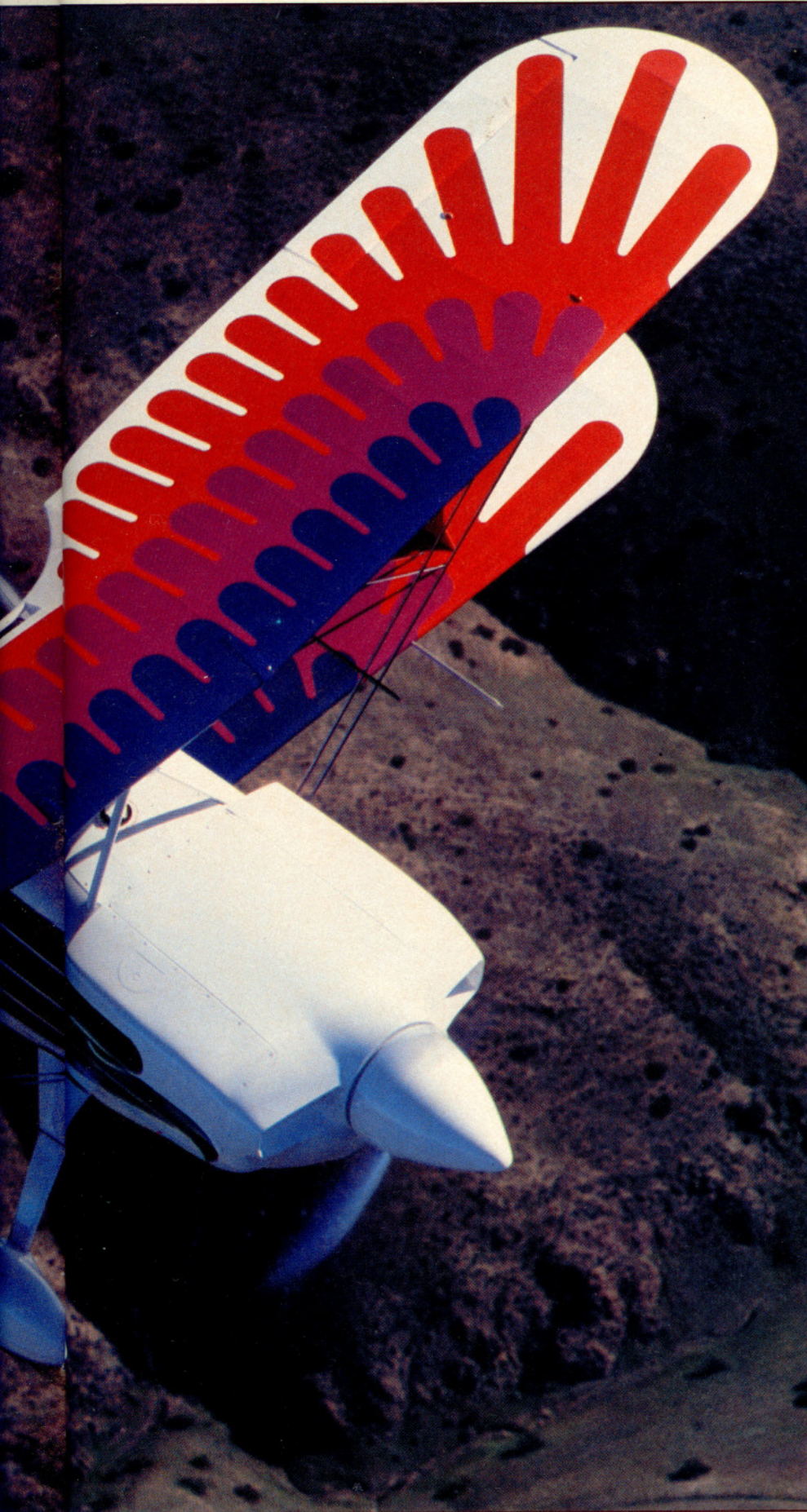


CHRISTEN EAGLE II



*Tired of flying straight
and level? Got a lot
of money and spare time?
Buy a Christen kit
and set yourself free.*

BY EDWARD G. TRIPP

The golden valley hung above me, green-turning hills to the left and, in the hazy distance to the right, pieces of the Pacific showed through valleys. The gear pointed to heaven. I had stopped my attempts to fly a semblance of a routine, struck both by the marvelous sight of the upside-down world and the effortlessness of inverted flight in the Eagle.

This was, after all, the first time I had flown the airplane and I was a very rusty, novice-class aerobatic pilot. Most of the aircraft I have flown that can fly inverted have required a great deal of concentration and effort, with a lot of forward stick and high angles of attack, to fly upside-down in a straight line, even after a bit of practice. The first outside (inverted) maneuver I attempted in the Eagle was so easy and gave such a sense of competence that I thought something had to be wrong.

The only thing wrong was my preconceived notion of what it would be like to fly the Eagle. A pilot with any training in aerobatics and a thorough check-out in the airplane can look quite competent in short order. As high-performance aerobatic aircraft go, the Eagle is easy to fly.

Frank Christensen, president of Christen Industries, checked me out at Christen Ranch, which encompasses company headquarters, a paved 3,000-foot strip and his family oasis. The check-out finally came during my sixth visit in 10 years and after a few aborted hopes to fly the Eagle that were frustrated by time and weather.

During those 10 years, more has been written about the Eagle than any





similar aircraft, and the commentary has been singularly enthusiastic.

The last time the Eagle was featured in *Pilot* (December 1980 p. 38), the concentration was on the Eagle as a kit aircraft and on Christensen's philosophy and ambitions. There is not a great deal to add beyond saying that both continue to develop. The plans and kits are improved as both the company and the builders increase in experience. There are 29 manuals that accompany as many kits; each is revised regularly. Each contains postage-paid cards for questions and suggestions, which frequently are included in the next revision.

A man who recently purchased a partially completed Eagle kit told me

that the list of manual revisions that had to be made was a stack of paper more than a foot high.

During the preflight briefing, Christensen told me that there are two types of people who buy Eagle kits: those who want a high-performance biplane and those who are intrigued by the kit as a project. If the latter are used to flying simple, tricycle gear airplanes, they usually are discouraged by the flying characteristics of their first taildragger.

The *Flight Kit* manual, which includes information about legal requirements, flight testing, insurance and maintenance, has several cautions and warnings about pilot qualifications. For instance: *It is strongly recom-*

mended that pilots have recent experience in high-performance, high-maneuverability aerobatic aircraft. . . . Most aircraft—including military trainers—do not approach the control responsiveness of the Eagle II. Pilots who are unacquainted with the sensitivity of the controls on an aircraft of this type are very likely to overcontrol.

"The Eagle is a very honest airplane," Christensen told me during the preflight. "It won't do anything you don't tell it to do. But you must be very careful about what you tell it. Most pilots tend to overcontrol, particularly during the first takeoff. Don't go crazy on pitch inputs.

"Visibility on the ground, on final and during flare is poor, so make certain you know where you are. And



keep the airplane straight," he said.

We completed the preflight—which I have glossed over because it is in no way different from that of your average aircraft—and climbed aboard.

A great deal has been learned about the importance to flight safety of comfort and of the location of controls, instruments and switches. These considerations become even more essential in aircraft that are used for unusual pursuits, such as aerobatics.

Have you ever noticed how few air show, aerobatic and fighter pilots are tall? It is almost as though there exists a conspiracy among design engineers (who must be average to small themselves). This is a personal complaint, since I happen to be tall. There are

many aircraft in which I am uncomfortable and to which I must accommodate my body.

A slight discomfort in the first few minutes in an aircraft turns to discomfort, then agony and distraction after a period of time—sometimes just a few minutes are all that is required.

The Eagle cockpit is large (Frank Christensen shares my complaint. He is big, too). There is plenty of leg and shoulder room. Pilots of varying size are accommodated by different thickness cushions of high-density foam for the back and buttocks. I settled into a semi-reclining position that was more akin to a modern racing car than the typical aircraft cockpit.

There is plenty of legroom, including to the sides of the cockpit. All the switches and subsidiary controls are located in positions that make it almost impossible to hit one by mistake, even during abrupt maneuvers. The stick and throttle fall readily to hand, as they used to say in the automotive enthusiast magazines. The front and rear cockpits are separated so that the front-seat occupant does not interfere with the rudder pedals—and vice versa—and so that there is no chance of loose objects falling into the belly of the aircraft or the tailcone and reappearing later during inverted flight or jamming controls.

The safety harness (another Christen Industries product) is comfortable, even when cinched tight for aerobatics. Years ago, I developed the bad habit of bracing myself with a hand against some piece of structure during inverted flight and during some nega-

tive maneuvers because of insecurity caused by poor safety harnesses. Throughout my flights in the Eagle, I had no impulse to support myself by anything other than the harness.

The primary harness is a five-point shoulder, lap and crotch system with pads that slip over the lap belts. The shoulder harness is used to restrain the torso only in the event of sudden stoppage. The weight of the body in inverted flight is taken up by the lap belt so that there is no pressure on the upper torso. It is a very comfortable and secure system. A second lap belt is buckled over the primary system as a safety measure that is used in all aerobatic aircraft today.

The combination of security and comfort are rare experiences for me. Pilots of modern fighter aircraft have come to expect it, but pilots of small aerobatic aircraft usually have to compensate for the lack of it.

The canopy is superb. A specially formed (free-blown), single-piece unit, it covers both cockpits and extends below shoulder level. It is hinged on the right side of the cockpit and has a very secure, positive latching system. The company has developed an emergency jettison system for the canopy. Visibility through the canopy is excellent. The view is decidedly different from that of most biplane cockpits.

As we taxied out on the relatively narrow Christen runway, the visibility from the rear seat was already impressive. The trailing edge of the lower wing is fairly far ahead of the pilot's eyes, and the field of vision is

considerably better than quite a few other conventional-gear biplanes.

Even with Christensen and me in the Eagle, at gross weight, the takeoff run was short. It is easy to get the Eagle up on the main gear. Shortly after that, it flies. Although I did not try it, the aircraft will probably fly off from the three-point attitude.

The controls are very light, and I did tend to overcontrol, particularly in pitch. So I switched from ham hands to fingertips; the problem went away. The best rate of climb speed is 82 KIAS. I used 100 knots, which produced a rate of better than 1,000 feet per minute, for visibility.

We went off to try a few coordination maneuvers and then returned for some landings and takeoffs.

The initial landings were good tests and demonstrations of the Eagle's handling and visibility from the cockpit. It is a typically short-coupled biplane, but directional stability and ground tracking, even during landings at higher-than-desirable sink rates, are very good.

Christensen's comments about the flying characteristics of the Eagle—that it would not do anything the pilot did not ask it to do—were correct. It takes accurate inputs, but they are easy to make, and poor ones are easy to correct. The combination of excellent control response and power, comfort and good visibility make the Eagle an honest airplane. Throughout the series of flights and maneuvers, I was unable to uncover any vices. I was very impressed with the Eagle.

Then Christensen climbed out and





sent me off on my own. My first solo was a thrill. My first solo cross-country was an even greater one. That flight in the Eagle was better than the two of them combined.

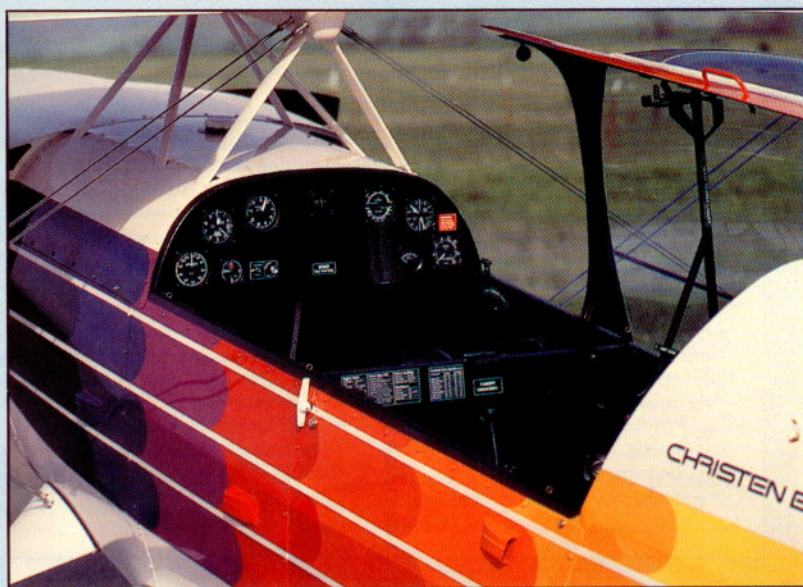
At the lighter weight, the airplane was like a totally different one—or the same one with a far more powerful engine. Takeoff runs were almost nonexistent. Initial climb rate was better than 2,000 feet per minute, even at an indicated airspeed of 100 knots.

The true test came in the aerobatic practice area. The vertical penetration (ability to climb after pullup to the vertical) is so good that basic maneuvers, such as loops and hammerheads, can be started from very low airspeeds. Yet even screaming toward the ground at 150 knots gives no impression of distress, either to the airframe or to the man on the controls.

The state of my personal art is such that I fully expect to fall, confused, out of many maneuvers, having to let the airplane find its own way out while I figure out what is going on. It was not necessary to do so once during my flights in the Eagle. I regret to say that that result was not the product of my superior skill. All credit goes to the airplane.

At one point, I became concerned that I had been up too long having fun and would blow the landing. So I went back to try one. It was sloppier than I would have liked, but it was controlled and not the least bit dangerous in terms of losing directional control. So I did a few more, with high satisfaction.

Then I went back to the practice





CHRISTEN EAGLE II

Kit base price w/o engine and propeller: \$27,000
 w/factory new engine and propeller: \$42,000
 Price as tested: \$81,500
 AOPA Pilot Operations/Equipment Category*: Sport

Specifications

Powerplant Avco Lycoming AEIO-360-A1D 200 hp @ 2,700 rpm
 Recommended TBO 1,200 hr
 Propeller Hartzell two blade, constant speed 74 in
 Wingspan 19 ft 11 in
 Length 18 ft 6 in
 Height 6 ft 6 in
 Wing area 125 sq ft
 Wing loading 12.62 lb/sq ft
 Power loading 5.13 lb/hp
 Seats 2
 Empty weight 1,050 lb
 Useful load 550 lb
 Payload w/full fuel 406 lb
 Gross weight 1,600 lb
 (Aerobatic: 1,520 lb)
 Fuel capacity 150 lb (144 lb usable)
 25 gal (24 gal usable)
 Oil capacity 8 qt
 Baggage capacity 30 lb
 Flight load factors +9 Gs, -6 Gs

Performance

Takeoff over 50-ft obst 900 ft
 Rate of climb, sea level 2,120 fpm
 Max level speed, sea level 139 kt
 Cruise speed, 75% power 5,000 ft 140 kt
 Cruise speed, 65% power 5,000 ft 131 kt
 Cruise speed, 50% power 5,000 ft 116 kt
 Range @ 75% cruise w/30-min rsv 5,000 ft 210 nm
 Range @ 65% cruise w/30-min rsv 5,000 ft 234 nm
 Service ceiling 22,200 ft
 Landing distance over 50-ft obst 1,375 ft

Limiting and Recommended Airspeeds

Vx (Best angle of climb) 68 KIAS
 Vy (Best rate of climb) 82 KIAS
 Va (Design maneuvering) 117 KIAS
 Vne (Never exceed) 158 KIAS
 Vs (Stall) 43 KIAS

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, at sea level and gross weight, unless otherwise noted.

*Operations/Equipment Category reflects this aircraft's maximum potential. See June 1981 *Pilot* p. 103.

area for more fun. This time, I was alert to the potential for fatigue. After all, it had been some time since I had done much and pulled many Gs. The G meter sat at plus 5.4 and minus 2. I still felt good, and the maneuvers were still reasonably crisp. So I started worrying about euphoria, or the nitrogen narcosis that has claimed so many scuba divers. I tried another sequence. It worked.

Then I realized that at no time had I been conscious of flying the airplane. It was truly effortless. I had heard some concerns expressed about the spin characteristics of the Eagle. I tried spins left and right, upright and inverted. First one, then two, then five turns and more. At varying entry speeds and abruptness of control input, recovery was crisp and fast—never more than a half turn. I tried just letting go of the controls; the airplane recovered by itself.

I do not pretend to be any more than an average pilot. The Eagle is easy to fly, so long as you are informed about the characteristics of the breed: biplane taildragger. It is capable of more than I can ask of it. However, it is apparent to me that it is capable of any of the maneuvers required to qualify as a world-class, unlimited aerobatic airplane.

For the average pilot, it is not tricky on the ground, so long as you are used to the visual cues and the different—more precise—flying that a taildragger demands.

So if you would like to own an aircraft that is capable of competing with the hottest ships in the world (note that I did not say winning, for that is yet to be proven) but you also want to take a partner along and want plush carpets, radio, transponder and comfort—well, you should look at the Eagle. It will make you feel like an ace, even if you are not quite up to it.

In the four years that the Eagle II has been offered, more than 500 kits have been sold—that means starts. To date, 320 complete wing and fuselage kits have been delivered, an indication that they are close to completion. More than 100 have flown so far.

That is a very good testimonial to an old-fashioned wood, tube and fabric airplane that requires from 1,200 to 2,000 hours to build. After all, how many production aircraft sell at a rate of more than 100 units per year? □