The Continuing Legacy of Charles L. Schepens, MD: Father of Modern Retinal Surgery

It seems fitting that with the return of the ASRS Annual Meeting to Boston, we honor the founder of modern retinal surgery, Charles Schepens, MD. He is perhaps best known for creating the binocular indirect ophthalmoscope, a revolutionary instrument that enabled practitioners to examine the peripheral fundus and set the stage for additional innovations in retinal detachment repair.

In 1951, Dr. Schepens performed the first scleral buckling procedure in the United States using an exoplant. A few years later, he described the use of an encircling polyethylene tube placed under the flap of a lamellar scleral dissection in conjunction with surface diathermy to create a chorioretinal adhesion and simultaneous drainage of the subretinal fluid. He subsequently modified the procedure by choosing silicone rubber, which was softer and less likely to erode. As a result of his many innovations and the groundwork he laid, Dr. Schepens is credited with helping to more than double the success rate of retinal detachment repair from 40% to 90%.

A great idea would never create a paradigm shift without strong interest and an inspirational leader. Dr. Schepens has been called “a teacher of teachers” for his skill and devotion to instructing others on the techniques of binocular indirect ophthalmoscopy and retinal surgery.

In his book, From Cuba With a Vision, Felix Sabates, MD, writes, “Every time you spoke with him, he was teaching you something.” During his illustrious career, Dr. Schepens trained 223 fellows; many of his students have gone on to promote and further refine these techniques, later becoming retina leaders in their own right.

We had the good fortune to interview several former fellows, colleagues, and friends of Dr. Schepens. Their insights clearly demonstrate that his legacy lives on today.

What was your first impression of Dr. Schepens? Do you recall your first meeting with him?

Lionel Chisholm: I first met Dr. Schepens as an interviewing retinal fellowship applicant. At the time, he presented an imposing and commanding presence. But later, in daily interactions in a clinical and research setting, I found that he was always supportive and helpful.

Jay Duker: The first time I met Dr. Schepens was at Wills Eye Hospital in 1988 when I was a senior resident. He came to Philadelphia as a visiting professor and lectured about a new innovation in computerized imaging of the retina—the scanning laser ophthalmoscope.

What struck me most during that initial meeting was his almost childlike inquisitiveness. At the time, he was in his mid-70s, yet showed an incredible youthful enthusiasm for moving the field of retina forward into the 21st century.

Alice McPherson: On the first day of my vitreoretinal fellowship, I was taken on a tour of the medical facilities. Dr. Schepens was scrubbed on a long case, so to meet him, my guide took me into the operating room where he was working. What surprised me the most was that Dr. Schepens was not wearing surgical gloves. Everyone else who scrubbed was wearing gloves, but I learned that Dr. Schepens did not usually wear them. Within a year, however, hospital policy changed and it became necessary for all surgeons to wear gloves.

‘What struck me most during that initial meeting was his almost childlike inquisitiveness.’

—Jay S. Duker, MD

Felix Sabates: I first met Dr. Schepens in the retina service of the hospital. Dr. Schepens was a slow, methodical surgeon who was always teaching, so he was busy in surgery all day.
A Storied Life—From War Hero to Retina Legend

It is easy to imagine a film adaptation of the life of Dr. Charles L. Schepens. He was born in 1912 in Mouscron, Belgium, orphaned at the age of 13, and studied mathematics at the University of Ghent before entering medical school and later specializing in ophthalmology. Dr. Schepens received his ophthalmology training at the military hospital in Brussels as well as at Moorfields Eye Hospital in London.

He was called to active duty at the start of World War II and joined the Belgian Air Force Medical Corps. On May 10, 1940, Belgium fell under Nazi control and his unit was disbanded. He then joined the Resistance, helping others to escape the Gestapo and flee to France. In 1942, he too escaped to France, where he managed a sawmill along the Spanish border near the Pyrenees under the pseudonym Jacques Alexandre Perot. During that time, he continued to assist the Allied forces by helping downed pilots and wanted members of the Resistance to escape. In mid-1943, he narrowly escaped arrest and fled to London.

His valiant efforts during the war did not go unnoticed. He received numerous awards including the Military Cross from France, the Officer of the Order of Leopold and Commander of the Order of the Crown from Belgium, and ultimately the highest honor in France—the insignia of Knight of the French Legion of Honor.

Once in London, Dr. Schepens returned to Moorfields Eye Hospital and embarked on an illustrious career that spanned more than 6 decades. Using his background in mathematics, he invented the binocular indirect ophthalmoscope that we still use today. Legend has it that he created the prototype with materials collected from the rubble left by the Nazi bombings in London.

Wishing to further advance his research interests, in 1947 he accepted a fellowship at the Howe Laboratory of Ophthalmology at Massachusetts Eye and Ear. Two years later, he founded its first retina service and served as its director. Later he established a formal retina fellowship program—also the first of its kind—that trained many of the leaders in retina.

In 1950, Dr. Schepens created the Retina Foundation to focus on research into retinal conditions. This was renamed the Schepens Eye Research Institute (SERI) in 1974 to emphasize that the research being performed was all-encompassing and not limited to the retina. Today, SERI is part of Massachusetts Eye and Ear and Harvard Medical School.

Dr. Schepens authored over 350 publications during his career—both journal articles and books. He also founded the Retina Society to encourage the gathering and exchange of ideas among leading specialists. His devotion and passion for advancing the retina field earned him many awards, including over 50 honorary degrees and visiting professorships, the Mildred Weisenfeld Award from the Association of Research in Vision and Ophthalmology (ARVO) for his distinguished scholarly contributions, and the highest honor from the American Academy of Ophthalmology—the Laureate Award.

Charles L. Schepens, MD

‘I am most satisfied that this type of work is not dying with me, thanks to the training program and the people who continue the tradition. I think it is wonderful to be proud of people who are younger than you and who will survive you and know you had something to do with the fact that they are so successful and the knowledge has been passed on.’

—Charles L. Schepens, MD

By 6 PM, he quickly moved to a room that had 5 or 6 patients on stretchers. They were to be operated on the following day, and he proceeded to check the fundus drawings done by his fellows.

Mary McCormick, his nurse, introduced me to him briefly, and later began giving me patients to draw. Early in the mornings, I would stand silently behind Dr. Schepens and watch as he performed his surgical procedures. After a few weeks, he turned around and asked, “Would you like to help?” That was the great opportunity that guided my whole life as a reluctant Cuban immigrant.

J. Sebag: Dr. Schepens first struck me as an austere person, but someone who seemed fair.

Robert Watzke: Dr. Schepens was a tall, thin, aesthetic-looking person, rather formal in his personality. He was very much the professor, and I was in awe of him. I didn’t have a lot of contact with him at the time. My contact with him came later, after I had moved to the University of Iowa.

I was working with another staff person at the university; together, we were doing all of the detachment procedures and scleral buckling. When Dr. Schepens came to Iowa City, Iowa to attend a clinical conference, I showed him some pre- and post-op patients, and the way we worked them up, I became much better acquainted with him at that time.

He was a very formal person. There was kind of a distance, but that was partially because of the difference in our status and age. I learned a tremendous amount—not particularly as a resident or fellow scrubbed in surgery, but mainly as a person who followed his technique and learned it a bit later.

What was it like to train under and/or work with Dr. Schepens?

Lionel Chisholm: Dr. Schepens made huge contributions to the retina field. But, for his fellows, the most important thing was his emphasis on precise examination and detailed identification of pathology. This provided us with the basis for a highly meticulous surgical approach to the treatment of retinal detachment.

At the time of my fellowship, scleral buckling was the only procedure, demanding thorough identification of breaks through detailed retinal drawings followed by precise placement of buckle elements.

Jay Duker: I never trained with Dr. Schepens, and I worked with him for only 1.5 years at the Retina Associates. Nevertheless, in that short time, I was able to directly observe his
Dr. Schepens paid tremendous attention to detail, almost to an obsessive degree. However, he seemed to have great reverence for what he did, explaining his penchant to obsess over the details. In retrospect, I have to say he taught me that details mattered. He was right.

What is the most important thing you learned from Dr. Schepens? How has your interaction with him influenced you?

Lionel Chisholm: For me, his lasting legacy remains strict attention to detail in all phases of patient interaction and precise identification of all pathology. These principles continue to help me. The whole process is now modified by technology—OCTs, both traditional and new developments, improved photography, etc—so now, perhaps, it’s easier for us to see the detail. Dr. Schepens was very interested in technological development but did not survive to see it come to fruition in the retinal field.

Jay Duker: I learned to continue to ask, “Why?”

Alice McPherson: The most important thing I learned from him was vitreoretinal surgery. Dr. Schepens accepted me into his retina surgery program at a time when no other women had been offered this type of fellowship training. He gave me his full support and allowed me to learn from his expertise. Without his training, I would have spent the rest of my life doing refractions. But instead, I have been fortunate enough to have had an extensive vitreoretinal surgical practice and to have founded the successful Retina Research Foundation.

J. Sebag: Dr. Schepens had great respect for scientists. He taught me the importance of appreciating the scientific underpinnings of what we did as clinicians, even though we might not fully understand them. As a result, I have sought collaborations with scientists and accorded them the utmost respect and consideration, constantly pointing out that without their important work, we would have little to offer patients.

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—Alice McPherson, MD

Dr. Schepens stood up in an Academy meeting and said that he was going to make a report that was completely at variance with the majority report of the committee. He stated that scleral buckling and binocular indirect ophthalmoscopy were by far the best method and that was what he felt should be recommended.

‘It’s hard to believe now, but most doctors used a direct ophthalmoscope to examine patients with detached retinas. They would then try to operate ... Dr. Schepens’ examination, as well as his surgery, was revolutionary.’

—Robert C. Watzke, MD

During this time, he and his associates published a series of articles, usually in the Archives of Ophthalmology, on the anatomy of the peripheral retina as shown by binocular indirect ophthalmoscopy and scleral indentation. These papers depicted—in encyclopedic detail—the anatomy, meridional folds, pars plana cysts, vitreoretinal adhesions, and other things that the older ophthalmologists couldn’t see with direct ophthalmoscopy. He then wrote a series of articles on scleral buckling—how it was done, the procedures, and the different methods of producing buckling.

It was possible to read these articles and use them as a jumping-off place, even without a formal fellowship. That’s what I did, and that’s what a lot of other ophthalmologists did. Within 10 years, this method of treating detachments took over completely, and the Academy recommendations were proven to be wrong.

What impressed you the most about Dr. Schepens? What do you think was his most important contribution to our field?

Lionel Chisholm: He was totally devoted to the retina field and worked tirelessly to search for and find support for new avenues of research. His major contribution was in retinal detachment, but he had many other initiatives to his credit.

His creation of the Schepens Eye Research Institute, now a part of the Harvard eye
Eventually all ophthalmologists realized that by identifying the causative breaks, retinal detachment repair success rates could double.

Jay Duker: There are many impressive things about Dr. Schepens, but the trait that stood out the most was his doggedness. All that he did, he did full out. He never took “no” for an answer, and never felt that any challenge was too big.

Of course, the most important contribution he made was to usher us all into the era of modern retinal detachment repair with the introduction of the binocular indirect ophthalmoscope. It took him years to convince the skeptics who continued to attempt to find peripheral breaks using a direct ophthalmoscope. However, eventually all ophthalmologists realized that by identifying the causative breaks, retinal detachment repair success rates could double.

Alice McPherson: The most important contribution Dr. Schepens made to our field was educating others through his knowledge and passion for saving sight. He was a man with purpose: an educator, scientist, mentor, and passion for saving sight. He was a man who was educating others through his knowledge and expertise in ophthalmology for a very long time. His influence survives and will impact the future of the specialty.

Are there any other stories that you would like to share about Dr. Schepens?

Jay Duker: He lived most of his adult life in Nahant, Massachusetts near the ocean. Even at an advanced age, Dr. Schepens regularly swam in the ocean.

Alice McPherson: Dr. Schepens did not talk much about his family life; he was a very private person. He was totally devoted to his professional work, friends, and family. He had 4 children and was married for over 69 years. His wife, Marie was a very talented portrait artist and medical illustrator.

Do you think Dr. Schepens’ contributions to the field still have an impact on retina practice today? How might they affect the future of the specialty?

Lionel Chisholm: His real legacy may rest in the founding of the Schepens Eye Research Institute, which spawned new advances in retina and other fields including cornea. The recent merger of SERI with the Harvard Ophthalmology research establishment created a very potent source of new developments for the better understanding of eye diseases that will continue far into the future.

The naming of the retina clinic at Mass. Eye and Ear in his name further recognizes the importance of his work. I think, therefore, that his influence survives and will impact the future of retina and the broader field of ophthalmology for a very long time.

Jay Duker: The most critical way that Dr. Schepens continues to impact our field is the number and quality of trainees who learned from him. He was a revolutionary in the educational and research phases of medicine, merging basic and applied eye research with clinical phases in ophthalmology. This ultimately led to the founding of the Retina Research Foundation.

J. Sebag: The most important contribution he made to our field was the emphasis he placed on careful clinical observation and the application of science to solving clinical problems. I also appreciated his quiet way of getting things done.

One day, I was summoned to Dr. Schepens’ office on Stanford Street, where he introduced me to one of his oldest friends and colleagues. Together, they described a series of experiments performed by this colleague that showed some interesting initial results. I was asked to design and execute the next series of studies.

Although in my estimation, the scientific questions were of only moderate interest, I accepted the offer, hoping to find a greater scientific wisdom in the purpose. Instead, I found a greater spiritual wisdom and life purpose.

Less than a year later, Dr. Schepens’ colleague died of a terminal illness with the knowledge that his work was being carried forth after his passing. Such was the respect, loyalty, and sensitivity quietly at work behind Dr. Schepens’ thinking and planning.

Robert Watzke: The thing that impressed me the most was how painstaking he was in his examination. He was always very careful when he examined his patients. He never just took a quick glance and came up with an opinion. He treated every case, every patient, with the same type of attention and conscientious examination.

He also developed a way to examine the fundus that enabled us to really find the clinical anatomy and interpret it, which had been impossible before then. He did not, of course, invent indirect ophthalmoscopy; nor had he really been the first to actually indent the sclera; but he put it together and pioneered using binocular indirect ophthalmoscopy to examine the anatomy of the retina in a completely new way.

What was Dr. Schepens like outside the clinic?

Lionel Chisholm: He was devoted to his wife, and we were fortunate to experience their gracious hospitality on frequent occasions. They imparted a refined international elegance to others, which balanced well against the demands of work. I have tremendous admiration and respect for Dr. Schepens and, along with many of my peers, hold him up as a person we can only strive to emulate.

Jay Duker: He was a worldly man who took great pride in all that he built: the Retina Associates, the Eye Research Institute, and the Schepens International Society. He was especially proud of his trainees: the myriad of retina specialists spread throughout the United States and the world who bring modern techniques of retinal detachment repair.

J. Sebag: I had the good fortune to dine with Dr. Schepens and his wife at the Harvard Club in Boston. He ordered lobster and Chablis for all in what seemed to be endless quantities. He was in his 80s at the time, but in full form and vigor. His personal constitution was remarkable. I can only imagine what he was like 4 or 5 decades earlier when he founded modern retinal surgery.

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—Jay S. Duker, MD

‘His influence survives and will impact the future of retina and the broader field of ophthalmology for a very long time.’
—Lionel D.J. Chisholm, MD, FRCS(C)
modern retinal surgery from him. Those trainees brought an incredible level of skill to virtually every corner of the world. Many of them became international leaders in the field of retina and mentored the next generation of retina specialists.

Having the title of “Schepens fellow” still carries tremendous weight in our community.

**Alice McPherson:** The impact is so great that every ophthalmologist in the world uses the binocular indirect ophthalmoscope to examine the peripheral retina of eyes. This enables better diagnosis, surgery, and medical treatment leading to better cures in all eye diseases—now and for decades to come.

**Felix Sabates:** I wish Charles were here to answer that question. He was so methodical in his explanations. He brought researchers and clinicians together and, indeed, was the creator as well as innovator of applied research in ophthalmology. He stressed that he was only a “facilitator.” Of course, he was more—an iconic figure and an example to follow.

He imparted his knowledge to all, and was devoid of the greed and lack of humility shown by some of our uninformed colleagues who fail to give proper credit to a great man. As for the future, I suspect he would say (and I would agree) that the future will be great and will be shaped by young, intelligent people who will continue to pursue the highest principles of our profession.

**J. Sebag:** Dr. Schepens was a very meticulous person. He taught us to carefully examine the eye and make very detailed drawings documenting our findings. In this age of advanced imaging, the art of careful physical examination is under threat. But when I think of Dr. Schepens—surprisingly often—I am always reminded of the value of visualizing the eye in detail, especially with the binocular indirect ophthalmoscope, which is also very helpful in the OR.

Another legacy teaching is the importance of identifying the cause of a rhegmatogenous retinal detachment. Buckling the entire peripheral fundus and/or performing 360-degree retinopexy in the periphery is a lazy person’s approach. Dr. Schepens taught us to identify the cause and emphasized that you need to treat only the cause of the detachment to cure the problem. In his day, that was scleral buckling, while today vitrectomy is more often employed. But Schepens’ principles remain the same.

Dr. Schepens was keenly aware of the important role new technology played in advancing our field and improving our ability to help patients. After inventing the binocular indirect ophthalmoscope, now on permanent display at The Smithsonian in Washington, DC, many other inventions resulted from his influence and support.

**Robert Watzke:** I think his lasting contribution was teaching us the importance of conscientious, painstaking examination of the retina. We no longer make drawings like he and I did in the past, but the conscientious examination that precedes everything we do is the legacy he left us and which will never change.

‘He stressed that he was only a “facilitator.” Of course, he was more—an iconic figure and an example to follow.’

—Felix N. Sabates Sr, MD, FACS

Also, the binocular indirect ophthalmoscope remains our major tool in the diagnosis and treatment of retinal disease. That’s the contribution he’s best known for and will continue to be remembered for, no matter how many other steps we take in the future.

**Conclusion**

Were it not for Dr. Schepens’ tireless dedication to improving our ability to diagnose, understand, and manage retinal diseases, it’s hard to imagine where we would be today. Our successes rest on the shoulders of giants like him. We learn history not only to avoid the mistakes of the past, but to build on the successes of our predecessors. Thank you, Dr. Schepens.

**Reference**


**For further reading**


**Financial Disclosures**

Dr. Chisholm – None.

Dr. Duker – ALLERGAN, INC: Consultant, Honoraria; AURA BIOSCIENCES, INC: Advisory Board, Honoraria; BAUSCH+LOMB: Consultant, Honoraria; CARL ZEISS: MEDITEC: Consultant, Equipment (Department or Practice); CODA THERAPEUTICS, INC: Consultant, Honoraria; ELEVEN BIOThERAPEUTICS: Board of Directors, Stockholder, Other Financial Benefit, Stock; HEMERA BIOSCIENCES, INC: Founder, Stockholder, Stock; IRONWOOD PHAR-MACEUTICALS, INC: Consultant, Honoraria; LUMENIS LTD: Consultant, Honoraria, OCLUDYN, INC: Consultant, Honoraria; OMERO CORPORATION: Consultant, Honoraria; OPHTHOTECH CORPORATION: Consultant, Stockholder, Honoraria, Stock; OPTOVUE INC: Consultant, Equipment (Department or Practice); PSIVIDA: Board of Directors, Salary, Stock; SANTEN PHARMACEUTICAL COMPANY, LTD: Consultant, Honoraria, THROMBOGENICS, INC: Consultant, Honoraria; TOPCON MEDICAL SYSTEMS: Consultant, Grants.

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