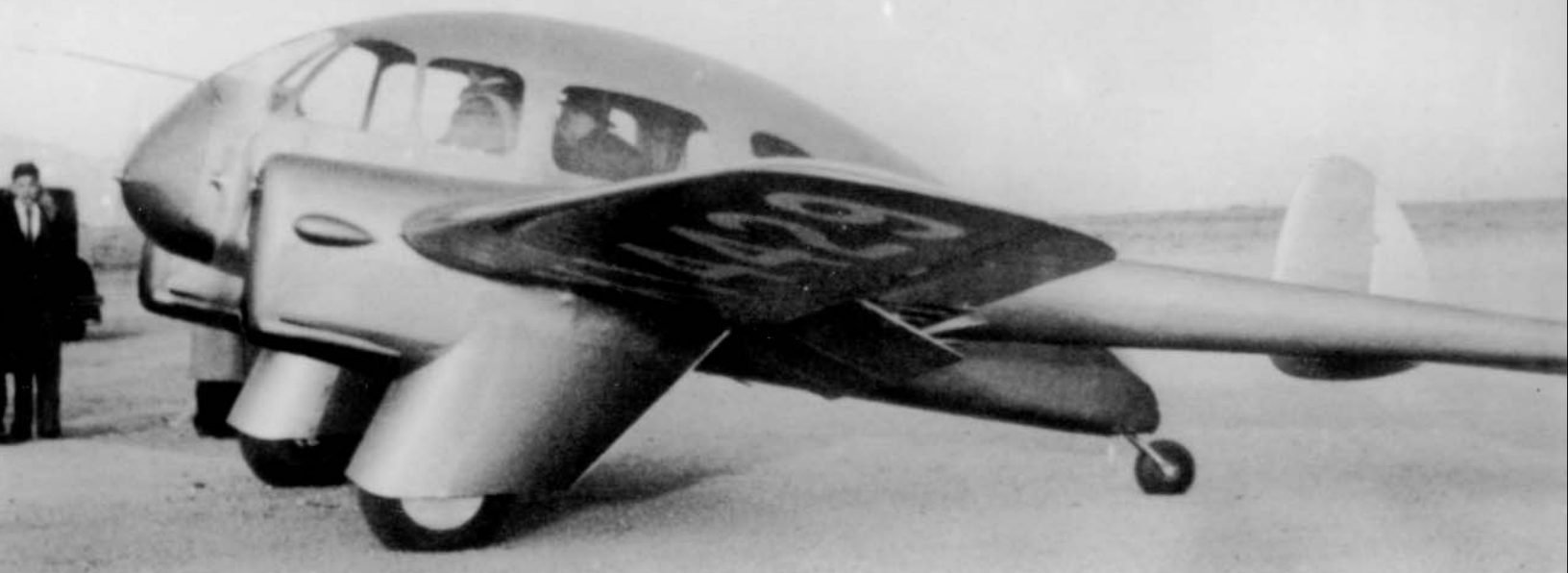


The American Gyro AG-4 *CRUSADER*

By H.N. “Dusty” Rhodes



American Gyro AG-4 Crusader. (Photo from the author's collection)

America's great economic depression was at its lowest ebb in 1933. It was hardly a time to design and build a revolutionary new airplane. An abandoned garage located on Arapahoe Street in downtown Denver, Colorado, was hardly a place to build the revolutionary new aircraft. Notwithstanding these debilitating factors, Thomas Miles Shelton designed and built the new Gyro *Crusader*. This 1934-'35 “one off” was an unusual ship in many ways with twin tail booms, twin vertical fins and rudders and a tear-drop fuselage. Power was provided by two Menasco C-4 engines, each rated at 125 hp.

Early publicity indicated the ship would reach a top speed of 233 mph and a cruising speed of 210 mph while landing at 55 mph. Flight testing in early 1935 showed an indicated top speed of 180 mph at 8,000 feet, roughly equivalent to 209 mph at sea level. Landing speed was 60 mph with flaps extended. If these numbers were factual, *Crusader* was a great performer for its time.

Shelton was a self-educated aeronautical engineer. In 1933, he was 32 years of age. He has been described as “trust-ing, affable and mild mannered.” Shelton never married so far as is known to the author. His mother exerted a great influence on him throughout his life.

For many years, he had planned a truly tail-less airplane with rudders and vertical fins at the wing tips. In finalizing the design for his *Crusader*, he bowed to conventional wisdom and placed a trailing tail section on two tail booms. The ship would resemble the designs built for Jack Northrop by Avion in the late 1920s and early '30s.

Because of its unique shape, the *Crusader* was often called the “Shelton Flying Wing” but its resemblance to a flying wing, as generally perceived, was slight. Another term for the plane was “Gyroplane” and this reference probably referred to the company that built it rather than the configuration of the machine. Some considered the design to be a precursor to the Lockheed P-38 fighter of WWII. However, it was only a remote “look alike” when compared with that famous airplane.

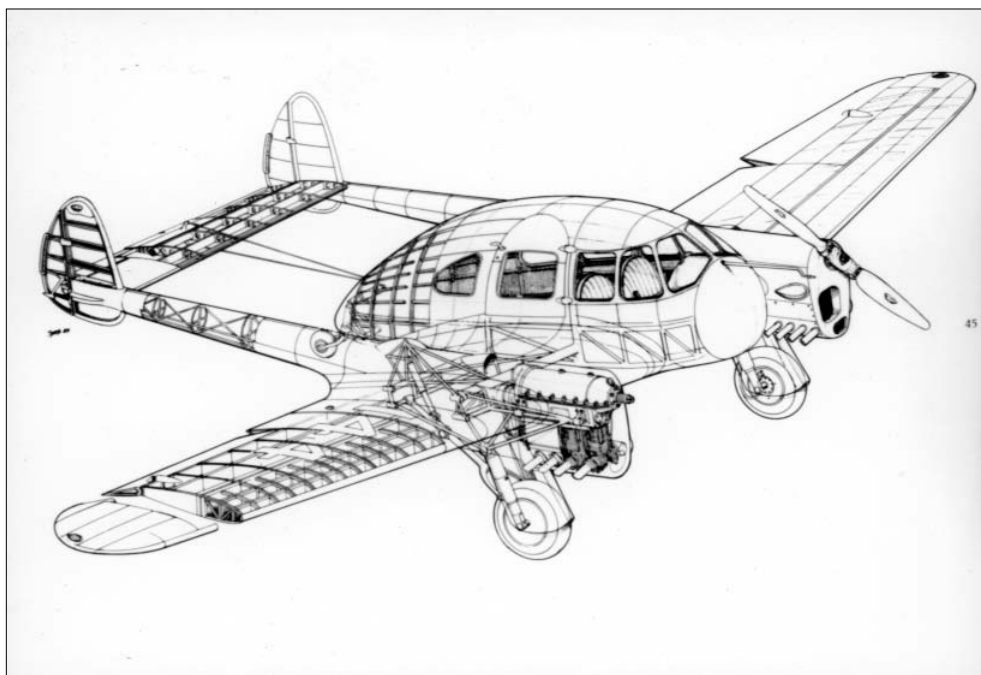
The official designation of the *Crusader* was AG-4 *Crusader*, 4-place, cabin, low-wing monoplane.

Crusader was of all-metal construction with flush-riveted skin and a heavily faired landing gear. A retractable landing gear was later fitted. This would provide only marginal performance improvement. Although “Controllable-pitch propellers” were advertised, all photographs show Hamilton Standard Ground Adjustable Propellers. (Some might consider these to be “controllable-pitch propellers.”) Fuel capacity was 50 gallons which gave the ship a range of 600 miles.

The prototype Gyro *Crusader* was built by Gyro Air Lines Corp., a subsidiary of The American Gyro Co. Those who purchased one share of American Gyro Co. common stock at \$10 per share would receive a “bonus” of one share of Gyro Air Lines common stock. This stock issue took place in April 1933. It appears that American Gyro Co. financed the initial work on the *Crusader* while “piggyback” stock sales provided funds to continue development.

The American Gyro Co. manufactured the “Gyro Cartridge Spark Plug.” In this engine accessory, the spark plug “shot a

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American Gyro AG-4 Characteristics

Span 36 ft 0 in
Length 21 ft 8 in
Useful Load 1000 lbs
Range 600 miles

Powered by 2 125-hp Menasco
C-4 engines

$V_{\max}$ 233 mph
 V_{cruise} 210 mph
 $V_{\text{single eng.}}$ 150 mph
 V_{stall} 55 mph

(From Aerofiles.com)

*Detail drawing of the American Gyro AG-4 Crusader's structural design.
(From the author's collection)*

charge of burning gas deep into the combustion chamber of the engine. The flames are shot from the base of the cartridge in the base of the spark plug with tremendous force of combustion.”

For reasons not entirely clear, operations were moved to California where *Crusader* development could continue. This move took place in 1935 simultaneously with the renaming of the firm as Crusader Aircraft Corp. An experienced manufacturer of all metal aircraft was sought and it appeared that Vultee would be that company.

However, Timm Brothers Aircraft Co. was finally chosen and a seven-place version of *Crusader* was commenced in the Timm factory at Grand Central Air Terminal, Glendale, Calif. This would be known as the AG-7. Manufacturing rights to the *Crusader* may have been sold to Timm at some point in time. The record is not clear on this. Many parties were said to be interested in the expanded version. Mountain Airways wanted four *Crusaders* with radial engines. Chang Kai Shek's China was said to have wanted 1,600 of the machines.

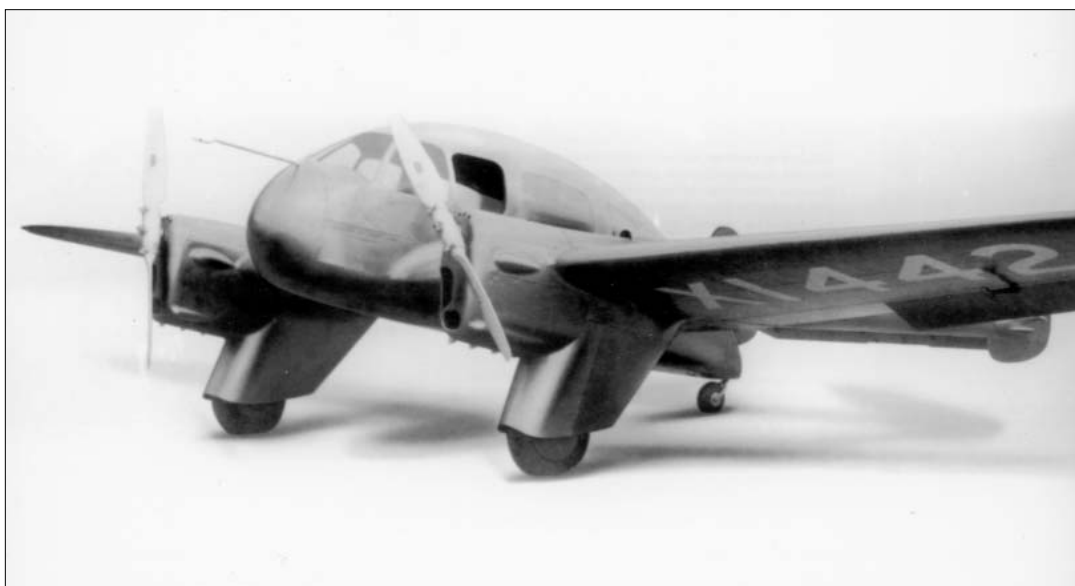
This AG-7 airplane was listed at \$35,000 FAF in 1935, equal to more than \$500,000 today. Cost to dealers was \$26,200. The AG-4 had been listed at \$20,000 in 1935.

Financing problems caused the program to fail. The AG-7

was never completed. The fate of Crusader Aircraft Corp. is unknown but bankruptcy is probable. Stock fraud and financial follies likely had a part in its demise. Shelton resigned as an officer of Crusader Aircraft Corp. in January 1937. He continued to work in aviation for the balance of his career. He died at age 90 in 1991.

The AG-4 *Crusader* airframe was dismantled and stored. It was destroyed in a hangar fire in 1942. Rumors lead one to believe there may be parts for the AG-7 still existing in California somewhere around Van Nuys.

Shelton was elected an Aviation Hall of Fame Laureate by the Colorado Aviation Historical Society in 1973.



American Gyro AG-4 Crusader, NX14229; the sole example of this model. (Photo from the author's collection)