

# A Biography of Jorgen Holmboe, 1902-1979

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Jorgen Holmboe was born November 8, 1902, on an island not far from Hammerfest, Norway, north of the Arctic Circle. His father, a minister, provided his early education. He remained on the island until 1911. He attended secondary school in Tromsø, and took university entrance examinations in Bodø. In 1922, he entered the University of Oslo. He initially went into mathematics, having received high marks in previous courses. In 1925, he sought and gained assistantship to Vilhelm Bjerknes, who had moved from Bergen where, as a physicist and meteorologist, he founded the Bergen Geophysical Institute and led development of the Bergen School of Meteorology. Holmboe was not too familiar with the work of Vilhelm Bjerknes, but after learning more about him, Holmboe expressed interest, citing assistantship to Bjerknes as one of the most challenging careers in Norway. During that time, he received extensive training in hydrodynamics and theoretical meteorology, and exposure to the polar front theory of cyclones, the revolutionary study of the Bergen School. In 1930, he passed his Candidate Real examinations and began work as a meteorologist in the Norwegian Weather Service in Tromsø. In 1932, he was transferred to Bergen. In 1933, he served on the Lincoln Ellsworth Antarctic Expedition as meteorologist. The objective was to fly across the continent; however, the expedition was abandoned after an accident. Shortly after returning in 1935, he was married to Kirsten Bendixen. Holmboe was 32.

In 1936, Holmboe accepted an invitation to the Massachusetts Institute of Technology as an assistant professor to Carl-Gustaf Rossby, a Swedish meteorologist and former student of Vilhelm Bjerknes in Bergen. This became the first U.S. department of meteorology. In 1940, Norway was invaded by the Nazis. The son of Vilhelm Bjerknes, Jacob, asked Holmboe to join him in establishing a meteorology department at UCLA. He was a principal collaborator with Bjerknes in his pioneering studies of long waves and their relation to cyclones. In 1944 he published an important work, "On the Theory of Cyclones," together with Bjerknes. Only the boundary condition was missing in the work to make the theory formally complete. The first doctoral student at the new meteorology department, Jule Charney, was able to fill the holes. Holmboe published *Dynamic Meteorology* in 1945 along with William Sharp Gustin and George E. Forsythe, two of his students. The book was intended to be a self-contained introductory text that would assume little outside knowledge of some basic physics and mathematics. *Dynamic Meteorology's* contents were based on Holmboe's lectures at the Massachusetts Institute of Technology and UCLA. The excellence of his lectures in dynamic meteorology was reflected in his ability to convey clear understanding of basic concepts as well as inspire interest in his students, like Jule Charney, to address unsolved problems in the field. The meteorology program remained a part of the UCLA physics department until 1946. Holmboe was chairman of the Department of Meteorology at UCLA twice; first in 1946 and again from 1949 through 1958. The Department of Meteorology at UCLA soon became one of the leading centers for teaching and research in the field throughout the world.

Holmboe's ties to the Scripps Institution of Oceanography are most directly expressed through his relationship with Norwegian colleague and SIO director, Harald Sverdrup. Sverdrup developed close working contacts between Scripps and UCLA, which became the degree-granting campus for Scripps in 1936. University of California President Robert Gordon Sproul appointed Sverdrup to an advisory committee to organize the UCLA Department of Meteorology during its inception. Bjerknes and Holmboe were recruited as faculty. In 1943, Sverdrup, Holmboe and his faculty colleagues all pressed for the establishment of an Institute of Geophysics at UCLA. After its establishment in 1946, the Institute of Geophysics continued to have strong connections to the Scripps Institution of Oceanography .

In the 1950s, Holmboe headed a study of the stationary waves that form in relation to certain circumstances associated in the air flow over the Sierra Nevada. The final report was issued in 1957. Its

significance was substantial enough to warrant an additional print in 1979. In 1962, one hundred years after the birth of Vilhelm Bjerknes, Holmboe published the article "On the Behavior of Symmetric Waves in Stratified Shear Layers." The article reiterated many of the theoretical results he had refined throughout his career. Holmboe was honored for his work by various organizations, including the American Meteorological Society, the American Geophysical Union, and as a result of his naturalization as a U.S. citizen in 1944, he was recognized as a foreign member of the Norwegian Academy of Sciences.

Jorgen Holmboe was considered a warm and friendly person by those who knew him, yet demanding as a scientist and instructor. Shortly after his return from Antarctica, he was injured in a skiing accident outside of Bergen. Despite broken bones, the event was fortuitous since it introduced him to his nurse and soon to be wife, Kirsten Bendixen. On May 11<sup>th</sup>, 1941, their daughter, Anna was born. Jorgen and Kirsten were both fond of accommodating colleagues, students, and guests at various socials throughout the years. He was a broad-minded man, interested in politics, art, and various fields of science. Throughout much of his career, his home was where everyone went to socialize. Holmboe was very much an outdoorsman, inviting colleagues and students to participate in hikes through Santa Monica's canyons. He was a man of vigor, outpacing those who joined him on the hikes that were so familiar. He enjoyed keeping a garden that consisted of fruit trees and various other flowers. He particularly enjoyed his magnificent collection of cymbidiums, orchids of great appeal.

Jorgen Holmboe's socially declined during his illness in later years. After he retired in 1970, he spent much less time socializing and maintaining contacts, opting instead to live a quiet life at home attending to his garden.

Shortly before his death, he gave a lecture at San Jose State University on "The Impact of the Bergen School on the Development of Meteorology in the United States." His lecture was accompanied by an interview reflecting on his early years as an assistant to Vilhelm Bjerknes. His captivating nature and energetic speech embody the passion with which he educated countless meteorologists throughout his long career.

Jorgen Holmboe died on October 29, 1979. He is survived by their daughter Anna, and three grandchildren.

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