Twin radiators mounted under upper wing of Express seriously hampered visibility. Propeller is pulled from left side of airplane to start "left-hand" engine like the Salmson. Kohler photo courtesy R. H. Demmerhirt


## YESTERDAY'S WINGS

# The Woodson Express and the Salmson Engine

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■■ The years 1924-1926, the period between the exhaustion of the cheap World War I surplus airplanes and the wholesale introduction of new designs following the Lindbergh "boom," saw the founding of many small aircraft companies. A market for new planes to replace the surplus types had opened. A few of these small companies grew to become giants of the industry, others appeared briefly and were soon forgotten. One such firm was Woodson Engineering Corp. of Bryan, Ohio, founded in August, 1924.

The firm's initial product was a relatively conventional three-seat biplane marketed as the Woodson "Express." This design, also known as the Woodson 2-A, was somewhat anachronistic, constructed entirely of wood when the rest of the industry was switching to welded steel-tube construction for fuselage and tail surfaces. However, the wooden fuselage did not have the traditional wire-braced, fabric frame. Rare to American practice, the frame wires and complex metal fittings were deleted and stiffness was achieved by covering the entire fuselage with plywood.

The name "Express" was derived from the multi-purpose design of the aircraft. A pilot sat alone in the rear cockpit and either two side-by-side passengers or cargo could occupy the front cockpit. The passenger seats were folded back to provide clear space for the cargo.

The Express was one of the last American civil designs in the over-180-hp class to use a war-surplus engine, the French Salmson Z-9. This nine-cylinder 1,146-cubic-inch displacement radial powerplant delivered 260 hp at a relatively slow 1,550 rpm. The basic design had been developed before WW-I as the Canton-Unne, but the firm reorganized as Salmson in 1913. Like many European engines the Salmson was "left-hand," that is, the propeller rotated counter-clockwise when viewed from the cockpit.

This was a famous unit in its own right and provided the only oddity of the Woodson design. The Z-9 had been the powerplant for the 705 Salmson 2A2 observation planes that the Allied European Forces bought in France in 1918. Contemporary publications credit Woodson with having cornered the entire supply of Z-9s that the government brought to the States in 1919 and later declared surplus.

The widely publicised feature of the postwar radials was that they were air-cooled. The Salmson was almost radical in being water-cooled, and it naturally required radiators, the satisfactory location of which was always a problem on any new airplane design. The Express tried several and standardized on a single unit under the nose and ahead of the landing gear, in the fashion of the contemporary Travel Air, Stearman, and American Eagle.

Although it had an almost complete monopoly in its horsepower class and was readily available, the Salmson didn't catch on with the industry. Several other manufacturers tried it but did not sell production versions. The major user remained Woodson.

The Salmson had a tough time competing with the 200-hp Wright J-4 Whirl-

### WOODSON EXPRESS

#### Specifications

| | |
|---|---|
| Engine | Salmson Z-9, 260 hp, 1,550 rpm |
| Wing span | 29 ft 6 in |
| Length | 23 ft 3 in |
| Wing area | 311 sq ft |
| Passengers and crew | 3 |
| Empty weight | 1,420 lb |
| Gross weight | 2,655 lb |
| Power loading | 260 hp |

#### Performance

| | |
|---|---|
| Rate of climb | 1,000 fpm |
| Maximum level speed | 130 mph |
| Range | 400 sm |
| Service ceiling | 18,000 ft |

*A Woodson Express with unpainted plywood fuselage in 1925. Note absence of registration numbers in that pre-regulation period and Salmson engine radiator under nose, in line with forward wing strut.*

wind, the air-cooled radial originally developed for the military, which became available for civil use in 1925. When the improved 220-hp J-5 Whirlwind became available at the end of 1926, the old water-cooled Z-9 was wiped out.

The Woodson firm reorganized in 1926 as the Woodson Aircraft Corp. It produced an updated steel-tube fuselage version of the Express (still with the Salmson) and developed a tiny 60-hp two-seat, low-wing monoplane. However, the corporation did not survive to ride the Lindberg "boom."

A few Express models flew until the early 1930s and some were re-engined with the by-then-popular J-5. But, since it was designed, built, and out of production before the adoption of licensing and airworthiness requirements in 1927, the Express never qualified for either the full Approved Type Certificate, or the lesser Category-2 Approval required for commercial operation. Individual examples were able to operate as "identified" but unlicensed aircraft after that time.

The Salmson engine, on the other hand, got a new lease on life. After

Woodson folded, a new firm, Menasco Motors of Glendale, Calif., appeared with what was again publicized as the entire U.S. stock of the Salmson engines. Menasco was founded specifically to convert water-cooled radials into air-cooled models. After extensive rebuilding, including new finned cylinders, these were marketed as the Menasco-Salmson B-2 and sold for $3,250, compared to $4,980 for the J-5 (1928 prices). While the B-2 didn't have the reliability of the J-5, it enjoyed brisk sales because of the significant price advantage.

After using up its surplus stock, Menasco went on to develop the famous line of inverted air-cooled sportplane engines that was in production from 1930 until WW-II. By that time, Woodson and the Express had taken their places as aviation antiquities □

*Final 1926 Express did not see production. Steel-tube design with split-axle landing gear still retained vintage Salmson engine. Notice the water header tank just behind the top cylinder. Hudek Aeronautical Collection*