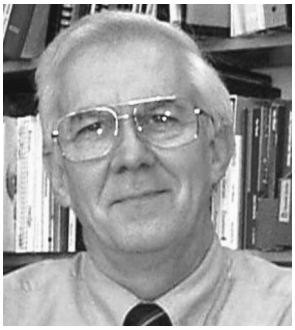

Rudolf Kingslake (1903–2003)

I was saddened to hear that Dr. Rudolf Kingslake died on February 25th. He was a great teacher of optical design and one of the nicest persons in our field. I would not attempt to describe his contributions to the field of optical engineering. That was done in last July's issue of *oe magazine*, where there is a wonderful tribute to Professor Kingslake with short appreciations by Bob Fischer, Warren Smith, and Bob Shannon. You can find it at http://oemagazine.com/fromTheMagazine/jul02/kingslake.html. It is also downloadable as a PDF file at the site.

I first met Dr. Kingslake (I never have called him by his first name, nor can I now, although I am certain it wouldn't bother him) when I, as many others have done, went to the University of Rochester to take his short course on lens design. The Sunday evening before the course started, he wandered among the tables where his students for the week were gathered, introducing himself and probably assessing the makeup of his class.

It was clear once the class began that he enjoyed his discipline, lens design, and his wonderful teaching ability grew out of a wish to share this fascinating field with anyone who was interested. I don't remember which summer I took the course, but it was just after Texas Instruments and Hewlett-Packard began their battle of programming calculators. Kingslake could not contain himself as he bounced across the front of the auditorium narrating with great glee his calculations for ray tracing through a series of lenses using one of these new marvels. After all, for those who had punched their cards and brought their offerings to the high priests of the IBM computers of that era, the invention of the programmable calculator was like the removal of shackles.

Once at a Washington meeting of the OSA, I decided I had had enough optics for the moment. I snuck out of the meetings and went down to the Smithsonian Air and Space Museum. As I traipsed around the main hall, I saw Prof. Kingslake standing on the landing of the stairs leading to the second floor. We greeted each other like kids playing hooky and stood looking across the hall at a Douglas DC-3 hanging from the ceiling. Kingslake remarked that over the years he had made a great many flights in that model and it had never looked as small to him as it did then.

He was a generous person. I wanted to have him autograph my copy of *Lens Design Fundamentals* and I hadn't seen him at one of the SPIE annual meetings, so I mailed him my copy. It was returned with a nice inscription and a generous note commenting on my book on optical design.

Long after his retirement from Kodak, he told me that he was spending his time rooting around the Eastman House Museum of Photography identifying, classifying, and organizing the lenses that had been donated over the years.

After Dr. Kingslake stopped teaching his course at Rochester and with Michael Kidger's death a few years ago, two of our most passionate and experienced teachers of optical design are gone. The question that has bothered me is: with the rise of optics as a major technological force today, who is going to train our optical engineers to design the systems of the future? Now, in place of the liberated Kingslake and other designers with their programmable calculators we have engineers using optical design programs. An engineer can take a short course to learn how to use the program and other courses are available to teach the more advanced aspects of the programs, but these courses do not teach optical design at the level and depth of university-based instruction.

Designing an optical system using the thin lens equation is the quickest way to get into trouble. For those who have to provide a new or revised optical design, buying a lens design program may make them feel better, but it doesn't make the design any better.

Certainly consultants can be hired to do detailed cost-effective designs, but do those who initiate, create, and specify new systems for their consultants understand what is possible if they have no idea of the general approaches to optical systems and the limitations? They can read Prof. Kingslake's books, which describe and analyze imaging systems. But how does one extend the work that he described so beautifully to laser-based and illumination systems? That is not to say there are not professors at some of the optics schools doing this work. But their efforts cannot satisfy what I foresee will be an unmet demand on our field.

Rudolf Kingslake will be missed. He was a gentleman and a great teacher of lens design. In his honor, SPIE established the Rudolf Kingslake Medal and Prize in 1974, awarded annually in recognition of the most noteworthy original paper on the theoretical or experimental aspects of optical engineering to appear in this journal. We are honored by his memory.

Donald C. O'Shea
Editor