

# SEARCH FOR A FIGHTER

CHARLES ZIMMERMAN'S VOUGHT V-173 WAS A MASSIVE STEP FORWARD IN THE CREATION OF A NAVY VTOL FIGHTER  
BY ARTHUR L. SCHOENI

Charles Horton Zimmerman was a man with a mission. Educated at the University of Kansas and the University of Virginia, he was an aeronautical engineer fascinated with airfoils and how they could be manipulated for different types of flight. By the 1930s, he was working for National Advisory Committee for Aeronautics (NACA) at the Langley Aeronautical Laboratory and his position gave him the time and resources to study airfoils, flight loading, and aircraft stability. He was particularly fascinated with stability and thought that the natural balancing reflexes of an individual could be utilized in controlling very small flight vehicles. He called this concept

"kinesthetic

control." This led him into the realm of vertical/short takeoff and landing aircraft — a subject that was new to the world of aeronautics. What if he could create an airfoil that would lead to the construction of a wing that would allow something like a fighter to have VTOL performance? Given the capabilities of the time period, it was a difficult problem. Zimmerman was also intrigued with creating a stall-proof aircraft that would not enter a spin.

Zimmerman began working on various concepts and his ideas evolved into a radical shape for an aircraft. His design would be nearly circular in shape. At cruise and high speed, the craft would be supported by the airfoil but at low speeds and in hovering flight, the plane would be supported by massive propellers. Zimmerman's concept would have a low aspect ratio airfoil that was the main body of the aircraft while the large propellers would be at the extremities of the wing for forward flight propulsion and to

serve as lifting rotors in hovering flight.

While all this was going on, Zimmerman was creating new concepts for his employer. He made a name for himself by solving the problem of a free-spinning wind tunnel at NACA's Langley Field while he later developed a free-flight wind tunnel.

Zimmerman's idea for a near-circular flying wing concept was developed out of a NACA lightplane research study made in 1933. Fred Weick, designer of the two-control spin-proof Ercoupe was in charge of the NACA research programs. Zimmerman was on his staff when Weick asked each worker to design a civilian-oriented lightplane, the merits of which would later be evaluated by impartial reviewers.

This unusual inter-NACA competition brought into being the Stearman-Hammond "safety plane" and the Ercoupe. Zimmerman came up with the flying wing concept and won the "contest" for aerodynamic excellence and farsighted engineering



The V-173 in all its strangeness during its third flight in December 1942 with Boone Guyton at the controls. Note the absence of the hand-made aluminum wheel spats and use of the early style national insignia.