320-B3B 160 hp @ 2,700 rpm	Lycoming O-540-B1A5 235 hp @ 2,575 rpm
Recommended TBO	1,200 hr	1,200 hr	1,200 hr
Propellers	Hartzell constant speed 2 blade, 76 in	Hartzell constant speed 2 blade, 72 in	Hartzell constant speed 2 blade, 74 in
Wingspan	37 ft 1.75 in	37 ft 1.75 in	37 ft
Length	27 ft 1.2 in	27 ft 1.2 in	27 ft 7.2 in
Height	9 ft 6 in	9 ft 6 in	10 ft 3.6 in
Wing area	207.56 sq ft	207.56 sq ft	207 sq ft
Wing loading	17.6 lb/sq ft	18.6 lb/sq ft	23.2 lb/sq ft
Power loading	12.2 lb/hp	11.9 lb/hp	10.2 lb/hp
Seats	4 (5 opt)	4 (5 opt)	5
Empty weight	2,200 lb	2,320 lb	2,735 lb
Useful load	1,300 lb	1,480 lb	2,065 lb
Payload w/full fuel	868 lb	1,048 lb	1,201 lb
Gross weight	3,500 lb	3,800 lb	4,800 lb
Fuel capacity, std	432 lb/72 gal	432 lb/72 gal	864 lb/144 gal
Fuel capacity w/opt tanks	648 lb/108 gal	648 lb/108 gal	N/A
Oil capacity ea engine	8 qt	8 qt	12 qt
Baggage capacity	200 lb/25 cu ft	200 lb/25 cu ft	200 lb/25 cu ft
	Performance		
Takeoff distance (ground roll)	990 ft	1,190 ft	1,080 ft
Takeoff over 50 ft	N/O	N/O	1,520 ft
Rate of climb (sea level)	1,350 fpm	1,050 fpm	1,450 fpm
Single-engine ROC	240 fpm	180 fpm	220 fpm
Maximum level speed	156 kt	159 kt	176 kt
Cruise speed/Range (Fuel consumption)			
@ 75% power			
5,000 feet	148 kt/570 nm (112.8 pph/18.8 gph)	150 kt/860 nm (112.8 pph/18.8 gph)	165 kt/850 nm (168 pph/28 gph)
@ 65% power			
5,000 feet	139 kt/620 nm (97.8 pph/16.3 gph)	142 kt/920 nm (97.8 pph/16.3 gph)	152 kt/910 nm (144 pph/24 gph)
10,000 ft	N/O	143 kt/950 nm (97.8 pph/16.3 gph)	158 kt/940 nm (144 pph/24 gph)
@ 55% power			
5,000 ft	127 kt/665 nm (82.8 pph/13.8 gph)	128 kt/1,010 nm (82.8 pph/13.8 gph)	138 kt/990 nm (120 pph/20 gph)
10,000 ft	128 kt/670 nm (82.8 pph/13.8 gph)	130 kt/1,020 nm (82.8 pph/13.8 gph)	143 kt/1,020 nm (120 pph/20 gph)
Service ceiling	18,500 ft	17,000 ft	17,200 ft
Absolute ceiling	N/O	N/O	18,500 ft
Single-engine service ceiling	N/O	N/O	5,100 ft
Single-engine absolute ceiling	6,750 ft	5,500 ft	6,600 ft
Landing distance (full flaps)	670 ft	750 ft	880 ft
	Limiting and Recommended Airspeeds		
Vmc (Minimum control w/critical engine inoperative)	74 KIAS	70 KIAS	70 KIAS
Vx (Best angle of climb)	66 KIAS	65 KIAS	74 KIAS
Vy (Best rate of climb)	86 KIAS	87 KIAS	97 KIAS
Vyse (Best single-engine rate of climb)	83 KIAS	83 KIAS	95 KIAS
Vfe (Max flap extended)	87 KIAS	87 (109 KIAS after 1959)	109 KIAS
Vle (Normal max gear extended)	109 KIAS	109 (130 KIAS after 1959)	130 KIAS
Vno (Max structural cruising)	143 KIAS	156 KIAS	172 KIAS
Vne (Never exceed)	180 KIAS	197 KIAS	216 KIAS
Vr (Rotation)	N/O	67 KIAS	70 KIAS
Vs1 (Stall clean)	57 KIAS	54 KIAS	62 KIAS
Vso (Stall in landing configuration)	51 KIAS	51 KIAS	54 KIAS

All specifications are based on manufacturer's calculations. N/O: not obtainable; N/A: not applicable.

Brigidier, which had engines mounted in a pusher configuration, was abandoned quickly.

In 1948, Piper acquired Consolidated Vultee's Stinson Division, which then was in the process of developing a light twin called the Twin Stinson. This airplane underwent several changes in its transformation into the Apache. Its twin tail design was discarded in favor of a single vertical tail, aluminum was used instead of fabric to cover the fuselage, and its 125-hp Lycoming O-290s were replaced with 150-hp Lycoming O-320 engines. Piper also considered but abandoned plans to offer the Apache with fixed landing gear and fixed-pitch propellers.

The Apache—the first civilian light twin—was introduced in 1954. In 1957, Piper switched to 160-hp Lycoming O-320 engines. More than 2,100 Apaches were built between 1954 and 1962.

In 1962, Piper introduced the Apache 235. This airplane basically is an Aztec with 235-hp Lycoming O-540 engines instead of the Aztec's 250-hp engines. The Apache 235 is a rare bird: Only about 100 were built between 1962 and 1966.

Over the years, a host of supplemental type certificates (STCs) have been obtained for the Apache. The modifications range from windshield wipers and crop-dusting equipment to Rajay turbochargers and tip tanks.

Currently, only one company offers a full conversion. Seguin Aviation starts by giving the airframe a major inspection and overhaul. The stripped airplane then is reequipped with 180-hp Lycoming O-360-A1D engines, a longer nose, a square tail, a dorsal fin, new engine cowls, flap gap seals and wing tips much like Horner wing tips, which improve lift. Finishing touches include new paint and a new interior.

This, of course, is the Geronimo conversion. According to Seguin, the Geronimo cruises at 140 knots, indicated, while burning 108 pounds (18 gallons) of fuel per hour at 65-percent power, and at 147 knots while burning about 120 pph (20 gph) at 75-percent power.

The most important performance increases come in single-engine performance. Seguin said the Geronimo can climb at gross weight (4,000 pounds) under standard conditions with one engine feathered at 750 fpm. Its single-engine service ceiling is 12,000 feet.

It costs between $65,000 and

$75,000 to have an Apache converted to a Geronimo. Seguin also sells Geronimos for $82,000 each. Seguin Aviation, Incorporated can be contacted at 2075 Highway 46, Seguin, Texas 78155. Telephone: 512/379-3278.

An excellent source of information on the Apache is the Flying Apache Association. The group publishes a monthly newsletter to help its members keep tabs on maintenance problems and locate parts for their Apaches. For more information, contact: John Lumley, President, Flying Apache Association, Incorporated, 5 Immelman Lane, Hampshire, Illinois 60140.

The Apache's dominance as a multi-engine trainer appears to be on the wane. The airplane is entering a new era as a vehicle for personal transportation. The Apache's poor reputation for single-engine performance can be debated. After all, *when flown properly,* the Apache's margin of safety is no more critical than any other airplane.

The Apache's strong points are its roomy cabin, its tough steel tubular structure, its relatively good economy of operation and its excellent short-field capabilities. For these qualities, the Apache deserves careful consideration by anyone contemplating the purchase of a used airplane. □

STURDY GOES SURFING

George Rodgers, who checked me out in the Apache, spent four full days at it. The first hour and a half were given to landings and takeoffs with everything working so that I could learn how easily it flew; then we progressed to engine-out emergencies. From the beginning, Rodgers made it clear that, unless a pilot could handle such abnormal operations, he had no business flying a light twin.

For 12 hard-working hours, we went through the sequence of identifying the failed engine, securing it, retrimming and flying the airplane. At first, Rodgers simulated engine failures by pulling a throttle back to idle, then advancing it a bit to provide a no-drag situation, simulating a feathered propeller. After three hours of that, we started doing actual shutdowns, including feathering. Psychologically, it was different to fly with a prop blade standing still, especially when it was the left propeller. That meant the hydraulic pump was unusable, so I had to hand pump the gear and flaps up or down.

Maurice Taylor, the FAA examiner, spent an additional four hours putting me through the paces for my multi-engine checkride. We flew slow on one engine, turned into and away from a dead engine, made approaches and go-arounds on one engine—with the prop feathered. Then, Taylor had me make full-stop landings in that configuration. He wanted me to experience the asymmetrical thrust/drag reversal when the remaining throttle was pulled back at touch down and to see how long it took to stop the rollout with a propeller feathered. The lesson: Use a long runway; leave some room to fumble.

Taylor then led me through the worst-case situation: losing the left engine—the critical engine—on takeoff. In that Apache, 76 knots was Vmc, the minimum single-engine control speed—the very edge of uncontrollability. The only way out was to land before a wing went down, because it would not come up again and the airplane could cartwheel.

The Apache required precise speed control with an engine out: at 79 knots, it climbed 54 fpm; at 87 knots, it gained 180 fpm; at 96, it would not climb at all. At 87 knots, I could climb out and make a successful go-around, with the airplane cleaned up. Taylor said that any multi-engine check-out must include finding that airplane's magic number. "If you lose an engine on takeoff, there won't be enough time to learn it," he said somberly.

I had 1,800 hours in Apaches before I bought my own, my *Sturdy Bird,* in which I flew 3,852 hours, hopscotching the North American Continent, including the Bahamas and the islands of the Caribbean.

My regular instructor, Andy Krog, was an airline captain who took flying as a serious business. He not only put me through the engine-out ordeal time after time, he included holding patterns, entries to holding patterns, procedure turns and all sorts of instrument approaches—all under the hood.

For 10 years, I took multi-engine/instrument refreshers every six months, just as airline pilots do, mostly at AOPA Air Safety Foundation clinics. I was confident in the Apache. I loved that airplane.

One day, I took off from Ocean City (New Jersey) Municipal Airport with full fuel, a passenger and a load of luggage. Compensating for a snappy right crosswind, I opened the throttles, accelerated to 78 knots, tugged at the wheel and lifted off, then reached down and pulled the gear selector up. About 10 feet in the air, the Apache ducked to the left, and that awful out-of-synch racket began.

It took a second to absorb that the left engine had quit cold. There was not enough runway remaining to land, and the airstrip was surrounded by houses. I was face to face with that worst case my instructors had told me about.

I did not have time to think. Reflexively, I went through the emergency procedure: left prop control to feather, extend the hand-pump lever and pump like crazy while keeping the wings level and climbing enough to clear the housetops. In the 11 seconds it took for the prop to full feather and the gear-up lights to come on, our airspeed had decayed to 78 knots, and the airplane was beginning to shake like my sister Kate—but it was flying.

With the drag from full aileron and full rudder, which were required to keep the wings level, the airplane would not accelerate to the magic number; so I elected to make a gear-up landing on the beach nearby, while I still had the Apache under control. The important thing was to not let that left wing go down.

It was a pretty good landing, nose high, full stall, no harder than many of my landings. Unfortunately, we immediately hit the only free-standing dune on three and a half miles of beach.

Sturdy Bird was damaged beyond economically feasible repair. But my passenger and I got out safely; and that is what multi-engine training is all about. —*FKS*