

6. In Memory of Hilda and Rudolf Kingslake: Two Lives Devoted to Optics

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Hilda and Rudolf Kingslake died within two weeks of each other in February 2003. Hilda died on February 14, two days before her 101st birthday, at the Episcopal Church Home in Rochester, N.Y. She had been ill for a number of years. Rudolf died February 25 at age 99, also at the Episcopal Church Home. They had been together in early life as students since 1921 and together in marriage since 1929. They both had every confidence that they would be together now.

Hilda Gertrude Conrady was born in London, England, on February 16, 1902. She was the eldest daughter of Alexander Eugen and Annie Conrady (née Bunney). A. E. Conrady, as he was usually called, was professor of optical design in the newly established Technical Optics Department of the Royal College of Science, a unit of the Imperial College of Science and Technology in London. (At home and amongst friends, Conrady used his middle name, Eugen.) Hilda was part of the first full-time class in the Technical Optics Department program. She studied under her father and was part of the first graduating class in 1923. Hilda continued her work in optics in the department as a research scholar. While there, she published regularly on such topics as the Foucault knife-edge test and primary spherical aberration, in journals including the *Transactions of the Optical Society (GB)*, *Proceedings of the Optical Conferences* (e.g., 1926), and the *Photographic Journal*. The authorship, in the style of the time, was “Miss H. G. Conrady, A.R.C.S. D.I.C.” Later, after her marriage to Rudolf, she would sign Hilda Kingslake née Conrady and, much later, Hilda Conrady Kingslake.



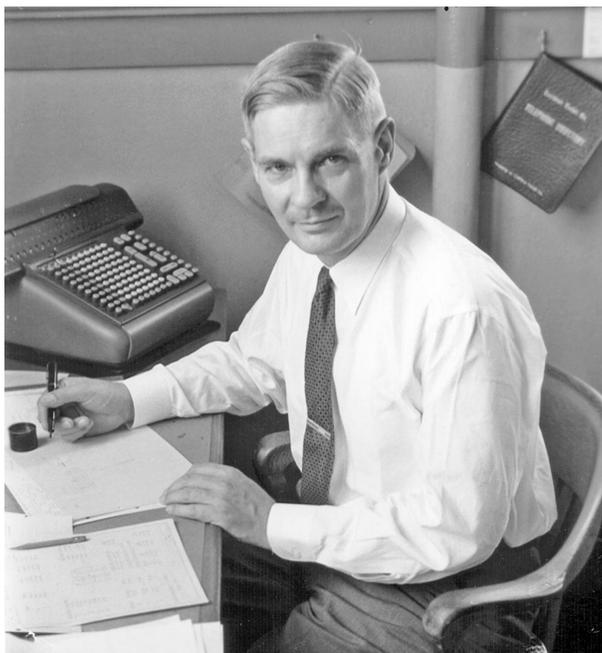
The Kingslakes attending a workshop.



Hilda Kingslake, November 1979.

Rudolf Kingslake was born Rudolf Klickmann August 28, 1903, to Martin and Margaret Klickmann (née Higham). He was the eldest of five children. Martin Klickmann changed the family name to Kingslake May 15, 1917. (Rudolf in reminiscing told me that the boys at school used to call him “Queenspond”!) After being educated in private schools, Rudolf attended Imperial College in the same program that Hilda had already enrolled in and thus came under the tutelage of Professor Conrady. Hilda, with a twinkle in her eyes, never let Rudolf forget that he graduated the year after she did, and that she carried the Conrady genes. What a team to carry forward, and significantly expand on, the Conrady tradition of optical design. Rudolf graduated with his bachelor’s degree in 1924 and earned his master’s degree in 1926. In 1950 he was awarded a doctor of science. After graduation in 1926, he

continued for another year as a Beit Fellow before joining Sir Howard Grubb, Parsons and Co., in Newcastle-on-Tyne, as an optical designer. After that he moved to the International Standard Electric Co. in London.



Rudolf Kingslake with a mechanical calculator at the Eastman House Museum.

A major turning point in both their lives and careers occurred when the president of the University of Rochester, Rush Rhees, visited England in the early summer of 1929, specifically to recruit faculty members for The Institute of Optics. Rhees entertained, interviewed, and successfully recruited Rudolf to the Institute over dinner at Brown's Hotel. The appointment as assistant professor of geometrical optics and optical design was confirmed by the board of trustees June 15, 1929, on the recommendation of the president, who wrote: "He [Rudolf] has published eight papers in the Transactions of the Optical Society (G.B.) and elsewhere. By training and experience he is admirably fitted to contribute to the development and significance of our new enterprise."

The Kingslakes were married September 14, 1929. They sailed to America, arrived in Rochester, and started their 74-year careers of exceptional and distinguished service to the field of optical science and engineering and to the professional international community of scholars. Their many contributions to the life of the University and to the greater Rochester community are well regarded, recognized and documented.

Rudolf had a lifelong career in association with The Institute of Optics and developed the teaching materials for the first courses in lens design and geometrical optics formally offered in the United States. He served the University as a full-time faculty member until 1937, when he joined Eastman Kodak as head of the Lens Design Department at the invitation of Dr. Mees, head of Kodak Research Laboratories. For the first year, Rudolf divided his time between The Institute of Optics and Eastman Kodak; he continued as a part-time professor until well into his eighties. The year before his move to Kodak, the Kingslakes spent a sabbatical at Imperial College under an exchange arrangement that brought L. C. Martin to Rochester. With Rudolf's unusual sense of humor, he said, "Martin and I exchanged jobs, houses, and cars . . . but not wives." It is worth noting that L. C. Martin "communicated" Hilda's first paper in the *Transactions of the Optical Society (GB)* in 1924.

The Kingslakes made separate and joint contributions to the development of optics and to the literature, particularly through publications in the various journals of the Optical Society of America. Both were made fellows of the society. Rudolf was elected president in 1947–48, and later became an honorary member of OSA. In 1973 he was awarded the Ives Medal. Both Kingslakes received awards and commendations from many civic and professional societies. In particular, Rudolf received major awards from the Society of Motion Picture and Television Engineers (SMPTE), the International Society for Optical Engineering (SPIE), the Society for Photographic Scientists and Engineers (SPSE, now the Society for Imaging Science and Technology), and the Rochester Engineering Society.

Hilda's technical papers are still cited and have lasting value. Her insightful contributions on the history of our field are equally valuable, including her *Fifty-Year History of the Optical Society of America 1916–1966* and *The First Fifty Years, The Institute of Optics 1929–1979*, together with its sequel, *The Institute*



Hilda Kingslake was active in community life in Rochester, founding a library service for shut-ins. She was known as the "Book Lady".



The Kingslakes and six Directors of the Institute: M. P. Givens, R. L. Hopkins, L. W. Hyde, B. J. Thompson, K. J. Teegarden, and N. George.

of Optics 1929–1987. Finally, I return to another important joint publication in *Applied Optics* titled “Alexander Eugen Conrady 1866–1944.”

Professor Conrady had published part one of his book, *Applied Optics and Optical Design*, in 1929, but was not able to complete the second part before his death. However he left a well-advanced, handwritten manuscript that the Kingslakes were able to use to complete part two. It was published in 1960, “edited and completed by Dr. Rudolf Kingslake,” and containing a foreword by Hilda G. Conrady Kingslake.

Several generations of full- and part-time students in The Institute of Optics, attendees at summer schools in Rochester and at courses around the country and abroad have benefited from Rudolf’s teachings. Many others have benefited from the excellent expository writing in his lecture notes and many books, including *Lenses in Photography*, *Lens Design Fundamentals*, *Optical System Design* and *A History of the Photographic Lens*. In addition, there is enduring value in the edited multi-volume series *Applied Optics and Optical Engineering: A Comprehensive Treatise*.

Rudolf and Hilda Kingslake were warm, friendly, modest and caring. They retained their senses of humor throughout their lives. At an 80th birthday celebration, Rudolf said, “There is nothing special about being 80—after all, anyone can have an 80th birthday, all they have to do is live long enough.” Finally, there is Kingslake’s first law: “In optics it is easy to do something roughly but very difficult to do it well.” Rudolf and Hilda, you both did it exceptionally well.