The International Society of Refractive Keratoplasty sponsors two honorary named lectures, the Barraquer Lecture, which is given during the American Academy of Ophthalmology meeting, and the Lans Distinguished Refractive Surgery Lecture, which is given at the time of the midwinter meeting. All ophthalmologists interested in refractive surgery know the contributions of José Barraquer, but few are familiar with the historical role of L.J. Lans, a Dutchman who made the first systematic study of refractive surgery in the late 19th century.

Leendert Jan Lans (Figure 1) was born in 1869 in Delft, the Netherlands, and graduated from the University of Leiden in 1897, taking his doctor's degree cum laude with defense of a thesis entitled “Experimental Studies of the Treatment of Astigmatism with Non-perforating Corneal Incisions” (Figure 2).1 Lans' interest in keratotomy for astigmatism was influenced by a quartet of 19th century colleagues: Bates, Faber, Schiötz, and Lucciola.

In 1895, E. Faber, another Dutchman, used tangential keratotomy to treat a 19-year-old male who had been rejected by medical authorities of the Royal Military Academy because his refractive error of $-0.75 +1.50 \times 120$ reduced his visual acuity to 20/60.3 A highly motivated young man, he was prepared to undergo any “new treatment” and although Faber had never heard of anybody doing an operation to correct astigmatism, he thought that the circumstances justified a try. He performed a 6mm-long, full thickness incision parallel to the corneal limbus in the 120° axis. Three weeks after surgery, the young man's refractive error was $+0.75 - 0.75 \times 120$, enabling him to pass his medical test with a visual acuity of 20/25. Faber cautioned that predictability of outcome would be difficult in such cases.

Lans was also familiar with the case published by Hjalmar A. Schiötz of Oslo, Norway, in which he used a transverse incision with a Graefe knife to reduce astigmatism that had resulted from cataract surgery from approximately 16 diopters to approximately 7 diopters.4

These three surgeons used full thickness corneal incisions, but Lucciola of Turin, Italy, in 1896 reported ten cases in which non-perforating corneal incisions were...
made to flatten the steep meridian.1

With these early experiences in humans in mind, Lans set out to improve the technique by systematic experimentation in rabbits, using patterns of keratotomy, keratectomy, and thermokeratoplasty to create astigmatism. The results of his studies defined the basic principles of radial keratotomy:

- Incisions in the paracentral and peripheral cornea would result in bulging of the peripheral cornea and flattening of the central cornea in that meridian (Figures 3 and 4);
- The scar formation that occurred upon wound healing would produce additional corneal flattening;
- Flattening in the meridian perpendicular to the incision would be associated with steepening in the opposite meridian;
- Deeper incisions would have a greater effect.

After receiving his degree, Lans studied with Snellen in Utrecht, maintaining his interest in astigmatism and helping Snellen define with-the-rule and against-the-rule astigmatism.5 From 1899 to 1903, Lans practiced general clinical ophthalmology in Dordrecht, a small town south of Rotterdam, where he became successful and respected and pursued his love of swimming and sailing. In 1904 he moved to Arnhem, where he founded the first medical committee for health care in schools and helped establish a Society for the Prevention of Tuberculosis. His election as the president of the Netherlands Ophthalmological Society in 1908 reflected his prominence, and he continued to be socially active until he died in 1941 in his hometown of Delft, mourned by the medical profession and his patients alike.

Unfortunately, his insights into the surgical treatment of astigmatism lay dormant until Tsutomu Sato independently revived interest in refractive surgery in 1939.6,7

It is fitting that the Distinguished Refractive Surgery Lecture should bear Lans' name, because the Lecture honors individuals who are making active and innovative contributions in the field of refractive surgery, as Lans did almost a century ago.

References