



Hans J. P. von Chaim

HANS J.P.VON OHAIN

1911–1998

BY WILLIAM R. SEARS*

HANS JOACHIM PABST VON OHAIN, inventor of the first turbojet aircraft engine that powered an aircraft, died on March 13, 1998. The first flight of his He S 3B engine was made in Marienehe, Germany, on August 27, 1939. After World War II he came to the United States as a “Paperclip” scientist to work in the Aerospace Research Laboratory (ARL) and the Air Force Aerospace Propulsion Laboratory (AFAPL). In both organizations he rose to the position of chief scientist. After retirement from the U.S. Air Force in 1979, he continued with independent developments. Von Ohain had the unique opportunity to observe the development of his original invention over almost sixty years, and to work in research on the many innovations for the turbojet engine for more than forty of those years. He is credited with fifty German patents and more than twenty U.S. patents.

Von Ohain was born into an aristocratic family that recognized early that their son’s talent was in science rather than military service. He was educated at the prestigious Georg August University at Göttingen, completing the seven-year course of study for a doctorate in physics in only four years. His instructors included Ludwig Prandtl, Albert Betz, Walter Encke, Richard Courant, Robert Wichard Pohl, and Theodore von Kármán.

* Portions of this tribute were contributed by Margaret Connor, Historical Research Specialist, Universal Technology Corporation, Dayton, Ohio.

Göttingen University is considered to be the cradle of aerodynamic theory, and von Ohain was one of its most successful students.

While von Ohain was completing his doctoral thesis on another subject, he made drawings of a design for a simple turbojet aircraft “device.” With the help of a mechanic from the local automotive repair shop, he built a model and applied for a patent. His friend, Professor Pohl, recommended that he obtain assistance when the project became too expensive. Twenty-four-year-old von Ohain took his drawings to the head of one of the largest aircraft manufacturers in Germany, Ernst Heinkel, who immediately saw the possibilities in the new form of propulsion, and hired the young man.

Von Ohain’s He S01 engine ran in March of 1937, fueled by hydrogen. A month later, and totally unknown to each other, Frank Whittle, in Britain, ran a turbojet powered by kerosene and diesel liquid. Whittle’s engine had an entirely different configuration from von Ohain’s and was based on his British patent in 1930. By the summer of 1939, von Ohain improved his engine and installed the HE S 3B in the Heinkel-designed He-178 aircraft. The world-changing first flight of a turbojet-powered aircraft on August 27, 1939, was overshadowed by Hitler’s offensive into Poland five days later, beginning World War II.

During the war, von Ohain developed other engines for Heinkel with funding from the German Air Ministry, including the He S 8 engine that powered the He 280, the world’s first turbojet-powered fighter aircraft, and the He S 011, considered the world’s most sophisticated jet engine in 1945. The war ended before it powered a flight.

Von Ohain was among the German scientists selected to bring their expertise to the United States following World War II. His first assignment was in the Applied Research Section in engineering at what became Wright-Patterson Air Force Base near Dayton, Ohio. It was quickly discovered that he had intellectual ability and had unique experience in propulsion. He was chosen by Theodore von Kármán and Frank Wattendorf to join them in planning an advanced testing facility in Tullahoma, Tennessee, now known as the Arnold Engineering Development Center.

Von Ohain worked in the research organization Aerospace (earlier, Aeronautical) Research Laboratory (ARL), which investigated a broad spectrum of disciplines useful for the U.S. Air Force. He distinguished himself with his thorough knowledge of technology. As one of his associates said, "He knew how nature worked!" Another said, "He was insightful and inciteful!" He was a mentor and inspiration to all, with a quiet and modest manner that could arrive at simple but effective solutions to difficult problems. His personal contributions were in the areas of direct energy conversion, including electrofluid-dynamic energy conversion (EFD), magnetohydro-dynamics (MHD), and magnetofluid-dynamics (MFD); the colloid gas core reactor; thrust augmentation, including V/STOL research and the "jet wing"; and advanced supersonic flow machinery. He acted as consultant for other organizations and as mentor for students at the Air Force Institute of Technology. In 1963 he became chief scientist of the ARL, responsible to be adviser for all the work of the laboratory. In 1966 he and Sir Frank Whittle shared the American Institute of Aeronautics and Astronautics Goddard Award "for brilliant discovery and outstanding contributions over a period of time in the engineering science of energy conversion," and became friends. They enjoyed discussing their solutions to problems with the early engines.

In 1975 the ARL was disbanded. Von Ohain left basic research to return to his first love, propulsion, and became chief scientist for the AFAPL, working closely with another propulsion legend, Cliff Simpson. His technical contributions to the Air Force and in international circles drew attention to his earlier achievements. Many honors and awards came to him from the Air Force and from professional associations. An interesting meeting was held in Dayton in 1978, an encounter between the jet engine inventors, where von Ohain and Whittle discussed their inventions before an open session at the Air Force Museum.

Von Ohain retired from his Air Force job in 1979. He continued professional contributions at the University of Dayton Research Institute, taught classes at the University of Dayton and the University of Florida at Gainesville, led seminars at the Air Force Academy and in Taiwan, and continued to receive presti

gious national and international awards. He was the Charles Lindbergh Professor at the National Air and Space Museum of the Smithsonian Institution in 1985. In 1991 the Charles Stark Draper Prize and gold medal, the “Nobel Prize” of engineering, was awarded jointly to Hans von Ohain and Sir Frank Whittle. He received the Daniel Guggenheim Medal from the American Society of Mechanical Engineers/Society of Automotive Engineers/American Institute of Aeronautics and Astronautics, and the Rudolf Diesel Award and the Prandtl Ring from Germany. Von Ohain is enshrined in the Deutsches Museum in Munich, the National Aviation Hall of Fame, the International Aerospace Hall of Fame in San Diego, and the Engineering and Science Hall of Fame in Dayton.

Von Ohain met the woman he married, Hanny Schukat, in 1947 at a Christmas dinner her parents had for some of the Paperclip scientists. He and Hanny had four children, Stephen, Christopher, Katherine, and Stephanie. Von Ohain, who was a bachelor until age thirty-seven, enjoyed family life.

Hans von Ohain is remembered by his associates and friends for more than his technical achievements. He had warmth, humor, and kindness, and was always looking to the next possibility, to the future. His life was summed up by his friend, General Philippe Bouchard, at a memorial service; “This patient, humble, gentle, creative, family-oriented person just happened to have invented the jet engine.”

