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## Otto Ludwig Lange (1927-2017)

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## Otto Ludwig Lange (1927–2017)

Otto Ludwig Lange, who passed away on 14 August 2017, belonged to a group of remarkable lichenologists born before the Second World War, such as Josef Poelt (1924–1995), Aino Henssen (1925–2011), Mason Hale (1928–1991) and William Culberson (1929–2003), who inspired generations of younger students.

Otto was born in Dortmund in Nordrhein-Westfalen on 21 August 1927, but his family soon moved to Göttingen where he went to school. Having endured the horrors of the war he returned to his studies in 1946 at the Universities of Freiburg and Göttingen, where he gained his doctorate in 1952, followed by a teacher's certificate. From 1953 to 1961 he was a research assistant at the University of Göttingen, gaining his habilitation in 1959 for a thesis dealing with temperature relations and heat resistance of desert and savannah plants in Mauritania. He became a lecturer at the University of Darmstadt, 1961–1963, before obtaining a Chair at the Department of Forestry and Genetics in Göttingen. In 1967 he was appointed to the Chair of Botany as well as Director of the Botanical Garden at the University of Würzburg, where, in spite of several calls to attractive positions at other universities in Germany and abroad, he remained until his retirement in 1992. His 25 years' tenure in Würzburg is characterized by an enormous scientific activity, comprising long periods of fieldwork combined with analysing data in the laboratory and writing scientific papers.

By the time of his retirement he had c. 230 publications to his credit, but this increased to an amazing 400 during his Emeritus period. His scientific career began with investigations of heat, frost and drought resistance of lichens, bryophytes and vascular plants growing under extreme environmental conditions. His pioneering field experiments were facilitated through his design of equipment to measure gas exchange in the field. He had broad biological interests, and never concentrated his field experiments on lichens alone; by examining other groups of organisms he provided a more balanced analysis of the results. About 45% of his publications concern lichens; he was the first scientist to demonstrate that those with eukaryotic photobionts could attain positive net photosynthesis with high humidity, while lichens containing prokaryotic photobionts require liquid water for photosynthesis, as cyanobacterial cells cannot become turgid with high air humidity alone.

Otto realized the importance of combining fieldwork with experiments in the laboratory to strengthen a theoretical framework, and spending long periods in various habitats in many different parts of the world. He was not only a successful scientist and teacher, but also realized the importance of engagements in scientific networks, research boards and editorial groups. During his long career as an academic teacher, many generations of students have had the opportunity to listen to his splendid lectures. Many attendees, including well-known lichenologists, such as Ludger Kappen, Burkhard Bùdel, Roman Türk and Volkmar Wirth, were trained in his laboratories, and others, such as Tom Nash and Allan Green, were fortunate to spend long periods in his laboratory as guest researchers. Both co-authors of this obituary met up

with Otto on many occasions such as meetings and conferences, IK also enjoying his company on walks in the Alps in connection with BLAM excursions, and MS lecturing at Würzburg.

Otto was an outstanding ecophysiologicalist, in fact one of the first, and naturally received many honours, awards, birthday tributes and Festschriften. He received honorary doctorates from Bayreuth, Lisbon and Darmstadt and honorary memberships of numerous international societies. He was internationally recognised by prestigious awards, such as the Acharius Medal in 1992, and was an elected member of the Leopoldina (National Academy of Sciences) in 1972 and awarded their Cothenius Medal in 2015; he was also the co-winner of the Gottfried Wilhelm Leibniz Prize (The "German Nobel Prize") in 1986 for outstanding achievements in science.

It is impossible to overstate in a few words the greatness of this man and his immeasurable achievements – this is undoubtedly a major loss not only to lichenology but also to the scientific world.

*Ingvar Kärnefelt and Mark Seaward*



Otto Ludwig Lange and Felix Schumm in connection the retirement party for Volkmar Wirth in 2008 (photo I. Kärnefelt).