

YESTERDAY'S WINGS

CURTISS EAGLE



The original trimotor Curtiss Eagle. Intended to be America's first production airliner, it failed for lack of a market. Note the bird-like paint job featuring a beak on the nose, talons on the wheel fairings, "tailfeathers."

by PETER M. BOWERS / AOPA 54408

■ ■ One of the major American aircraft manufacturers ready to plunge into the civil aviation boom that was supposed to follow World War I was the Curtiss Aeroplane & Motor Co. of New York. From a wartime high of seven, Curtiss retrenched to two plants, following the post-armistice cancellation of the big wartime contracts.

Maintaining the best engineering and development facilities in the country, Curtiss was able to beat other manufacturers into the market with entirely new commercial designs, not reworked war surplus. The first of the new Curtiss line was a private owner type, the Oriole, which first flew in March 1919. The second was the Eagle which ap-

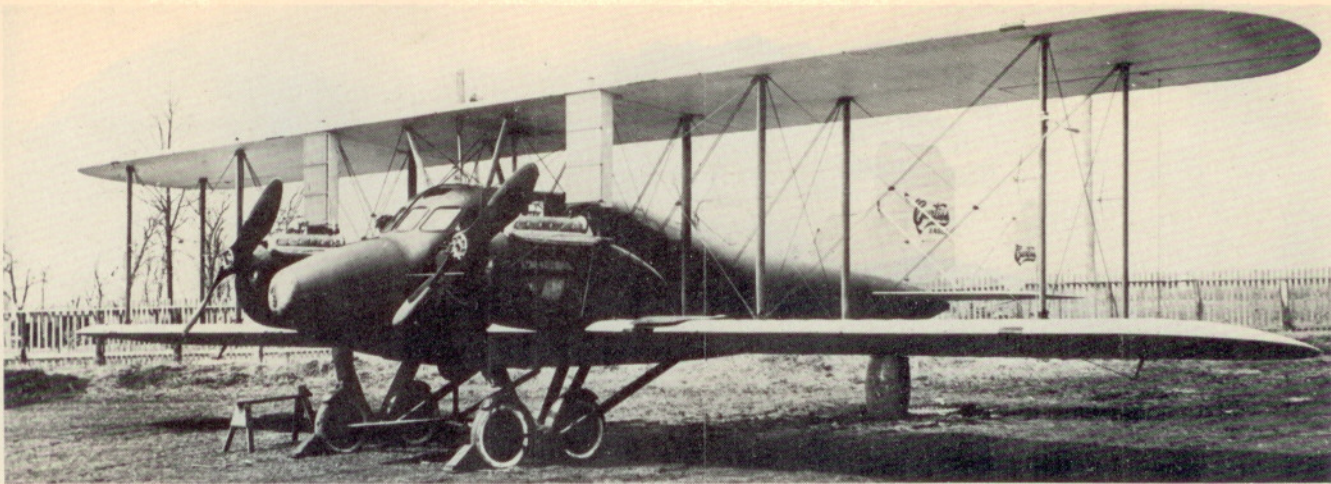
CURTISS EAGLE

Specifications

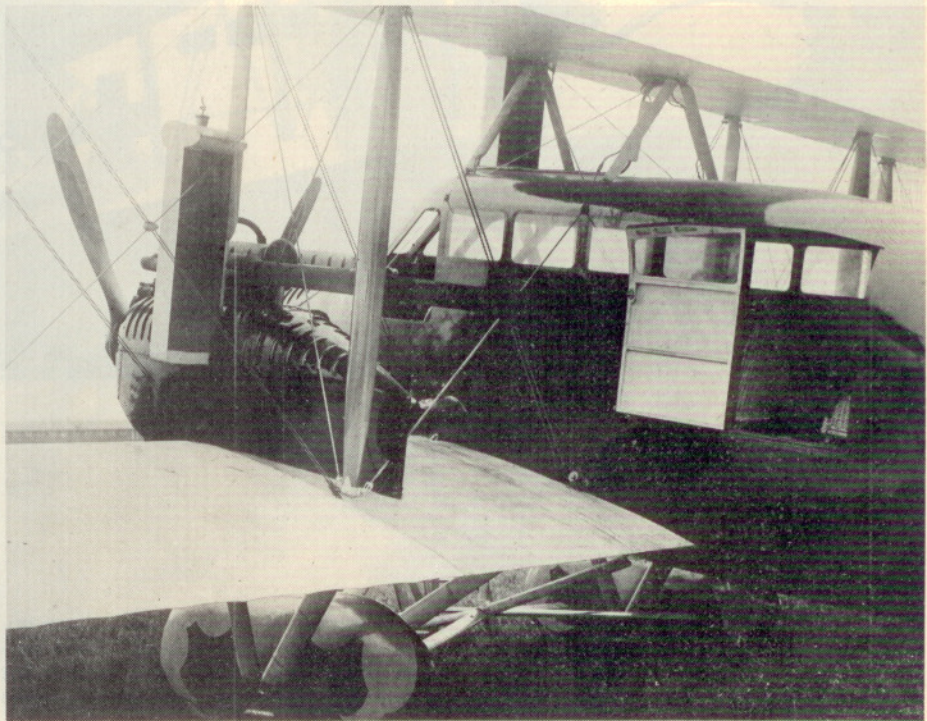
Engines	3 Curtiss K-6 150 hp @ 1,700 rpm
Wing span	61 ft 4 in
Length	36 ft 9 in
Wing area	800 sq ft
Empty weight	5,130 lb
Gross weight	7,450 lb

Performance

Climb	408 fpm
Maximum level speed	107 mph
Economical speed	75 mph
Range (economical)	475 mi
Stall speed	57 mph



When the trimotor Eagle proved underpowered, Curtiss brought out a twin-engine version with 400-hp Curtiss C-12 engines. Extra rudders were added in an attempt to improve the single-engine controllability.



Close-up of the prototype Curtiss Eagle showing the raised cabin roof, passenger door, wicker seats, and large radiators.

peared the following August and was intended to be an airliner.

Designed by William Gilmore, who had also produced the Oriole, the Eagle was a conservative design with many advanced features. That the Eagle was a failure as an airliner was a reflection of the times, not Curtiss' technology, although there were some significant shortcomings in that area, too.

The Eagle was designed as a trimotor. Most twin-engine types of this period were unable to stay in the air with one engine out, but a trimotor supposedly could, thereby making it a somewhat more reliable plane to fly. The engines were 150-hp Curtiss K-6s, six-cylinder

spin-offs of the 400-hp, water-cooled K-12 which had been developed for the military in 1918.

The Eagle could accommodate not only six passengers in its comfortable, enclosed cabin, but the pilots as well, a novelty in these days when converted European bombers used as airliners left the pilots out in the cold. Construction was all of wood and quite conventional. The only exception was the fuselage, which used criss-crossed layers of thin veneer wrapped over a frame of bulkheads and stringers by a patented process known as Curtiss Ply. To increase headroom for the passengers, the top of the fuselage was bulged upward in the

cabin area. Provision was made for two pilots side-by-side at wheel controls. With only one pilot aboard, the Eagle could carry seven passengers.

The engine installations were typical for the time, the cylinders sticking up above the lines of the nose and the nacelles. The nacelles were unusual in that they were installed on the lower wings instead of suspended between the wings as on contemporary bombers. The monstrous column-type radiators largely negated this streamlining improvement by completely being stuck out in the airstream for most efficient cooling but terrible aerodynamics.

continued



The only customer to buy more than one Eagle was the U.S. Army, which bought three single-engine versions powered with the 400-hp Liberty. This one has been converted to an aerial ambulance, complete with red crosses and all-white coloring.

CURTISS EAGLE *continued*

The landing gear was unique on two counts. First, it used a tandem-wheel "bogie" arrangement, braced from both the inboard and outboard sides. Second, on the prototype-demonstrator at least, the bogies were enclosed in the fore-runners of the wheel pants, which would become popular more than a decade later. On the Eagle, these were more effective in keeping the wheels from throwing mud and gravel into the low-slung propellers than in streamlining the aircraft.

The original price of the Eagle was \$40,000, but this dropped rapidly to \$25,000 within a few months as the big bird proved hard to sell.

With only 450 total horsepower, the Eagle was somewhat underpowered. Rather than use the same number of some other manufacturer's slightly greater powered engines, Curtiss elected to change it to a twin-engine type using a pair of 400-hp Curtiss C-12s (formerly the K-12). This near-doubling of the power was too much for the airframe and the twin-engine version made few flights. The first ascension

nearly ended in disaster when one engine quit just after takeoff. Fifty percent power was more than ample for remaining airborne but single-engine controllability was extremely marginal.

Nothing more was done to promote a twin-engine version, or any other civil version, of the Eagle; Curtiss suspended production of new civil aircraft in 1920 and slashed prices drastically to clear unsold Orioles and other non-military models out of the plant. The Eagle, however, carried on for a while due to a U.S. Army Air Service contract for three. These were further major conversions, this time to a single-engine type with a 400-hp Liberty engine in the nose. While the total power was slightly less than that of the original trimotor, there were beneficial decreases in powerplant weight and aerodynamic drag. The Army used two as personnel transports and had Curtiss complete one as an aerial ambulance which provided for four litter cases loaded through special hatches, plus medical attendants.

Why did the Eagle fail as an airliner? It wasn't competition from the cheap surplus models that had killed the Oriole. A different situation prevailed in the case of the Eagle. Except

for a few twin-engine war-surplus flying boats converted to passenger work, it had no direct competition. Its powerplant problems could have been worked out had Curtiss decided to push the matter. But no amount of powerplant and aerodynamic improvement, or even price reduction, could overcome the absence of the major factor necessary to commercial success—a market.

There was no market for transports because such airplanes could not make a profit on scheduled point-to-point flights on passenger revenue alone. The added income of mail pay was not available, as it was on European airlines, because the U.S. Post Office Department was carrying the mail in its own planes. Not until 1927, a year after the Post Office began turning the mail routes over to the private contractors, did scheduled airlines with multi-engine transports become successful. While there had been plenty of inter-city travel by air prior to that time, it was more in the nature of daring adventure in an open-cockpit biplane than a comfortable and routine ride in a flying parlor car.

The only thing really wrong with the Eagle was that it was eight years ahead of the market. □