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SCOPE

SO Highlights From AAO 2023

By John R. Stechschulte, MD

AAO 2023 was held in San Francisco and marks my 30th Academy annual meeting. Each year I plan my meeting schedule around educational content, catching up with friends and enjoying what the host meeting city has to offer. The meeting was well attended and stands as the biggest event in ophthalmology. My colleagues and I found the city and the weather to be very comfortable. Future Academy meetings, "Where All of Ophthalmology Meets" will be held in Chicago in 2024, Orlando in 2025, New Orleans in 2026 and Las Vegas in 2027.

If you registered for the meeting in person or virtually you can still watch all portions up until March 1st. Virtual meeting registration is open through January 31, 2024. Consider watching the sessions, described below, that were specially designed by the Senior Ophthalmologist (SO) Committee for our colleagues.

Our key SO committee symposium concerned an extremely important issue, Professional Longevity. The symposium was created by SO committee member Stephen Obstbaum, MD and SO Committee chair, Samuel Masket, MD. The topic was stimulated by *The New York Times* guest essay entitled "How Would You Feel About a 100-Year-Old Doctor?" The central question was "What are the Essential Elements in Our Approach to This Emerging Challenge?"

2023 Artemis Award recipient Grayson W. Armstrong, MD, MPH pictured (center) with Daniel Briceland, MD, 2023 Academy President and Samuel Masket, MD, SO Committee Chair.

The panelists included Alfredo Sadun, MD, PhD, who presented a real example of an anonymous possibly cognitively impaired ophthalmologist. Flora Lum, MD explained that the Academy's membership is aging such that 37% of US ophthalmologists are over 60 years of age while 64% of them remain in clinical practice. John Irvine, MD posed this question – "Do aging physicians represent an ethical dilemma"? Paul Lee, MD, JD described employer groups utilizing written policies concerning physician competence. American Board of Ophthalmology CEO George Bartley, MD proposed self-regulation, using periodic evaluation, with oversights and ABO involvement. Tamara Fountain, MD discussed practice transitions. Overall, it was a fantastic session with many questions from the audience. Members may likely see more around this topic at future meetings.

It was a great honor for our SO committee member, Eve Higginbotham, MD, to present the 2023 Jackson Memorial Lecture during the opening session. Her superb

talk was entitled "Striving Toward Better Eye Health Beyond our Waiting Rooms". The three themes of her lecture were the clear documentation of the social determinants of health, an evidence-based argument establishing the value proposition for eye and vision health as a population health imperative and the need to understand the ancestral contributors to the burden of disease and risks for individuals and specific populations. Dr. Higginbotham also led a panel discussion in the learning lounge on "The Value of Serving on Boards". It was very well attended, and the participants were amazing. I continue to be impressed by Dr. Higginbotham and we are lucky to have her as a colleague, committee member and friend.

The SO Committee hosted a very enjoyable SO Program: An Ophthalmologist's Love Affair with Wine and Sensory Diversity featuring two outstanding speakers. The first was Ivan Schwab, MD concerning "Evolution of Specialized Senses and the Eye". He unveiled the evolution of three specialized senses that allow only animals to see in ways that humans cannot. Bees use electroreceptors so they don't return to the same flower. Herons with the sense of light polarization can capture prey that is just under water. Pit Vipers use their infrared to sense the warmth of small animals even when hidden under leaves. David Hardten, MD, an ophthalmologist from the mid-west and winemaker then described his "Love Affair with Vineyards and Wine". While enjoying his talk the audience sipped four varieties of wines. Those attendees holding the winning raffle tickets received a bottle of award-winning Cabernet from Hardten Family Vineyards. At the close of the meeting, the YO committee presented the EnergEYES Award to Tamara Fountain, MD. She has been an active member and leader of the Academy and now a member of the SO Committee. We are proud of her and love having her on our team.

John Stechschulte, MD and Mashaw Mansoor, MD during AAO 2023.

The SO Committee partnered with the Young Ophthalmologist (YO) Committee, and I had the pleasure of co-chairing the session with YO Committee chair, Andrea Tooley, MD. Our joint session "Start, Stop, Continue: Lessons From a Lifetime of Surgery" consisted of both SOs and YOs who described how or why they did or didn't make changes to their surgical practices. We are grateful to all the speakers for sharing their wisdom, specifically - Tom Oetting, MD, Robert Bailey, MD and Ruth Williams, MD who spoke as SO's, however, their surgical hands, brains and hearts remain young.

Dr. Masket joined the Academy's Committee on Aging chair, Simon Law, MD who developed the joint Symposium titled "Function, Frailty and Fatality in Care for Aging Patients". The collaboration between both committees has been going on for years and will continue with relevant, mind-provoking content.

On behalf of the entire SO Committee, Dr. Masket presented the 2023 Artemis Award to this year's recipient Grayson Armstrong, MD, MPH. Dr. Armstrong was honored and humbled by the award and received recognition throughout the meeting. He is so deserving as his work in telemedicine is outstanding.

Eve Higginbotham, MD gives the Jackson Memorial Lecture during the opening session.

Between courses, I had the wonderful experience of speaking to YO members on the value of mentoring. Earlier this year, I was matched to Mahsaw Mansoor, MD, a University of Iowa Ophthalmology Resident who participated in the Academy's Advocacy Ambassador Program. I shared my pearls on the seven roles a mentor can play in their lives - Sponsor, Advisor, Coach, Role Model, Confidante, Teacher, and Agent.

If you want to mentor a resident or play an active role in the Academy, please plan to attend the AAO Mid-Year Forum in Washington, D.C. beginning on April 17th, 2024. As **ophthalmologists** who remain **engaged** in our great profession for a **lifetime**, the spring meeting enables each of us to share our ophthalmic wisdom, advocacy skill, and practice management experience with the next generation of ophthalmologists.

AAO 2023 proved to be a great meeting experience. I look forward to next year's meeting in Chicago where the SO Committee will continue to develop impactful programming with our SO colleagues in mind.

From the Editor's Desk

Why Sex?

By Alfredo A. Sadun, MD, PhD

Sex: the pleasure is momentary, the position ridiculous, and the expense damnable.

— Lord Chesterfield, 1694-1773

OK, I admit that I chose this title knowing that it had the dubious quality of being click bait.

But it's accurate as well. I want to discuss sex, partly from the point of view of personal and social costs, but mostly from the point of view of biological costs. If it's so costly, natural selection must have also found it very useful. What is that all about?

In fact, this is an important subject for serious science. Nick Lane, PhD, at University College London, is an evolutionary biochemist who uses his deep understanding of our cellular biochemical pathways, and more importantly the genetic coding for these pathways, as clues to our evolutionary path. He uses the DNA nucleotide sequences as fossils. Genes have variations called polymorphisms, that may be adaptive modifications, but also are often of no significance. Yet the polymorphisms can tell us how closely species and phyla are related. They can identify all sorts of "missing links." So, knowing how similar our genes for cellular housekeeping are, say compared to a chimpanzee, we know we parted ways 6 million years ago.

We can do the same with humans and a rat or a fruit fly and learn where in evolution we diverged. Lane writes that there are 10 amazing inventions that eukaryotes have made. Eukaryotes are complicated cells with nuclei and one of three types of life on this planet. The other two are archaea and bacteria which are called prokaryotes. We, as eukaryotes, are unlike bacteria, but so are amoeba, fish, fungi, trees, and even algae. And one thing all of us eukaryotes have in common, in addition to a nucleus and organelles, is sex. Several other things we eukaryotes have in common is aging and death. But that is a story for another time. Let's talk about sex. Sex is expensive. And I don't just mean dinner, a show and flowers.

For we know, strictly biologically, that sex comes with great costs. Sex is a very efficient way to transmit disease. Yes, we know that some diseases spread by contact (like in handshaking) or by respiratory means, such as with COVID-19. But some awful diseases pretty much only spread through sex. With the temptation so great, sexually transmitted diseases have been the demise of many famous men, such as King George III (some say his madness from syphilis is why we needed to have the American Revolution), philosopher Friedrich Nietzsche and composer Robert Schumann. Then there was gonorrhea that took down many an army and, more recently, AIDS that has led to the tragic deaths of 40 million people at the end of the 20th century.

But biologists would say that the most impressive costs from sex is a not so hidden tax on living. In terms of psychology and sociology, we know that the average young adult spends a substantial portion of his/her resources in dating and an inordinate amount of time in fantasizing and planning. And if it doesn't go well, there's not just wasted resources but a great deal of loneliness, anxiety and depression. More biologically, the cost for a woman to have a pregnancy, a long period of lactation and then child caring, is monumental. Furthermore, until recently, childbirth caused maternal mortality levels of up to 10%. This is precisely why women have to be very discerning, though this is perceived by some men as leading to the unfair asymmetry of courting. As the writer H.L. Mencken said, "In the duel of sex, woman fights from a dreadnought and man from an open raft." She has to, as she has so much more at stake.

The flower subcontracts some of its sexual functions to the hummingbird.

Let's begin with the basics. Sex starts with mitosis and then proceeds to miosis where in forming one gamete you toss out another set of perfectly good chromosomes. How wasteful. You go from two to four sets of chromosomes before you reduce to one and make a gamete. Then one gamete meets another, and you're back to two but with a shuffling of the deck.

Imagine if humans could make clones. Firstly, everyone could reproduce directly (men as well as women), thus doubling the efficiency of reproduction. Secondly, all this investment in courtship and mating could be omitted. And finally, the costs of divorce attorneys and giving away the house to make things right, could be avoided.

But it is probably even worse for other organisms. Rams must butt heads; stallions bite and kick; peacocks invest in a beautiful huge tail that makes evading predators quite difficult; and baboons, slash and even kill, all for the privilege of female access. Plants pay as much for their version of sex. A flower must be made with form and brilliant color and odor to attract the right insects (Figure). And these same insects must be paid off with sweet nectar, which is mostly glucose, a premium currency of life.

And yet almost every form of life, excluding bacteria and archaea, uses sex. You might ask, if a single cell eukaryote reproduced asexually, and made clones of itself, wouldn't it be spared all this expense, and wouldn't it out-compete its sexual neighbors? Apparently not as we've had over 2 billion years to try. OK, there are a few exceptions, like the common dandelion that can reproduce without sex, but even these exceptions prove the rule by reverting to sex whenever conditions allow.

The naturalist Charles Darwin had some of this wrong. He too noted the universality of sex and its obvious drawbacks, and he too spent a lot of time pondering its advantages. Keep in mind that Darwin was doing this before genes were known. Yet he understood heritability, and he knew some factor was going to pass from parent to child that influenced form and function in the next generation. He thought sex was to provide hybrid vigor. This was a well know phenomenon that basically came down to the problems of inbreeding and the extra strength and rigor of "mutts." But hybrid vigor can be achieved by avoiding inbreeding, which can be circumvented altogether without sex.

You remember the famous joke when the playwright George Bernard Shaw is propositioned by a beautiful actress who says something like, "Imagine if we had a child. It might have my beauty and your brains." And Shaw reputedly replies. "God forbid! What if our child had my beauty and your brains!"

Sex roles the dice and the outcomes can vary. If we reproduced as bacteria do, which is to say by cloning, there would still be the role of mistakes in the form of mutations that would give evolution something to work with. But it is sex that shuffles the deck of known cards (genetic variations) which allows each offspring in the next generation to improve or to decrease the value of each hand. This possible net negative outcome would argue against the value of sex.

However, overall, shuffling the deck must have great value. The most obvious thing is that with sex you can evolve more rapidly. But more importantly, you can explore genes, not just one at a time for their fitness, but in various combinations. In fact, genes and their proteins are doing lots of functions and analysis of a single mutation should consider much more than one effect. It's a systems' analysis of many component parts. In fact, that's where the game of trial and error, where errors get eliminated by natural selection, plays out the most.

Novel mutations are rare and less of a driver of evolution. Mutations often need another mutation to do any good. It's sexual reproduction that brings together both mutations in ways that might be very good or very bad. But sometimes, sex combines two broken parts to produce something cool. Without sex, the degenerating parts accumulate, especially in complex organisms. As a consequence, complexity is unsustainable, so it's no wonder that only bacteria and archaea, the simplest forms of life, can do without sex.

Finally — and I like this argument the best — sex gives us the immediate opportunity to create variations that can exploit different niches in our environment. One offspring grows best in the shade, another in the sun. This would allow for better exploration of new environments, toleration of fluctuating environments and ecological development where different members of a species actually provide some form of mutual advantage to each other. One man's trash is another man's treasure.

For parasites, this type of advantage is very obvious. Malaria fights off the human immune system by covering itself with antigens as an invisibility cloak. By the time the antigens are recognized as foreign and the immune system is primed to attack, the malarial parasite produces new antigens. By combining components from the two parents in various protein permutations, the parasite can go on almost indefinitely, thus always keeping a step ahead of our immune cells. In a similar way, we make antibodies by mixing and matching polypeptides that derive from both parents. Our ability to mount an effective resistance to COVID also derives from all the combinations we get from sex.

For us humans, sex and the variety it produces certainly applies to our children, who will tend to develop different personalities and proclivities. Psychologists have shown that children vary much more than would be expected randomly. If one is bold, another is careful. And that surely applied to my own household with my three kids whose personalities ended up as different as I could imagine (though their characters remain similar) despite what I thought was a pretty homogenous upbringing.

These are just some observations that we, as old-timers (Senior Ophthalmologists) have made with the perspective of seeing sex from many angles. There are others. "You have to know that an older man cannot hang from a chandelier." — Dr. Ruth.

Sexual reproduction is universal for eukaryotes. From single-celled yeast to towering trees to complex animals, the process of reproduction usually depends on two parents. Sex promotes more diversity while reducing the impact of deleterious mutations, thus promoting adaptation including innovation and resilience.

The fact that sex was discovered about 2 billion years ago and has been adopted and maintained by almost 100 million species on our planet means it was not only a good idea but fundamental and necessary to avoid extinction.

The fact that we humans invest, develop and even obsess over sex makes more sense when we appreciate its value to the exquisite gene combos we create with it — our children. But we must also admit that sex spices things up and helps serve a rich cultural environment which makes life much more interesting. Sometimes, you just have to look at this weird thing called sex and laugh. Sex may also be nature's joke on us.

Retirement and Reinvention

By Marilyn Baird Mets, MD, MS

Let me begin with my plug and with full disclosure: I have published my first novel, and it is available for sale on Amazon.

Now, onto the big question: how to live the rest of my life. I reiterate. This is a REALLY BIG question. I have lived already at least 80% maybe 90% of my life. The fact is, no one knows, not me, nor anyone else. And I haven't had to make a decision about my life's direction in half a century.

There were other goal-guided decisions in our early careers. My husband Laurens and I have two full-time, different academic professions. He is a molecular biologist and a University of Chicago professor currently working on alternative energy through a microorganismal system. I am an academic pediatric ophthalmologist. We had to figure out how to move around the country and still be in the same place at the same time throughout my training.

We met in Boston after I graduated from Wheaton College. He was getting his PhD at Harvard, and I was at the Harvard School of Public Health. Then, he had a position at the National Institutes of Health, so I applied to two medical schools, both in Washington, D.C. I went to George Washington University for three years and was able to trade most of my fourth year with a student from Case Western so that I could live in Cleveland with my husband who had been offered a faculty position at Case. I trained at the Cleveland Clinic for my internship and residency. We moved to Columbia, Md., for my ophthalmic genetics fellowship at Johns Hopkins with Irene H. Maumenee, MD, followed by my pediatric ophthalmology fellowship with Marshall Parks, MD. Laurens spent the time at the Carnegie Institute at Hopkins. From Columbia, we could commute to both Baltimore and Washington, D.C. Following this, we settled in Chicago, a big enough city for both of our careers, where we have been for the last 43 years.

Marilyn Baird Mets, MD, MS

We have three children, three wonderful children. One was born in Maine (Lancaster course, I took one week off, and my fellow residents taped the lectures) and is a pediatric ophthalmologist in Colorado Springs, Colo.; one born in Cleveland is a molecular biologist at a startup in the Bay Area; and one born in Chicago, an RN and MPH who stayed in Chicago at the American College of Surgeons. Now we are blessed with five grandchildren.

Back to the issue at hand, I repeat, there have been many decisions to make all along, but not this decision. How to live the rest of my life? That is, my life after my career in academic medicine, my building a division, my friendships with my colleagues, my surgical time, my time taking care of children's eyes in so many other ways, my long-term relationships with my patients.

How do you let this go? When do you let this go? Should you let it go at all? We don't live forever. No one can be a microsurgeon forever. For me, I can't linger. I'd rather leave at the peak or close to it when things are humming. Of course, not everything was

humming. There were some difficulties. The corporatization of medicine. Working as an employee not a physician of the hospital as a "provider" was offensive. It was clear that the direction medicine was going was not only negative for physicians, but also for patient care, for health care. Then COVID-19 reared its ugly head.

A transition was inevitable. What do I do when I have transitions coming? I read, and I read. The stack of books on my bedside table grows and grows and topples. Sorting them from the scramble, I note one in particular that I like, "Your Life Calling: Reimagining the Rest of Your Life" by former television host Jane Pauley. This is less an endorsement and more a statement of fact. I like Jane Pauley, and I like her book.

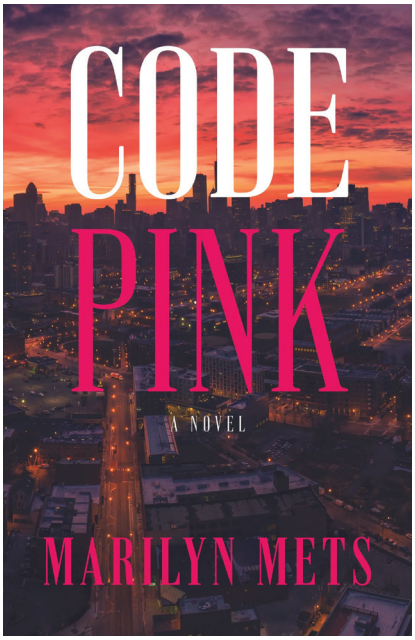
On to action. I never jump into cold water. I ease in. I envy those who can jump, but I know myself. I ease. So, I set up a staging process to step out of what I consider was my great privilege to enjoy my fantastic profession as a pediatric ophthalmologist. Daunting though it was, here it is: cutting back on intraocular surgery and then extraocular surgery, then one year of half-time work, then one year at one-fifth time and then full retirement.

So, at that point, my colleagues and the staff had a party, a lovely party, a "rounds" party. I had said I didn't want a party, so they planned rounds. We had patient presentations, just like our usual rounds. Good discussions were had as always. We took photos. Everybody smiled. Then, they put a tiara on my head that said "Retired," and I was.

Back in my quiet house, the specters began to appear.

Respect. Physicians are generally respected members of society. Do you give that up when you retire?

Impostor syndrome. As physicians, we, or at least most of us, all have this to some degree at some point in time. Almost all of us can remember that first day in the emergency room. A trauma patient arrives and the thought flashes through our minds. "This guy is really in trouble! He needs help! Where's the doctor?"



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This syndrome applies especially to women. Now, less so, but in the past, certainly, we were not supposed to be there wearing a white coat in the first place. We were supposed to be nurses. Although now that we are all "providers" (I hate that designation), the waters get further muddied.

Identity. Who am I? Dr. Marilyn Mets, Marilyn, wife, Mom, Grandma, author. Your life is calling. You'd better answer the phone. Time to pull it together.

There are broad goals that need to be addressed. Attention should be paid to mind, body and soul. Mind and body are pretty obvious, soul less so. I'm not speaking in a religious sense but I think we can all agree that mind and body aren't enough to describe the human experience. There is something else; in life and for my purposes, I'm designating the word "soul" to cover that "something else." We must nurture these three things.

There are tools for this purpose.

The first tool is **purpose**. We each need a sense of purpose to feed our minds and souls. Taking care of patients has provided that. Now we need a replacement.

We also need a **schedule**. Our schedules have been very full with patient care. As a matter of fact, most of us are pointed from room to room, all day, by our staff. Now, we need to organize our time on our own. Our minds are so used to this that they require some kind of structure.

Exercise, bodies require physical exercise. We, of all people, know this. However, often we have been too busy to take proper care of ourselves. Now we must.

Our **minds need exercise** as well. Our profession has been providing this. Now, we're on our own. Social interac-

tion. We humans are social beings. We need other people with whom to interact. Family and friends feed both our minds and souls, cherish them.

I have always wanted to write. I took a fiction writing course for physicians taught by Tess Gerritsen, MD, and Michael Palmer, MD, about 15 years ago. However, three children and an overflowing, full-time career was all I could manage. Now, in retirement, I can move forward with writing! My tool for purpose and exercising my mind has been writing my first novel, "Code Pink." It's a medical thriller about a Chicago medical student who becomes embroiled in a search for the culprits of a baby-stealing ring targeting under-privileged women. My goal is to entertain and inform with an insider's view of the challenges of coming of age in medicine, loaded in a medical thriller with a twist of historical fiction. It turns out, the process is complicated, more complicated than I imagined. There's the writing itself, editing with a developmental editor and a copy editor, getting on social media, making a website, publishing and marketing. Significantly more steps than I anticipated, but for the novice — me — it was a learning experience throughout, which is a good thing.

On to **body maintenance**. For me, physical exercise comes mainly in the form of pickle ball, which also provides **social interaction**.

Let's face it. If the sport that you like best is called pickle ball, then you can't take yourself too seriously which is probably a good idea in retirement. In pickle ball, if your opponents have 11 points and you have zero, you have been "pickled." Serious competition aside, when that happens, you go home and vent by writing a poem about them:

Power Couple

She with black hair
Dyed
Big, buxom, but buff
A big diamond.

He burly, bearded
Gruff and brusque.

Both

Banging away at the
Ball
Mercilessly.

Pickle ball
Power couple.

Heh, heh. Don't take yourself too seriously, but …

One more thing I've been stewing about lately, is uncertainty. It's out there and is compounded with additional worries, like death and illness, that are realities at my age. I spoke to my daughter who assured me that uncertainty has always been there, but I was too busy. My life was too crammed to notice it. Now that I have time for more existential thoughts, she encouraged me to develop another method for coping with life's unpredictability. Leave it to the next generation to get to the essence of dilemmas in short order.

So, you need purpose, exercise of mind and body, a schedule, social interaction and, as always in life, a sense of humor. On the upside, there's an immediacy about this retirement time. If not now, then when? Put aside delayed gratification to which we, as physicians, are particularly prone. This time is a refreshing rocket booster to decision-making.

One person's thoughts. Marilyn here, signing off for now.

Dr. Met's and her husband, Laurens.

Charles L. Schepens, MD (1912-2006)

By J. Sebag, MD, and Thierry Verstraeten, MD

What you leave behind is not what is engraved in stone, but what is woven into the lives of others.

— Pericles, Greek statesman (c. 469 – 429 BCE)

Charles L. Schepens, MD, was a very special man who was molded by his times, yet simultaneously shaped them.

By dint of the way he lived, Dr. Schepens exemplified leadership and heroism during a very dark period in the history of the world, traits which he manifested repeatedly later in life to markedly improve our field of ophthalmology. We can all marvel at the history he created through the power of his life and his story should serve as inspiration.

Born in 1912 just 30 km from the German border in Mouscron, Belgium, Dr. Schepens was the youngest of six children. He was ostensibly destined for a career in medicine, as his father was a family practitioner who died when Dr. Schepens was only 7. His three older brothers became physicians, and his two sisters were nurses. Interestingly, his first passion was mathematics, likely influenced by Jesuit teachers at Notre Dame de la Paix boarding school in Namur, Belgium. Nonetheless, he pursued medical studies at the University of Ghent, and after a student fellowship in the world-renowned Institute of Pharmacodynamics, headed by Nobel Prize winner Corneille Heymans, he graduated in 1936.

Charles Schepens married Marie-Germaine Van der Eecken, an accomplished artist known to all as "Cette". Dr. Schepens chose the field of ophthalmology, although he carried with him a penchant for mathematics that was critical to some of his major contributions to medicine. Remarkably, these important developments in the history of ophthalmology might never have happened, were it not for the extraordinary ways in which Dr. Schepens responded to the events of a horrifying time in the world.

Drs. Charles Schepens, Alice McPherson and Wallace Foulds.

Dr. Schepens began ophthalmology training in Brussels under Léon Hambresin, MD. While working at the prestigious Eye Institute of Professor H. Weve in Utrecht, Holland, his training was interrupted in 1940 by the sudden and unexpected German invasion, a violation of Belgium's neutrality. A member of the medical corps of the Belgian Air Force, Dr. Schepens' heroism during the war has been well-chronicled but is worthy of brief consideration.

When the Air Corps was disbanded, he joined the Resistance, fighting the Nazi German occupation. For two years his medical office in Brussels functioned as a mail drop for the transfer of secret documents. After two arrests by the Gestapo and alerted to another, he escaped to France where he took the pseudonym Jacques Perot and acquired an abandoned sawmill in Mendive, located in France's South Pyrénée mountains. Dr. Schepens not only transformed the mill into a viable business entity, but also a major conduit for the underground rescue of military and political personnel, as well as enabling other activities of the resistance to Nazi German occupation. Resolute to overcome hardship and prevail over the enemy invaders, Dr. Schepens became successful in this new endeavor.

When France (rather belatedly) acknowledged these achievements near the end of his life, Dr. Schepens at age 94 was awarded la Légion d'Honneur. It is the highest French order of merit (both military and civil), established in 1802 by Napoleon Bonaparte. In a 2004 interview for the Boston Globe, Dr. Schepens reflected that "It was a wonderful life, you know," referring to the time he spent in the French Pyrénées with his wife Cette and their two young children Claire and Luc. Indeed, despite the dangers, he might well have lived his entire life there had it not been for another major intrusion caused by the war. Nearly caught again by the German Gestapo in July 1943, Dr. Schepens fled to England. He

Charles L. Schepens, MD

took this forced move to resume his work as an ophthalmologist.

At Moorfield's Eye Hospital in London, Schepens worked with Ida Mann and began his lifelong quest to improve the care of those afflicted with retinal disease. His initial major achievement, in 1945, was the development of the world's first binocular indirect ophthalmoscope. There is a story, perhaps apocryphal, that the prototype was made from pieces of metal he found in the rubble of a German buzz bomb that had struck Moorfield's. That prototype is currently housed in the Smithsonian National Museum of American History in Washington, D.C.

But the prospects to continue this work in England were not good, and in his words, "There was nothing left in Belgium to go back to." So in 1947 Schepens moved his family to Boston, where he was welcomed to the Howe Laboratory by David G. Cogan, MD. With the approval of E. B. Dunphy, MD, head of the Massachusetts Eye & Ear Infirmary, Dr. Schepens began what would ultimately become the world's first retina service. In 2003, Dr. Schepens was heralded by Belgium when during an international symposium he received the key to the city, awarded by the mayor of Bruges and was inscribed in the city's archive. In attendance were Professors Jean-Jacques DeLaey, Wallace Foulds, Gabriel Coscas,

Marriage of Marie-Germaine "Cette" Van der Eecken and Charles L. Schepens.

Charles L. Schepens, MD, inscribing his name in the city archives of Bruges, Belgium.

Peter Kroll and Ingrid Kreissig; Alice McPherson, MD; and other notable members of the international ophthalmic community.

Like so many immigrants to America, Dr. Schepens came with little but was determined to leave his mark. As the author of four books and 360 publications, recipient of every notable award bestowed upon an ophthalmologist, founder and first president of the Retina Society, Inaugural Laureate of the American Academy of Ophthalmology, and attainer of countless other achievements, it would seem that Dr. Schepens has indeed made every mark. His indirect ophthalmoscope is now used routinely throughout the world, and in France, it is referred to by many as "le Schepens." It is laudable, however, that he appreciated and often recognized the contributions of those who went before him.

Dr. Schepens was always quick to credit Hermann von Helmholtz, Jules Gonin, Marc Amsler, Henricus Jacobus Marie Weve, Hermenegildo Arruga and others. His childhood friend Oleg Pomerantzeff, who fled the Russian revolution in 1910 to immigrate to Belgium, attended the same Jesuit boarding school in Namur, Belgium and became an engineer. In 1962, Dr. Schepens invited him to Boston, where he was instrumental in perfecting a newer version of a binocular indirect ophthalmoscope designed to utilize the center of the pupil to illuminate the fundus and capture reflected light from the peripheral pupil.

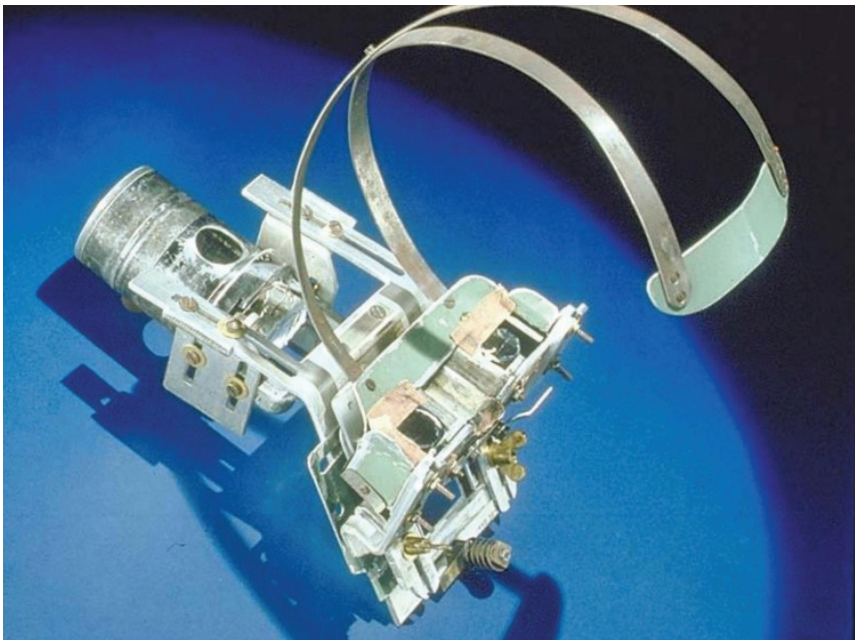
Dr. Schepens was also very proud of his relationships with the more than 200 fellows whom he trained, including notables such as Federico Grignolo from Genoa, Italy (his first fellow), Bob Brockhurst, Ed Norton, Harvey Lincoff, Bill Tasman, Alice McPherson, Ray Margherio, Morton Cox and many other renowned ophthalmologists. As a teacher of teachers, Dr. Schepens eventually taught indirect ophthalmoscopy and modern retinal surgery to everyone in the world. According to Harvey Lincoff, "Blindness from retinal detachment that was frequent before the emergence of Jules Gonin in 1929 has become rare since the emergence of Charles Schepens in 1950."

The markedly improved success rates in retinal reattachment that were realized as a result of "le Schepens" and a series of other developments in Boston for retinal detachment surgery reaffirmed Dr. Schepens' belief that better therapies can only be attained through improved basic science understanding of disease processes and, correspondingly, enhanced diagnostics aided by advances in technology. This conviction led to the creation of

the Eye Research Institute of Retina Foundation, which has diversified, expanded and now bears his name. The Schepens Eye Research Institute at Harvard has been and will likely remain the largest independent institute for eye research in the world, a living legacy to the basic biomedical and clinical eye research Dr. Schepens thought so important.

Through this great institute, legions of American and international eye researchers and surgeons can trace their professional roots, either directly or indirectly via their teachers, to Dr. Schepens. He has been quoted as saying: "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 that you had something to do with the fact that they are so successful, and the knowledge has been passed on."

The personal attributes of courage and resolute determination that were forged during his days as a leader in the resistance to German occupation not only played a significant role in his paramount contributions to ophthalmology but were also evident in his approach to patients. Any of his fellows can attest to the incredible determination he displayed while painstakingly performing surgery for many hours, even in his later years. Indeed, Dr. Schepens was a tireless worker who saw adversity as a challenge to overcome. Though he demanded much from his colleagues and co-workers, he was even more demanding of himself. Apart from his daily swim in the waters of Nahant, north of Boston, Schepens had no major hobbies and remained primarily committed to the significance of his work. Cette, his wonderful wife of 69 years, spoke longingly of the time when "One day I'll have him for me. Right now, he's for the world."



Prototype of the Schepens Binocular Indirect Ophthalmoscope. National Museum of American History, Smithsonian Institute, Washington, D.C.

However, in his 95th year of life, Dr. Schepens was still working until just before his death. Thus, it would appear that Cette's wishes were sadly never realized. But rest assured, madame, your sacrifice is appreciated on a daily basis by millions of grateful patients and their doctors throughout the entire world.

During his life, Dr. Schepens appeared outwardly as a simple, unassuming man. His demeanor concealed the great depths within, but to Dr. Schepens, cars were simply vehicles of transportation, not symbols of status. As his back increasingly caused him chronic pain, he left driving to Cette, who used a grey Chevrolet sedan for the daily commute between Nahant and Boston.

"A bed is a bed", as he said, so he always stayed at the Holiday Inn, eschewing fancier accommodations. But in 1999, he was selected by his peers as one of the 10 Most Influential Ophthalmologists of the 20th Century for his innovations and inventions that have so greatly improved ophthalmology. The self-effacing grace and wry, whimsical way in which Dr. Schepens often confronted important events were perfectly embodied when Dr. Schepens was awarded the highest honor bestowed in American ophthalmology: the Laureate of the American Academy of Ophthalmology.

On June 24, 2006, a service was held at the Memorial Church of Harvard University in Cambridge, Mass., to honor Dr. Schepens. Though ostensibly the event was organized to commemorate his passing, it was, in truth, to honor his 94 years of vibrant life, for a great man's death is made significant by the power of his life.

In the words of one attendee and former student, "[Dr.] Schepens had an unlimited amount of kinetic energy and seemed always focused, engaged, passionate, and driven. His logical thought processes, attention to detail, and formidable intellect are legendary. He was quite engaging, and never forgot anything about anyone he ever met. In his presence, you could feel the energy he radiated — the fire of so many things to do and questions to be answered. This energy was contagious and gave him the ability to inspire others with his passion and enthusiasm. He created in us a sense of the importance of the projects in which we were involved."

Indeed, the many who follow in his footsteps are a fitting legacy for the man who was molded by his times but was still able to shape them.

More than Meets the Eye: A Behind-The-Scenes Look at an Eye Chart Display

By Aubrey Minshew, MA

If you visited the Truhlsen-Marmor Museum of the Eye® in the last year, you may have seen a display case of historic eye charts and vision tests, a part of a yearlong display series of eyeglasses, vision aids and vision tests complementing the exhibit "Spectacular Spectacles."

In this display, the modern eye chart was almost instantly recognizable, but it also featured some lesser-known eye charts that might not look so familiar. One set of vision tests in this display tells us a great deal about the history of immigration to the United States and gives us an interesting behind-the-scenes peek at how museum collections and exhibits operate.

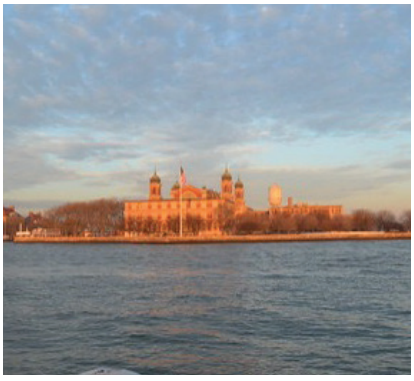
The objects I'm referring to were a set of four small vision charts printed in different alphabets, including two sets of symbols, one in an older German-style script and one in the Hebrew alphabet. These charts all featured carefully designed "optotypes," or letters specifically sized and placed for determining visual acuity. These eye charts, like the ones we use today, descended from the work of Herman Snellen (1834-1908), a Dutch ophthalmologist who developed the modern seeing eye chart in 1862. Of the many innovations that Snellen made in visual acuity testing, a major change was basing his optotypes on a specific external standard (a 5-inch arc) that others could adopt to create accurate standard eye charts.

Ellis Island in New York Harbor.

Snellen's visual acuity tests became widespread just before a period of unprecedented immigration to the U.S. In 1891, less than 30 years after Snellen published his work on optotypes, the best-known immigration station in America, Ellis Island, opened. In 1897 the U.S. government categorized the eye infection trachoma as a "loathsome or contagious disease" that required screening. At the same time, the U.S. Public Health Service wanted to filter out immigrants who were blind or had low vision because they were perceived as being likely to become wards of the state. To do their work, eye charts printed in the common languages of immigrants to the U.S. Charts were also printed using symbols or "tumbling Es" to test immigrants who either didn't speak English or couldn't read at all. Between 1891 and 1930, nearly 80,000, or 1% of immigrants seeking entry, were barred from the U.S. for medical reasons, including trachoma and low vision.

If you visit the National Museum of Immigration at Ellis Island in New York, you will see eye charts on exhibit, and you might think that they look very similar to the ones on display at our Museum of the Eye. You'd be right to think that because they're actually on loan from us!

Our collection contains a set of 13 separate eye charts, three of which are on loan to Ellis Island. Our relationship with the immigration museum began in 1988. The only significant break was for seven months after the devastation of Hurricane Sandy



Modern Ellis Island and the National Museum of Immigration.

Museum of the Eye

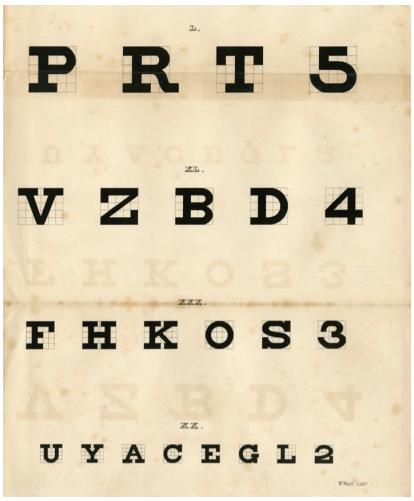
in 2012, which created a destructive tidal surge in New York Harbor. When the museum was ready, the Museum of the Eye was more than happy to lend the charts back to Ellis Island.

Behind the scenes, it is very common for museums to loan objects to one another for specific exhibits, but loans are a complicated legal and logistical process. Agreements need to be drawn up for all sorts of details, like the term of the loan, or who is going to provide insurance or care for the object while it's away from its home institution. Stipulations must also be made for physically moving the object from its home museum to the borrowing museum. With an object like the museum's eye charts, this process is relatively simple.

But imagine how complicated it must be to loan large objects, like large sculptures in art museums or even retired military planes for an air and space museum. During my career, I have witnessed the latter in person. When a nonfunctional airplane was requested on loan, both institutions worked together to carefully move the plane through a complicated system of container ships, trucks, and finally installing it in a building whose walls rolled up like a classroom map. Quite an experience!

So, the next time you visit the Museum of the Eye remember that small historical artifacts like eye charts often unlock a much larger story than you might expect. Also, when visiting any museum, consider how many exhibits are a mixture of objects from different museums and owners and what a complicated logistical system had to be developed behind the scenes to create the show that you're enjoying.

Practical Treatise on Diseases of the Eye, 1820.

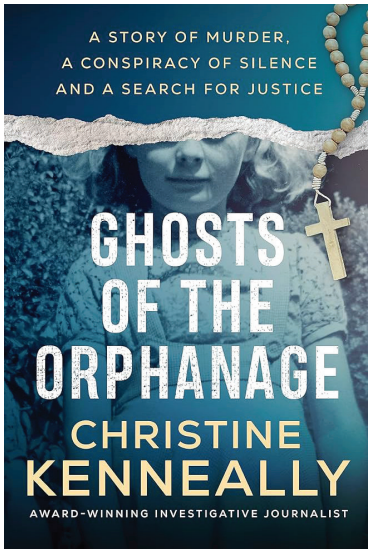


Eye charts in the Museum of the Eye galleries (left); Early Snellen optotype designs (right).

What We're Reading This Fall, 2023

Book Review Editor, Robert L. Stamper, MD

Senior ophthalmologists share the best of what they're reading this fall. Share what you're reading and send your review to our book review editor, Robert L. Stamper, MD, at scope@aao.org.



Ghosts of the Orphanage
By Christine Kenneally
Reviewed by Robert L. Stamper, MD

As a teen, I remember being horrified by the abuses of orphans depicted in Charles Dickens' "Oliver Twist."

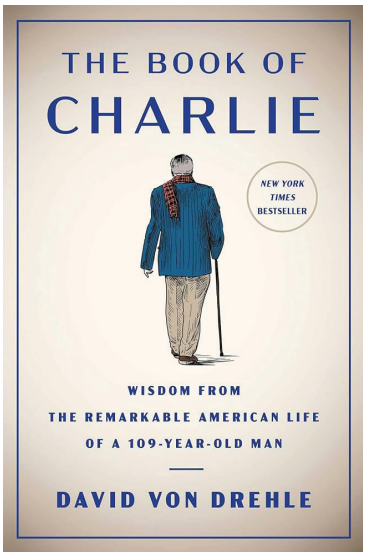
Based on my impressions from the movies, radio shows, early TV shows and the "he's not heavy; he's my brother" ads, I had assumed we, as a society, had moved way past the Dickensian portrayal of orphanages.

Author, Christine Kenneally interviewed survivors and some staff of mid-20th century orphanages from places as widely separated as Australia, Canada, England and the U.S. She scrutinized court and institutional records (often hidden or destroyed) and tells the personal stories of several of these children, now adults. She documents a litany of physical, sexual and mental abuse. Sometimes the extent of the cruelty exceeded anything I could imagine.

Often these institutions were run by religious orders but not always. Children who complained were brutally punished. Escapees were hunted down and, following their capture, occasionally disappeared entirely. Children were expected to witness the punishments which sometimes resulted in serious injury or death. Children who survived often suppressed the scenes of brutality to themselves and others — usually unable to speak of them out loud even as adults. Those who did complain were not believed. The nature and extent of these crimes were deliberately covered up by the higher-ups akin to what happened with clergy sexual abuse.

Often these institutions were run by religious orders but not always. Children who complained were brutally punished. Escapees were hunted down and, following their capture, occasionally disappeared entirely.

The book is well-written and impeccably documented. It is not easy to read; however, because this is not ancient history or fiction, we should all be aware of what can happen to a society who turns a blind eye to those less fortunate.



The Book of Charlie: Wisdom from the Remarkable American Life of a 109-Year-Old Man
By David Von Drehle
Reviewed by J. Kemper Campbell, MD

Rarely does a human live 109 years. Rarer yet does a gifted writer have the opportunity to chronicle that individual's biography firsthand. Rarest of all is a book reviewer fortunate enough to discover this gem of a book and recommend it to future readers.

"The Book of Charlie" by David Von Drehle provides exactly that Russian-nesting-doll type of experience. The book's titular Charlie is Charles White, MD, born in 1905, who became a pioneer anesthesiologist in Kansas City and died as author Von Drehle's neighbor in 2014.

This reviewer will not interrupt an old man's reminiscences by relating any of the fantastic experiences of his adventurous youth. Suffice it to say that Charlie seems to be a person who could be the product of a marriage between Indiana Jones and Auntie Mame.

Charlie's life mimics two of the reviewer's favorite movies based on stories by F. Scott Fitzgerald and Winston Groom: "The Curious Case of Benjamin Button" and "Forrest Gump." His sage advice for living a fulfilling life while

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attaining the span of Methuselah is certainly worth pondering.

Author Von Drehle is an editor and columnist for The Washington Post. He moved his family

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to a staid suburb of Kansas City in 2007 and became acquainted with his 102-year-old neighbor.

Through years of friendly conversations, he gradually absorbed the wisdom Charlie had painfully accrued and wrote the book to pass along this knowledge to his own children.

Von Drehle is a facile writer, and the anecdotes flow seamlessly with pertinent references to writers as disparate as stoic Roman emperor Marcus Aurelius, psychiatrist Viktor Frankl and "Game of Thrones" author George R.R. Martin strewn at appropriate intervals.

This slim book, without photos or illustrations, reads like a fascinating magazine article and could be finished in one sitting. However, Charlie's lessons would be better savored slowly, and multiple readings would be preferable.

Babi Yar
By Anatoly Kuznetsov
Reviewed by Samuel Masket, MD

Babi Yar is a large ravine in the outskirts of Kiev, the present-day capital of Ukraine. But it is also a euphemism for the "unimaginable horrors of war" that plagued the people who lived in the vicinity when the Nazis invaded in 1941, during the early days of WWII.

In that location the Nazis machine gunned 34,000 local Jewish residents in very short order, in fact, less than two days. Later they would execute Romas, prisoners of war, partisan fighters, dissident citizens and even the local soccer team for defeating the German team. Young women were physically abused and then bludgeoned to death in the ravine. The rat-a-tat-tats of machine gunfire seemed to go on 24 hours a day and unendingly.

Two years later, as the Nazis were being driven back from the region by the advancing Soviet Army, the Germans tried desperately to cover up their acts by having prisoners dig up the bodies and incinerate them. Because the prisoners were underfed and horribly overworked, they either died or were murdered on-site to prevent their story from being told. However, at the very end of the German occupation, a 300-prisoner uprising occurred;

The book was written from the diaries, hidden notes and viewpoint of the author who was a 12-year-old when the Nazis first occupied the area. We learn much about the marvels of his survival during the two years of occupation.

only 13 survived. Nonetheless, those few gave testimony to the events at Babi Yar. Make no mistake, this is a very difficult, albeit truly enlightening book to read.

The ravine, although central to the book, is not the entire story. The book was written from the diaries, hidden notes and viewpoint of the author who was a 12-year-old when the Nazis first occupied the area. We learn much about the marvels of his survival during the two years of occupation as well as the general history of the region from the czarist era, through Stalinism and the war years. Starvation was always rampant.

Kuznetsov, under the pseudonym A. Anatoli, first published this memoir in Russia in 1966

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and then defected to the United Kingdom in 1969. In the current version, it is interesting to note that there are portions in bold type that were edited out by Russians censors, and there are other segments in parentheses that were added later after the author's defection. Seeing the world through the eyes of a 12- to 14-year-old boy resourcefully living in a virtual hell creates indelible images for the reader.

Finally, there is an important parallel to some current events. When the Nazis warned all local households to get rid of existing Soviet publications, the author's mother said to him: "You have your life ahead of you, so just remember that this is the first sign of trouble — if books are banned, that means things are going wrong. It means that you are surrounded by force, fear and ignorance, that power is in the hands of barbarians."

Transformer: The Deep Chemistry of Life and Death
By Nick Lane
Reviewed by Alfredo A Sadun, MD, PhD

I've always been very impressed by the books written by Nick Lane, a professor of evolutionary biochemistry at University College of London. Most of my Scope readers, like me, studied the Krebs Cycle in college.

But what I never understood, is that the Krebs Cycle can also run backwards. That makes all the difference.

Lane explains that evolution began with running the Krebs Cycle in what we think of as reverse. In that direction, it is very useful for making many of the building blocks needed for growth and development (and cell division). We eukaryotes have learned to run it on forward for more efficient energy production which works in connection with the mitochondrial electron transport chain. Various tissues use it forwards (like the brain) or backwards (like the liver) as needed most. Here, it gets pretty technical with biochemistry, but it's worth the effort for the stakes are critical.

As Lane says, "To understand this cycle of energy and matter is to resolve the deep chemical coherence of the living world, connecting the origin of life with the devastation of cancer, the first photosynthetic bacteria with our own mitochondria, the abrupt evolutionary leap to animals with sulfurous sludge, the big history of our planet with the trivial differences between ourselves, perhaps even the stream of consciousness."

I found this both amazing and illuminating. For example, I knew the Warburg effect, enhanced glycolysis that happens with most cancers. But I always wondered why cancer cells avoid mitochondrial respiration in favor of the less efficient use of glycolysis. Warburg said it was because cancers degenerate to more primitive chemistry. Which is sort of saying cancer cells mess up. Nonsense. Like all life, cancer cells are under selection pressure and evolve. They have the Warburg effect because growth and cell division favor cancer growth.

Energy production in the form of ATP is less important. In fact, too much ATP actually harms cancers, since ATP is the final product of several key growth pathways and having a lot of ATP around backs the reactions up and leads to less of the useful products.

For an in-depth dive into biochemistry, Lane does a fantastic job of keeping the book readable and, indeed, animated. Lane's excitement comes through. And

Lane explains that evolution began with running the Krebs Cycle in what we think of as reverse. In that direction, it is very useful for making many of the building blocks needed for growth and development (and cell division).

now I understand both aging and cancer a lot better. And my own work on mitochondria makes a lot more sense. Mitochondria are, as Lane reminds us, the 2-billion-year-old remnants of ancient bacteria that were taken into our ancestral cell as part of a biological symbiosis. Lane also reminded me that mitochondria do much more than provide our cells with energy.

They, and their maternally derived DNA, do a delicate dance with our nuclear DNA to control metabolism and help evolve us to adapt to changes in our environment and diet. And when this adaptation works less well, we succumb to the changes with accelerated aging and cancer.

Foundation News: The Orbital 2023: Gold Rush Was a Success!

By Gregory L. Skuta, MD

It was great to see our colleagues at AAO 2023 in San Francisco. I hope you all had safe travels to and from the annual meeting.

A SUCCESSFUL ORBITAL 2023: GOLD RUSH

The 20th annual celebration was a most dazzling event! The Orbital 2023: Gold Rush — the Foundation's most prestigious fundraiser — was held at the illustrious Westin St. Francis Hotel. Orbital Chair Christie Morse, MD, and her outstanding committee worked hard to curate a treasure trove of unforgettable offerings. Those who joined us in person bid on exciting items, from the AAO 2024 Chicago Meeting Package to the Sante Fe getaway, Kentucky bourbons and California wines.

We were delighted to celebrate Foundation leaders David and Molly Pyott for their outstanding support of the Academy, its Foundation and our beloved profession. Proceeds from the event will directly contribute to the Academy's Leadership Development Program. We also celebrated Grayson W. Armstrong, MD, MPH, the recipient of the Academy's 2023 Artemis Award, nominated for his success in improving health care access for underserved communities and lessening health care disparities through implementing telemedicine. It was a thrilling night!

Attendees pictured at the 2023 Orbital in San Francisco.

We hope to see you all in Chicago for the 21st Orbital celebration in October 2024.

MAKE YOUR TAX-SMART YEAR-END GIVING DONATIONS BY DEC. 31

As we say goodbye to 2023, we ask you to consider a year-end gift. Your generosity of a tax-deductible donation by Dec. 31 will ensure that the programs you count on as ophthalmologists are constantly evolving and innovating to create educational experiences that benefit you and your patients. Protecting Sight and Empowering Lives is not just a brand statement, but one we live out every day, thanks to your investment in your Academy. Continue to help us build a better future for our patients. Remember, you can now choose to make a monthly or quarterly recurring gift. Donate today.

YOUR LEGACY

It is so important to give back to your profession. With a planned gift, you can secure your legacy and help provide for the future.

Thank you again for your continued support of the Academy Foundation. I wish you all a delightful holiday season. I would appreciate hearing from members like you. Feel free to contact me anytime at gskuta@aao.org.

SCOPE
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P.O. Box 7424
San Francisco, CA
94120-7424

T: +1 415.561.8500
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