

■ ■ The Kinner Airplane and Motor Company was founded in 1919. While it turned out a few interesting wooden airplanes and some motors from then through the mid-1920s, it is best remembered today for the series of five-cylinder air-cooled radial engines in the 100 through 160 h.p. range that it produced from 1927 to the middle of World War II.

As pointed out many times in previous articles of this series, the Kinner engines of the late 1920s were the first direct replacements for the ubiquitous war-surplus Curtiss OX-5s that became available. Many production airplanes simply substituted the relatively light Kinner for the heavy, water-cooled OX-5. The most noticeable feature of such conversions was the greatly lengthened nose of the airplane that resulted from moving the Kinner forward to maintain longitudinal balance in an airplane that hadn't been designed for it.

Although the Kinner engines went out of production during World War II, they are still well known as the result of several hundred late 1920s and early 1930s types maintained by the antiquers, and the still-plentiful WW-II surplus Ryan PT-22 trainers [March 1969 PILOT].

Far less known today are the production Kinner airplanes of the 1930s which were built in Glendale, Calif. The first of these, named the *Sportster*, appeared in 1932 and marked quite a break with its contemporaries. Most of the 90 to 220 h.p. biplane types had phased out with the advent of the depression, and the new design crop emphasized small two-place monoplanes in the 65 to 100 h.p. range. The *Sportster K* was a two-place, low-wing monoplane with the 100 h.p. Kinner K-5 engine. Construction was conventional for the time, with welded steel-tube fuselage and tail surfaces and wood-frame wings, all fabric-covered. An unusual design feature for the time was the use of side-by-side seating in a single open cockpit.

The *Sportster* followed the old biplane design philosophy of using lots of wing area to keep the wing loading down. It had a span of 39 feet and a wing area of 227 square feet. With a gross weight of 1,700 pounds, this gave a loading of barely eight pounds per square foot and compared favorably with the loadings of biplanes with equivalent power.

The most unique feature of the *Sportster*, however, was the use of folding wings. A straight stub center section supported the tripod landing gear. The strut-braced outer panels, which were rigged with 4½° of dihedral outboard of the gear, folded at that point. This was intended to simplify the storage problem by allowing more planes to occupy a given amount of hangar space. Folding wings have been introduced for this purpose on civil aircraft from time to time since before World War I, but the concept seems to have had much better reception in Europe than it ever had in this country. Perhaps the economy is fallacious;

New design emphasized small two-placer in 65–100 h.p. range, using air-cooled radial engines. Most unique feature of 'Sportster' model was use of folding wings

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two cannot occupy the space of one at the price of one, although three can occupy the space of two. Another deterrent may have been that the folding was not always an easy one-man job.

The *Sportster's* wings folded in two movements: rotation aft into the vertical plane, pivoting at the rear spar fitting, and then swinging aft like a gate to stow the panels alongside the fuselage with the upper surfaces facing inward. This moved the weight of both wing panels halfway back to the tail wheel and made pushing the folded ship around by the tail a tough job.

The original *Sportster K* was produced under Approved Type Certificate (ATC) No. 490. As could be expected, the design soon grew to more power and higher gross weights. Some unexpected competition had a lot to do with it. The *Sportster B* and *Sportster B-1* models, produced under ATC 516, had 125 h.p. Kinner B-5 engines and gross weights of 1,875 pounds. The *Sportster B-2*, ATC 522, used the B-5 engine at a gross weight of 2,000 pounds.

Further improvement resulted in a new model, the *Sportwing*. This was essentially a cleaned-up *Sportster* with the B-5 engine and a faired landing gear. Early production versions had fairings known as "spats" around a revised landing gear structure and enclosed the engine in a full cowl. Later versions changed to the form of landing gear fairing known as "pants" and did away with the engine cowl, making the *Sportwing* look more like the original *Sportster*.

From this model it was a short evolutionary step to a cabin model known as the *Playboy R*, built under ATC 554. This retained the side-by-side seating of the previous models but shortened the span, deleted the folding-wing feature, and substituted wire bracing for the wings in place of the struts that had previously been used above the wing.

#### SPECIFICATIONS AND PERFORMANCE

	SPORTSTER B	PLAYBOY R
Span	39 ft.	32 ft. 8½ in.
Length	24 ft. 2 in.	24 ft. 3 in.
Wing area	227 sq. ft.	189 sq. ft.
Powerplant	Kinner B-5 125 h.p. @ 1,925 r.p.m.	Kinner R-5 160 h.p. @ 1,975 r.p.m.
Empty weight	1,272 lbs.	1,463 lbs.
Gross weight	1,875 lbs.	2,270 lbs.
High speed	112 m.p.h.	137½ m.p.h.
Cruising speed	100 m.p.h.	125 m.p.h.
Landing speed	40 m.p.h.	55 m.p.h.
Climb	900 ft./min.	750 ft./min.
Service ceiling	15,000 ft.	14,000 ft.
Range	400 mi.	625 mi.



# Yesterday's Wings

## The Kinner Monoplanes



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2.



4.



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1. The Kinner Sportsters and the Security S-1s shared the unique design feature of folding wings. Note the unusual paint pattern on the two farthest S-1s shown. This was apparently intended to deemphasize the height of the very generously proportioned vertical tail surfaces.

Courtesy John W. Underwood

2. The standard Kinner Sportster B of 1934, with 125 h.p. Kinner B-5 engine, side-by-side seating, and struts above the wing.

Photo by Peter M. Bowers

3. Original form of the improved Sportster known as the Sportwing. The landing gear fairings are known as "spats" even though they cover the full length of the landing gear leg, which would seem to qualify them as "pants."

Photo by Peter M. Bowers

4. Revised Sportwing with the type of landing gear fairing known as "pants," which enclose only the wheel. The solid upper area is merely filling between the landing gear struts, not a wrap-around fairing as shown in the previous photo.

Photo by E. M. Sommerich

5. The Kinner Playboy R. Notable changes from the modified Sportwing were the wire bracing of the wing, the enclosed cabin, and power increase to 160 h.p.

Photo by E. M. Sommerich

6. Final Kinner monoplane was the four-place Envoy C, which was essentially a stretched Playboy with a 300 h.p. Kinner C-7 engine.

Photo by William Plommer

7. The last of the line—the sole surviving Timm/Aetna Aircraft 2SA, a tandem-seat variant of the original Kinner Sportster that became the Timm Aerocrat. This one is based at Puyallup, Wash.

Photo by Peter M. Bowers



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7.

The change from open cockpit to cabin was simple—merely a case of building the turtledeck superstructure up a bit higher.

The next step in the evolution of the Kinner monoplanes was obvious and just as simple. The two-place *Playboy*

R was stretched to become the four-place *Envoy C* with the new 300 h.p. Kinner C-7 seven-cylinder engine. This model saw very limited production, the major single customer being the U.S. Navy, which bought three with improved 340 h.p. Kinner C-7 engines

under the Naval designation of XRK-1. One of these later had its Kinner engine replaced by a 400 h.p. Pratt & Whitney Wasp Jr.

From 1934 on, the trail of the basic two-seat *Sportster* design gets complicated. At that time, W. B. Kinner, found-



er of the firm, and his son quit the original company and formed a new one, the Security National Aircraft Corporation at nearby Downey, Calif. They moved back to another plant in Glendale in 1936.

Their new airplane, known as the Security S-1A, was practically a duplicate of the Kinner *Sportsters*. A sharp eye could detect a little less roundness in the fuselage fairings, a less pronounced curve at the base of the fin, and one foot more wingspan. Everything else was about the same, including the 100 h.p. Kinner K-5 engine. The cabin comfort of the *Playboy* was made optional in the form of a removable coupe top that could be fitted to the open cockpit. Oddly, the S-1A was issued ATC 521, just one ahead of the Kinner firm's improved *Sportster B-2*.

The next version of the Security, the S-1B, produced in 1936 and eventually awarded ATC 705, used a different engine. This was the Security S-5-125, a five-cylinder radial that was almost as hard to distinguish from the previous Kinner designs as the S-1 airplane was from the Kinner *Sportster*.

Security didn't stay in Glendale very long. On Feb. 1, 1937, a new organization, Security Aircraft Corporation, took it over and moved to a new plant in Long Beach, Calif. This operation lasted for two years, after which another firm, American Aircraft Company, was formed to take over the designs, plant, and other assets of Security. This resulted in the confusing situation of identical airplanes being identified (correctly) as either American or Security or (incorrectly) as Kinner *Sportsters*.

Further identification problems arose at this time. The original Kinner firm became bankrupt and the manufacturing rights to both the *Sportster* and the *Sportwing* were acquired by Otto Timm, who put the *Sportster* back into production in his own Glendale plant under the name of Timm *Aerocraft*.

Timm tried to interest the Army Air Corps in the *Aerocraft* as a primary trainer during the expansion program that began just prior to World War II, but the Army wasn't interested in side-by-side trainers. He then redesigned the ship as a tandem, under the designation of *Aerocraft 2SA* (ATC 733), with the 160 h.p. Kinner R-5, but still the Army wouldn't buy. Timm then abandoned the basic 1932 design altogether and developed an entirely new bonded-plywood design, the Timm PT-220-C, which he succeeded in selling to the Navy as a primary trainer under the Naval designation of N2T-1.

Design rights to the *Aerocraft 2SA*, meanwhile, passed to another firm, Aetna Aircraft Corporation, so again a single model flew around under two different names. It is perhaps fortunate for the airplane identification buffs, therefore, that there are so few members of this "family" left. Latest FAA figures show two airworthy *Sportsters* out of a total of four remaining, one *Playboy*, one Security/American S-1B, and one Timm/Aetna 2SA. □