

Charles W. "Bill" Worman has been infatuated with aviation since he was six years old and spent much of his youth building and flying rubber band-powered model airplanes. But he truly fell in love with aviation when he was 14.

■ He was at his home airport, Felts Field, near Spokane, Washington, in 1931 when he saw a sparkling-new Fairchild 22 slide from the sky and alight softly on the summer grass, its polished propeller flickering sunlight. ■ It was sleeker than any airplane he had ever seen. The eye-catching Fairchild had a thin, straight (no dihedral) parasol wing mounted high on a truss of struts and a trim fuselage that tapered to a distinctive vertical fin. Worman was smitten. ■ Fast-forward to 1979. While sailing on the waters of Puget Sound, he began to realize that the only thing



A young airplane woos a young man *Lifelong Love*

By Barry Schiff

PHOTOGRAPHY BY MIKE FIZER



better than what he was doing would be to fly a Fairchild 22, the object of a lifelong affection. His daydreaming evolved into a goal, and his determination began to take on a life of its own. But Worman did not just want to buy a Model 22. Anyone can do that, he reasoned. "I wanted to restore one so that I could be personally involved with the airplane."

Worman put his plan into action and scoured the country for his dream machine. He found four aircraft, but none was for sale.

He ultimately located one in New Jersey that the seller described as a "project." The aircraft turned out to be a pile of junk, bits and pieces of twisted metal and shattered wood that bore no resemblance to the Fairchild 22 that it was represented to be—no matter how vivid the imagination. Its four-cylinder Menasco D-4-87 Super Pirate engine was in dire need of overhaul.

But this was just what Worman wanted. Although none of the parts could be used to build his new Model 22, he decided that they could be used as patterns from which he could manufacture new parts. He bought the junk in 1979 for \$7,000 and negotiated with the seller to throw in a rusted-out, short-bed Dodge pickup truck in which to haul the bits and pieces across the country to his home in Eastsound, Washington, on Orcas Island.

After an exhaustive and discouraging two-year search, Worman concluded that factory drawings were nonexistent. Lacking plans for building the airplane, he arranged with the owner of an airworthy Model 22 near Stockton, California, to take measurements and detailed photographs. He was then ready to begin bringing his dream machine to life.

The notion of building a production airplane without parts or plans might be considered by some as an impossible dream. But such a daunting undertaking surprised no one familiar with Worman's engineering and mechanical expertise.

Worman had designed and manufactured teardrop-shaped Kit Trailers, a business that he sold in 1958 and is still in operation. He then designed and manufactured folding buildings, a business in which he sold his interest and retired to Orcas Island in 1970.

One of the most frustrating challenges faced by Worman while building his airplane was shaping a nose cowl from a sheet of aluminum. He created

the necessary mold (made of steel-reinforced concrete) and tried numerous times to bend the metal to match the deep, bowl-shaped mold using rubber mallets, but his attempts failed.

He eventually learned from a friend of a friend about metal bumping. This process involved securing an aluminum sheet to the mold, climbing a 10-foot ladder, and dropping a leather pouch filled with 25 pounds of fine shot onto the target. After repeating this process about 50 times, the aluminum sheet had been bumped into the shape of a Fairchild nose cowl.

Worman is quick to acknowledge that he had plenty of help along the way, people who enthusiastically volunteered their expertise or ran errands. There is a list of about 100 such people proudly and prominently displayed on one wall of his 4,500-square-foot hangar



At 84, young-at-heart Bill Worman poses with his sweetheart, On a Clear Day.

(which contains an elaborate machine shop). Among them is famed author Ernest K. Gann, who lived in nearby Friday Harbor. Also, Worman's friend—respected engineer Victor Ganzer—provided aerodynamic guidance and stress analysis to ensure that the airplane would meet certification criteria. Worman believes that his project prolonged the lives of some older volunteers by providing them with challenge and purpose that they otherwise lacked.

After 10 years and an estimated 7,500 man-hours of labor, Worman's dream took to wing on November 29, 1989. His airplane is so pristine and so much better than new that it would make its original builders green with envy. The only original part of the airframe is the data plate. It shows that NC-13167 is a 1932 Fairchild Model 22-C7B, one of eight versions built by the Kreider-Reisner Aircraft Company in Hagerstown, Maryland, a division of

the Fairchild Aviation Corporation.

Worman's airplane originally sold for \$3,450, a princely sum for that era. (It is now estimated to be worth about \$125,000.) But despite the sticker shock, the Fairchild 22 was a hit with flight schools and became what historians regard as the first popular general aviation airplane. Today there apparently are only six airworthy Fairchild 22s in the world.

Merrill Wien, Worman's close friend, would be checking me out in NC-13167. Since he hadn't flown the aircraft for some time, he first took it around the pattern a few times by himself. As Worman and I watched the antique monoplane shooting circuits and bumps, I noticed a few tears working their way down his cheeks. He explained that this was the first time he had ever seen his airplane fly. During all previous flights, he either was aboard the aircraft or not at the airport when others flew it. This was an emotional experience for him. He said that he did not know "how good the engine sounds and how easy it is to distinguish the parasol-wing monoplane from others in the pattern."

Have I mentioned that Worman is not a pilot? He has been taking lessons in his own 1952 Cessna 170 to gain proficiency in the fine art of taildrugging before transitioning to the Fairchild. He hopes to solo the airplane and use it to obtain a recreational pilot certificate. Who says that dreams do not come true?

After his third landing, Wien taxied the airplane directly toward us. This head-on view makes it obvious how the in-line engine contributes to the Fairchild's slender lines. It has much less frontal area than a radial engine and creates much less cooling drag. The inverted engine configuration places the crankshaft high above the cylinders, providing ample ground clearance for the 87-inch-diameter propeller. This eliminates the need for longer landing-gear legs and the added weight and drag that would result.

The Hamilton-Standard propeller is ground adjustable. Clamps near the hub are loosened to adjust blade pitch for the desired performance. Maximum pitch increases cruise speed, and minimum pitch increases climb performance; a mid-range pitch setting results in a compromise between maximum cruise and maximum climb performance. Once the clamps are tightened, the adjustable propeller behaves and is used just like one



that has fixed pitch.

The fabric-covered airframe is constructed of chrome-moly steel tubing, spruce, and plywood, not unlike the Aeronca Champions and Piper Cubs that would follow.

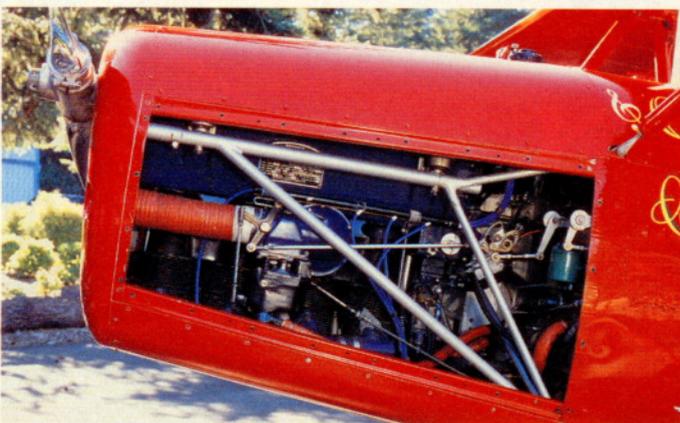
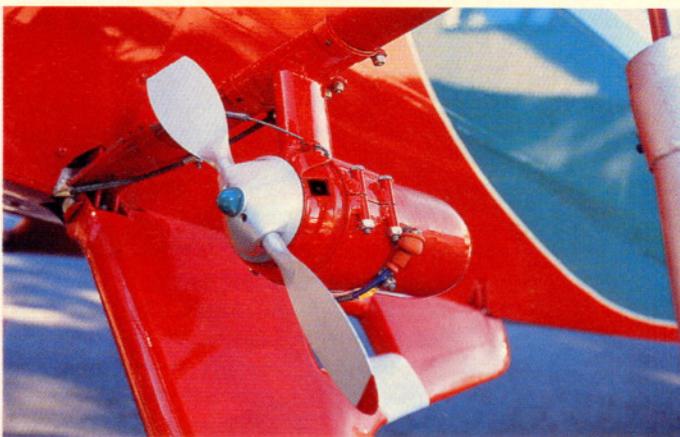
The Fairchild 22 has a fuel capacity of 36 gallons, 24 in the nose behind the engine and 12 gallons in a feeder tank in the right wing that gravity feeds into the main tank when a valve in the cockpit is opened. The float-type fuel gauge is a tried-and-true, clear-plastic sight tube sticking up from the nose tank ahead of the forward cockpit.

Also sticking up through the top of the cowling and ahead of the sight gauge is the starter motor.

A single venturi tube on the right side of the fuselage provides vacuum for the turn indicator in each cockpit. This was considered "fully IFR-equipped" until the FAA required artificial horizons and directional gyros in the late 1950s.

A wind-driven generator is mounted on the left lift strut. Should one blade of the diminutive propeller break in flight, the out-of-balance generator could result in airframe damage. To eliminate this threat, the rear-seat pilot can employ a cable-operated brake to arrest generator rotation while in flight.

Although both cockpits are almost identically equipped, the airplane must be soloed from the rear seat to maintain the center of gravity within limits and because that is the only place from which



A wind-driven generator (top) provides electrical power. The inverted in-line Menasco engine is responsible for the aircraft's slender profile.

the engine can be started. The Fairchild has an electric starter but does not have an electric fuel pump. A manually operated wobble pump is used for priming.

Otherwise, the airplane is relatively conventional. It has a gross weight of 1,750 pounds, an empty weight of 1,010 pounds, and a useful load of 740 pounds.

After a normal start, Wien and I taxied out and completed the preflight checklist. Although the Menasco engine

has a carburetor, it does not have a conventional carburetor heater. Instead, induction air is ducted through a shroud surrounding the number-three cylinder. This heats the air before it enters the carburetor. In other words, carburetor heat is always on—except for takeoff. When the throttle is fully advanced to its mechanical limit, a small door opens that allows ram air to bypass the shroud and enter the carburetor directly. This cooler air boosts maximum power from 125 horsepower (when induction air is heated) to 134 hp for takeoff. It is a clever scheme. The bad news is that induction air is not filtered during either takeoff or cruise. (Retarding the throttle after takeoff also retards the spark.)

Takeoff is unremarkable for a taildragger, but as airspeed increased, I began to feel the exhilaration associated with flying an open-cockpit airplane on a warm summer day.

I was also reminded about why open-cockpit pilots have worn their baseball caps backward since before it became fashionable in the inner city. (Helmets are preferable to caps in the winter.) If the bill of the cap projects forward and catches the wind, there is a good chance that you will lose both the cap and an expensive headset.

Normal climb speed in a Fairchild 22 is 60 mph, but NC-13167 does not climb anywhere near the advertised climb rate of 1,050 feet per minute. It is only half



that. I learned later that Worman has his propeller set to optimize cruise performance, which reduces maximum climb rate.

The airplane is a delight to maneuver, although it loses a bit too much airspeed during steep turns even with a wide-open throttle. The ailerons and elevators are light and harmonious, somewhat surprising for a 70-year-old design. This is attributable, in part, to full-span, narrow-chord ailerons that produce surprisingly little adverse yaw. Also, push tubes riding on ball bearings are used to move the ailerons and elevators. The rudder is cable operated, and pitch trim is controlled by a manually operated jackscrew that adjusts the horizontal stabilizer.

It is difficult to get the airplane to “break” nose down during a power-off, 1-G, wings-level stall. The airplane just mushes at an indicated airspeed of 45 mph. Power on or during accelerated stalls, the Model 22 impetuously rolls off toward one side or the other, but restoring control occurs easily and simultaneously with a release of back-pressure.

Even with Worman’s propeller adjusted to maximize cruise speed, the Fairchild 22 is not a barnburner. It cruises at 106 mph and has a redline of 116 mph.

The airplane glides and approaches to land at 60 mph. Like most aircraft designed during aviation’s Golden Age, it does not have wing flaps but instead slips effectively and without airframe buffeting.



For a 1932 airplane, the Fairchild has an exceptionally clean design. The aircraft rolls out after landing on Orcas Island (below).

Unlike similar aircraft, it does not require as much of a nose-high attitude during a three-point landing. It also is easier to land an airplane with a parasol wing than a biplane because there is so much less wing structure to block the view.

You barely feel the initial touchdown because the long, spring-oleo, shock-absorbing struts compress so slowly. It feels similar to making a good landing in an airplane with trailing-link landing gear.

The Fairchild 22 has toe brakes, but they are so ineffective that you probably could land with them engaged and not notice. It made me wish that the airplane had been equipped with a tail skid instead of the optional tailwheel. (Although a tail skid assists in slowing an airplane—especially on unimproved surfaces—it makes it more difficult to make taxiing turns. The procedure involves pushing the stick fully forward, adding a blast of power to take some of the weight off of the tailskid, and kicking full rudder to yaw in the desired direction.)

The unusually wide landing gear (91 inches), however, makes the airplane relatively stable on the ground and less prone to ground looping.

At 84, Worman says that he has one more construction project left in him. If he can find an engine and the plans, he wants to build another airplane from scratch—a 1917 German fighter from World War I, the Fokker D.VII. He selected the D.VII because of his respect for the design and because he and the aircraft were born in the same year. He hopes to complete the project in less than three years instead of the 10 required to build his Fairchild.

No one who knows Bill Worman will be surprised when another of his dreams comes true. □

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