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SCOPE

William R. Green, MD: A Wilmer Eye Institute Legend

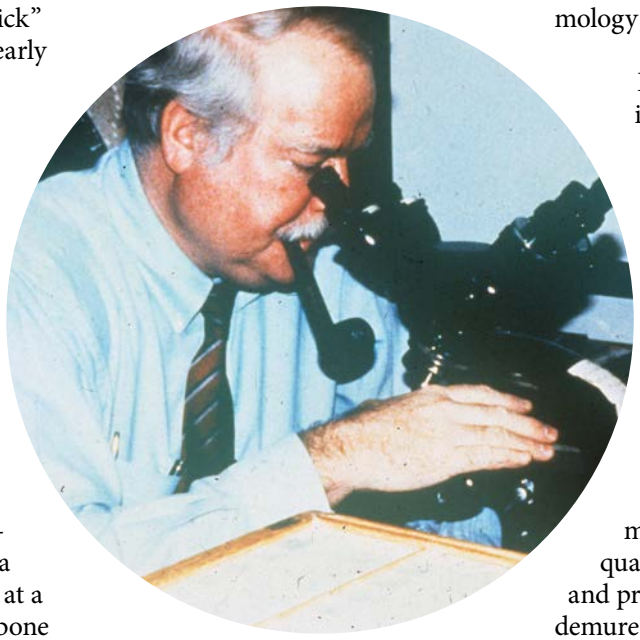
Hans E. Grossniklaus, MD

William Richard "Dick" Green spent his nearly 40-year career directing the Wilmer Eye Institute of Johns Hopkins Hospital, where he gained renown as one of the foremost eye pathologists of the 20th century. But his beginnings were modest.

Dr. Green grew up in Paducah, Ky., where he was the youngest of eight children. He had several jobs as a child and teenager, including a paper route, working as a short order cook and a laundry service and caddying at a country club. He played trombone in a high school band and was on his high school basketball team. He sang tenor at his church.

While attending Centre College in Kentucky, Dr. Green met his future wife, Janet Jones, and directed a band. After graduating in 1955, he attended medical school at the University of Louisville. In medical school he met Arthur Keeney, MD, who was influential in Dr. Green's career and undoubtedly encouraged Dr. Green to pursue ophthalmology.

After graduation from medical school, Dr. Green completed an internship at the New England Medical Hospital of Tufts University, attended postgraduate courses in ophthalmology at Harvard, the Howe Lab and the Retina Foundation in Boston. He then completed a two-year ophthalmology residency at the Wills Eye Hospital and was a postgraduate student at the National Institute of Neurological Diseases and Blindness (there was no National Eye Institute at the time). He then did a fellowship at the Armed Forces Institute of Pathology (AFIP) under the direction of Academy Laureate Award recipient, Lorenz Zimmerman, MD. To top off his training, Dr. Green did a residency in anatomic pathology at Temple University and became board-certified in both ophthalmology and anatomic pathology.



Dr. Richard "Dick" Green uses a microscope at the Wilmer Institute, Johns Hopkins Hospital.

Dr. Green spent a year heading the ophthalmic pathology laboratory at Wills and in 1968 became the director of the ophthalmic pathology laboratory at the Wilmer Eye Institute of Johns Hopkins Hospital. He had a forthright personality, a sound character, eschewed speculation and was not shy about making his opinions known. He maintained fidelity to these qualities in both his personal and professional life. He was not demure in the presence of almost anyone with the possible exception of Dr. Zimmerman. With that in mind, he was not afraid to disagree at times with the famous director of the Wilmer Institute, Edward Maumenee, MD, during grand rounds. This led to lively debates about various ocular conditions. I'm sure Professor Maumenee enjoyed and learned from these encounters.

Larger than life in every aspect, Dr. Green tackled his profession and personal life with gusto and enthusiasm. He was encyclopedic and made sure that his students were up to date on the current literature. Dr. Green was famous for carrying carousels of Kodachrome photos to his

William R. Green, MD

Dr. Richard "Dick" Green and his wife Janet at Dr. Green's graduation from the University of Louisville School of Medicine.

lectures and showing many examples of each condition he discussed. He authored over 700 articles in the peer reviewed literature and a number of book chapters.

Dr. Green's best-known chapters were the extensive, state of the art chapters on the pathology of the retina and choroid in Spencer's *Ophthalmic Pathology, An Atlas and Textbook*. These chapters remained the standard references for many years. He was the king of clinicopathologic correlations and his publications were cited for many years as the definitive articles about the pathology of virtually all diseases of the eye.

During his career, Dr. Green essentially accumulated his own dataset of eye pathology cases and he interrogated that dataset. He was in a unique position to do that as he was at the Wilmer Institute. The clinical tools at the time included fundus photography and fluorescein angiography. He used the pathology tools at the time, light microscopy and electron microscopy, to correlate the pathologic findings with the clinical findings in his large collection of cases. This better enabled understanding of many ocular conditions, including age-related macular degeneration and other retinal diseases.

Few had the capacity and tenacity to do this since Ernst Fuchs of Vienna who, in the early part of the 20th century, correlated fundus findings using the ophthalmoscope with light microscopic findings from his own large collection of enucleated eyes. In many ways, this was a metaphor for Dr. Green's life-commitment, steadfastness and hard work.

Dr. Green taught at the microscope. He had twice-weekly sign-out sessions with medical students, residents, and fellows. Occasionally practicing ophthalmologists would attend these sessions. He would sit at a two-headed microscope. Others in the room would have their own microscopes and descriptions of the cases they worked up. They would take turns bringing their cases to Dr. Green at his microscope, which was perched on a small, flimsy table. If there was a slightest motion while both he and the student looked at the slides, Dr. Green would jump back from his microscope, cry out as if he were poked in the eyes and glare at the student. This was his method of controlling the process. Things never got out of hand; Dr. Green was always in control.

At the time, Dr. Green was a voracious smoker, which was allowed in his laboratory. He would sometimes simultaneously have a lit cigarette and lit cigar in an ashtray while he also smoked his pipe. He usually had several cups of coffee during these sign-out sessions; he would press a button on the phone next to him, a beep would go off, and a technician would come in and fill up his coffee mug. Two beeps would summon his secretary, usually to modify a report or request some material. Dr. Green was a "gentle giant" who was kind and caring underneath his gruff outer coating. His fellows were most loyal to him and vice versa.

Dr. Green was a good cook. He would invite students and colleagues to his house, and either he or Janet would prepare a meal and enjoy it with his guests. I remember he introduced me to a true "Virginia ham"-one that is dried and salted. He also brought in dishes to the laboratory for his students.

One memorable meal with chili that Dr. Green made with chèvre (goat) meat. He enjoyed music and played the trombone in a band during his youth and was known as "Slide Bones Willie." He would play music at the end of the day in his office; this could be classical music or country and western. I remember Dr. Green playing Willie Nelson songs. Dr. Green would sing to the music himself.

Dr. Green was a notable member of the American Ophthalmological Society (AOS) where he served as president and was awarded the Howe Medal. He would dance with his wife Janet after the annual AOS banquets. He was an avid traveler and would be invited to various venues around the world and travel with his wife. He and Janet enjoyed restaurants, conversation, sightseeing and music/dancing during the trips. Dr. Green and Janet raised two sons and, in later years, had three granddaughters.

Dr. Green's legacy is his students. He taught the Wilmer residents for nearly 40 years with many fellows, and he was a great mentor and leader. The students learned that ophthalmology was more than cataract surgery: it was a branch of medicine and surgery. They learned to be honest, truthful, and ethical. These students took the life lessons of integrity, commitment and devotion that they learned from Dick Green with them throughout their professional and personal lives.

Dr. Green as a resident at the Wills Eye Hospital.

It is a testament to Dr. Green's legacy that many of his students have become leaders in ophthalmology themselves.

From the Editor's Desk

Wisdom

M. Bruce Shields, MD

What is the difference between knowledge and wisdom? I had the occasion to ponder that question during a recent group discussion and discovered that I'm not entirely sure of the answer.

However we define them, I guess it's safe to say that knowledge and wisdom are both qualities that are supposed to increase with age. And, if that's true, we seniors should have a respectable level of each.

The meaning of "knowledge" seems pretty straightforward. I suppose we could say that it is the accumulation of facts (most being presumably true) which we have acquired in our lifetime and have remembered and maybe even know how to apply properly. You can probably come up with a better definition, but it's something like that.

Defining "wisdom" doesn't seem to be quite so easy, although I'm pretty sure it's not the same thing as knowledge. It's a bit more nuanced, and I have had a hard time finding the right words for it. Maybe it's just one of those things that you know when you see it. And I do think I've seen it.

One of the most knowledgeable and wisest people I ever knew was my mentor, Morton Grant, MD. There is a legendary story about him, which seems to provide some insight into the meaning of wisdom. I can't vouch for its veracity, but it is certainly consistent with his nature and is a good story that makes a good point.

For whatever reason, Dr. Grant did not sit for his board examinations early on in his career (he was probably too occupied with advancing the frontiers of our knowledge in glaucoma). By the time he got around to it, he was already well recognized as a world leader in the field of glaucoma. Of course, he passed the written exam without difficulty and then presented to sit for his oral exams.

The examiner for the glaucoma section must have felt a bit intimidated by the stature of his examinee and probably also felt understandably deferential. At any rate, he began with a straightforward question like, "Please describe the pathway that aqueous humor takes in leaving the eye." Dr. Grant thought for a while and then in his inimitable manner said, "Gosh, I'm not sure."

Dr. Grant undoubtedly knew as much as anyone living at that time about the aqueous outflow pathways. But he also knew how much we don't know about the subject and, rather than simply regurgitating some incomplete facts, he stated the truth. And maybe that is the meaning of wisdom: to know (and admit) what we don't know.

As seniors, you and I are probably recognizing more each day how much there is that we don't know. And it would be nice to think that that recognition is a sign of our maturing wisdom. Or at least of a modicum of humility. And maybe those two go hand in glove: wisdom and humility.

I suppose, had we been paying attention in our younger days, we might have recognized these attributes of wisdom and humility in many of our seniors, as I did in Dr. Grant (albeit not fully until later years). And now the new younger generations may be watching us, and wouldn't it be nice if they could see at least a spark of those values reflected in our lives. What better legacy could we leave?

Kenneth J. Hoffer, MD: Helping Others See the World

M. Bruce Shields, M.D.

One of the joys of retirement for many of us is the opportunity to travel around this amazing world we live in. Having spent our careers trying to help others enjoy the gift of sight, we may appreciate more than most the good fortune of being able to see clearly the beauty that our world has to offer.

One of our colleagues, Dr. Kenneth J. Hoffer, has not only made it possible for thousands of people to enjoy better vision through his innovative contributions in cataract surgery, but he has gone yet another step further in helping all of us more fully enjoy what we may see as we travel about.

Dr. Hoffer grew up in Troy in upstate New York, but an internship at UCLA Medical Center in Santa Monica, Calif., convinced him that this was where he wanted to be. So, after his ophthalmology residency at Kresge Eye Center of Wayne State University in Detroit, he and his wife, Marcia, returned to Santa Monica, where he began his practice. He had not been there long before his interest in lens implants led him to perform the first phaco and IOL implant in the area in 1974.

Later that year, he founded the American Society of Cataract and Refractive Surgery (ASCRS) and, the following year, he established the society's journal, *The Journal of Cataract and Refractive Surgery*, for which he served as editor during its first six years. He also helped start the society's Annual Scientific Sessions, which he chaired for the first seven years.

His contributions to cataract surgery have included teaching as a clinical professor at UCLA and inventions of instruments, intraocular lens designs, surgical techniques and formulas for lens power calculations. He has had over 200 scientific papers published, along with 60 chapters in textbooks and his book, "IOL Power," was published in 2011. Now, after 45 years, he is "slowing down" and concentrating more on advances in IOL powers and the IOL Power Club, which he helped start in San Sebastian, Spain, with some international colleagues.

And that brings us to the second way in which Dr. Hoffer is helping others see the world.

If you are planning a trip to Europe this winter or anytime in the future, you may want to take a look at Dr. Hoffer's website, KHoffer.com. There you will find an extensive collection of excellent photographs and accompanying comments on travel throughout virtually every country and region in Europe, including Russia. It is a remarkable resource to help you plan your trip and a hobby to which Dr. Hoffer has devoted countless hours in its ongoing development.

It began in 1997, after the Hoffers' three children were grown and they took their first extensive European trip that summer. They went to Italy and spent three months driving around the country. It was such an enjoyable experience that they continued to take three-month European trips every other summer, with the most recent being to Greece and Bulgaria in 2017. In all, they have visited 30 countries in Europe, with Romania and Malta being the only two they have yet to visit.

EU Map of countries (in purple) that Dr. Hoffer has visited.

Kenneth J. Hoffer, MD

In the days before social media became popular, Dr. Hoffer began by keeping his "diarios" ("diario" is Italian for diary) of their travel experiences on his Palm Pilot. Each night, he would send his notes along with a few photos by AOL email to family, friends and colleagues, the number of which soon grew to more than 150. In 2003, he met an IBM employee who helped him start distributing his diarios on an IBM email, and this continued through 2005, following which the same friend encouraged him to launch his current website.

Dr. Hoffer and his wife Marcia in the Swiss Alps (2009).

Anyone who has fought with digital technology, which I guess is about all of us, can appreciate the challenges that Dr. Hoffer has faced.

"Fighting technology changes is a huge challenge," he bemoans. For example, there was the time that AOL shut down his account because they accused him of spamming, and he had to call them from Spain to get his account reopened. And, since all his photos before 2003 were nondigital, he has had to convert all of his slides to digital files.

Dr. Hoffer also had to alter his procedures over the years. He found he was spending too much time writing his travelogues during his journey, so he changed to taking photos and notes while traveling and writing when he got home. Working in Adobe Photoshop and editing is very time-consuming (one page can take up to three months), so he was not able to finish one trip before taking off on the next. His solution has been to write at least 10 pages for a new trip before adding one page to previous trips.

But he has persevered and reaped the rewards of his diligence. Although he doesn't have a counter to know how many read his website, he has many positive anecdotes, like the time he was doing a Google search for a building in Munich and was taken to one of his own diarios. Or the time an import/export dealer in China was searching for a person in France, who happened to be an acquaintance of Dr. Hoffer's, and found him on Dr. Hoffer's website.

So why does he continue? I suspect there are many reasons, not the least of which are his obvious love of traveling and his pleasure in helping others make the most of their travels. But Dr. Hoffer offers additional reasons.

"It will be great reliving these trips someday in a nursing home," he says with a smile. He also recalls a program on "60 Minutes" some 20 years ago in which several people over the age of 100 were interviewed, and it was noted that a common trait of each was that they had "something they needed to finish."

So, Dr. Hoffer's hobby will hopefully keep him going for many more years to come while providing each of us a way to enhance the enjoyment of our travels.

Dr. Hoffer and his wife Marcia in Paris (1997).

What We're Reading This Winter 2020

Book Review Editor, Thomas S. Harbin, MD, MBA

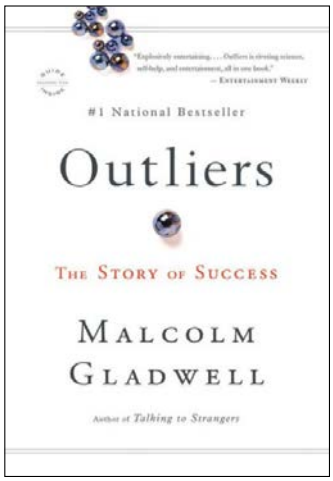
Senior ophthalmologists share the best of what they're reading this Winter. Share what you're reading and send your review to scope@aao.org.

Outliers
By Malcolm Gladwell
Reviewed by Marcia D. Carney, MD

"*Outliers: The Story of Success*," authored by Canadian journalist Malcolm Gladwell, outlines the lives of high achievers … the best and the brightest successful people and how they became successful.

Gladwell methodically dissects success whose core is task, ambition and intelligence. He also, however, outlines the needed ingredients to add to these core elements to truly become successful. He opens with a discussion of the strange pattern in hockey players' birth months and leaves you initially searching for a point, leaving you asking the question, "How can our birth month determine our destiny?" Eventually, he makes the point that cultural forces that determine success may initially be hidden.

Most of us live with the concept that success is derived from talent and hard work alone. In the book, Gladwell identifies several avenues to success in our work. He analyzes the lives of people, such as the Beatles, Microsoft CEO and co-founder Bill Gates and Bill Joy, the co-founder of Sun Microsystems, examining their circumstances as outliers, i.e., intelligence or hard work.



Although talented and motivated, these people happened to be in the right place at the right time. Gladwell also notes that although it is important to be intelligent, it is just as important what you do with the intelligence. In looking at these high achievers and musical achievers, Gladwell summarizes that success is affiliated to a particular task and to achieve mastery of the task or product of study, it takes 10,000 hours of work in that field to achieve mastery. He infers that success depends on intelligence, but also what you do with it in a minimum of 10,000 hours of dedication to learning or perfecting your tasks or knowledge.

The Beatles, for instance were talented musicians. However, they played long hours in Hamburg before exposure to the United States, thus perfecting their music style and content. Ability or talent is nothing unless combined with the 10,000-hour rule according to Gladwell.

Bill Joy had access to the university computer systems. It took him 10,000 hours to practice and write computer programs which are still used today. Gladwell points out that there is something "profoundly wrong with the way we make sense of success." We often attribute success to a rare and triumphant collection of individual qualities — talent, motivation, genius — when, in fact, success stories (successful outliers) feature people who are "the beneficiaries of hidden advantages, extraordinary opportunities and cultural legacies" that enable their success, as opposed to those whose path to success is more obvious.

Gladwell's purpose for writing "Outliers" was to inform readers on how successful people achieve success through the help of others, practice and opportunity. This may change the way that society views outliers as becoming successful people. They may not be outliers. Some of them just have the opportunity, timing and 10,000 hours to practice as keys to success rather than sheer talent.

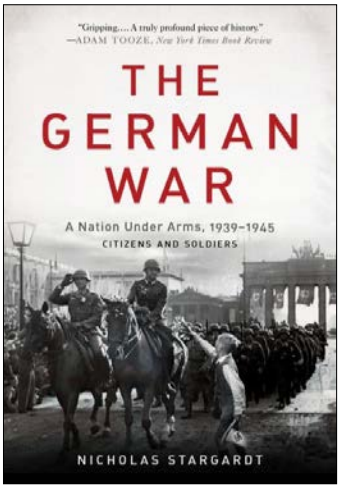
Born in 1963, Gladwell made a name for himself with other books on the best seller list as "Blink: The Power of Thinking without Thinking," and "The Tipping Point."

It was a good read. And for those interested, Malcolm Gladwell will also be the keynote speaker at the Academy's opening session during AAO 2020 in Las Vegas.

The German War: A Nation Under Arms, 1939-1945
By Nicholas Stargardt
Reviewed by Alfredo A. Sadun, MD, PhD

Why do we need another book about World War II? What would make it so compelling? Because this book describes the events of WWII from German eyes.

Stargardt, a professor of history at Oxford University, compiled a new collection of research files and, more importantly, presented a very humanized perspective that, to me, was very different and transfixing.



What We're Reading

The sources are German newspapers, German radio broadcasts, German historical files, German diaries and interviews with German soldiers and citizens. I was flabbergasted. I already knew about the main events, invasions, battles and bombings, but now I saw it from another perspective.

The German citizens did not regard WWII as a new war. For many of them, it was a continuation of World War I. Most Germans actually believed that theirs was a defensive war. Adolf Hitler and Joseph Goebbels had told them, and they believed it, that Jews and communists were designing to destroy Germany, and this war was their best defense.

Even the German invasions of Czechoslovakia, Poland and France were, from the German civilian perspective, preemptive strikes to prevent invasion from the British on the West or the Soviet Union from the East.

This book was not fun to read. It is well known that the war was a disaster and tragedy for much of the world and that this included Germany as well. That German soldiers, citizens and cities suffered greatly came as no surprise. But mixed with their anguish, this book provided voices of victimhood that shocked me.

Most Germans had become aware, but did not object to the German atrocities. For most, the realization came slowly, so they rationalized to avoid guilt. They accepted Hitler's vision and justified the atrocities Germany perpetrated as necessary to avoid their own victimhood.

At the end of the war, only a few Germans faced up to their own culpability, and they interpreted the bombings of Dresden and Hamburg as both logical and moral consequences. But most didn't see it that way. Hitler was widely admired by the German populace and the ideology of a world Jewish conspiracy was widely shared.

Stargardt's work frightened me as he showed how well Nazi propaganda resonated with the German people and gave them a feel-good narrative. It was that narrative of Germans as the true victims, that, for most Germans, justified their atrocities.

Today, we see how easily politicians stoke fear and hatred. But I now appreciate how easily politicians convince the public that they are the victims. From there it's not hard to obscure the moral boundaries. I was left with these somber reflections: 1) Propaganda is about harnessing feelings, not controlling thoughts; 2) He that sows the wind, shall reap the whirlwind.

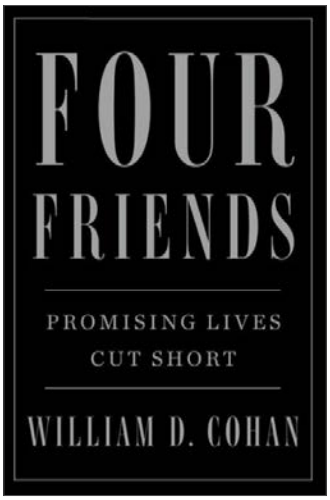
This book was an eye-opener and a cautionary note for our times.

Four Friends: Promising Lives Cut Short
By William D. Cohan
Reviewed by J. Kemper Campbell, MD

William D. Cohan is an investigative journalist and writer whose previous works involved institutions and members of the financial world. His latest book demonstrates he is equally adept at empathizing with flawed individuals.

"*Four Friends*" begins at the Phillips Academy in Andover, Mass., one of the nation's most elite and prestigious prep schools. Both former President George W. Bush and his father President George H.W. Bush matriculated at Andover and the school has funneled generations of primarily WASP students into Ivy League universities.

Cohan, who graduated from Andover in 1977, became interested in writing this book after he discovered one of his classmate's death in 1979 at age 39 was related to an automobile accident caused by another inebriated classmate.



Cohan then realized that four other schoolmates had died under tragic circumstances in their late 30s and early 40s before achieving the level of success which had been assumed in prep school.

One of the four was John F. Kennedy Jr. and another was a grandson of President Harry Truman. Cohan's adolescent ties to these men allowed him access to the intimate friends, family and business acquaintances which permitted his remarkably candid portraits of each man.

Each of these unfortunate individual's strengths and weaknesses are described unflinchingly, and their abruptly truncated and unfulfilled lives will linger with the reader. Though the details of JFK Jr.'s demise will be known to most readers, Cohan's glimpses of his lifelong struggle with fame elevate the book above the Kennedy voyeurism of tabloids. Interestingly, the fates of the lesser-known men become equally compelling in Cohan's hands.

Classic American writers, from Thornton Wilder to F. Scott Fitzgerald, have wrestled with the issue of whether divine intervention or karma plays any part in an individual's fate. Cohan simply allows readers to draw their own conclusions from his memorable book. The reader will now hope that Cohan will use his considerable talent to describe victims on the streets of Chicago.

What We're Reading

Three Laws Lethal
By David Walton
Reviewed by Thomas A. Harbin, MD, MBA

On Nov. 6, 2019, the Ars Technica website featured an article by Timothy Lee: "How terrible software design decisions led to Uber's deadly 2018 crash."

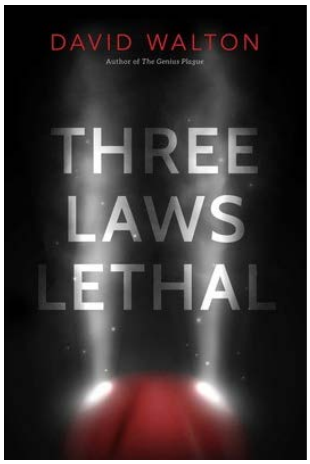
In it, the National Transportation Safety Board had a telling observation: The system involved in the accident "did not include consideration for jaywalking pedestrians."

How much thought have you given to the algorithms of self-driving cars? How much do you really know about AI?

If you enjoy science fiction and want to be challenged to think hard about self-driving cars as well as learn something about AI, this is the book for you. It's also a great story.

The book begins with a self-driving car turning away from a fallen tree into a motorcyclist, killing him but saving the two occupants of the car from a fatal crash into the tree.

What set of instructions wired into the car made it turn away? Did the car detect the fact that a motorcycle with a human driving it was in the way? Who



wrote the software and did any regulator review it? How much transparency is there in the current version of self-driving cars?

These questions and others we may not have thought about permeate the book.

The story goes from the "accident" to the tale of four graduate students who start an auto-driving car company with AI as the architect of their cars' systems. Murder, lawsuits, bitter disputes and danger from the cars spice up the story, keeping you turning the pages.

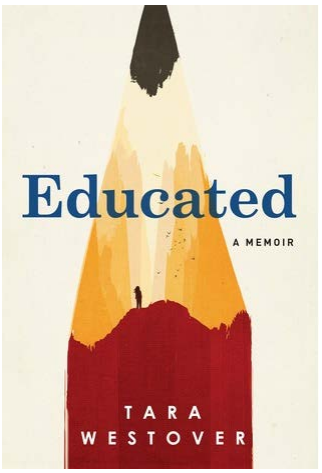
This book has stayed with me longer than most and makes me very hesitant to put total trust into a self-driving car. It seems to have predicted just the sort of tragedy discussed in the headline above.

Educated
By Tara Westover
Reviewed by Samuel Masket MD

Educated is a longstanding New York Times bestselling autobiography by Tara Westover, a young woman who was raised on an Idaho mountainside by devout Mormon parents who were also survivalists.

Like the people of Ruby Ridge, the Idaho community that was the site of an FBI siege in 1992, Westover's father had intense paranoia regarding the government, formal education, western medicine, hospitals, etc. Westover, who never attended school until she was 17 and lacked a genuine birth certificate, came to realize that there was a world external to hers when an older brother who left the fold encouraged her to seek a formal education.

The motivated author began a long and arduous path, self-educating at the outset, but eventually she was accepted to Brigham Young University, where it became evident that she knew nearly nothing of the "real world," given her



cloistered rearing. In her childhood environment her father "ruled the roost" with an iron hand and intimidated his children, forcing them to work the scrap and salvage yard that he owned, risking serious injuries that occurred all too often.

Westover was also tortured physically and psychologically by a disturbed brother, Shawn, who was always supported, most often inappropriately, by her parents, in keeping with their male-dominated fundamentalist family.

Nevertheless, Westover managed to get into BYU, received a degree and was highly encouraged to attend Oxford University for a PhD program. However, from time to time along the journey to an education, Westover would return to Idaho, seemingly to understand and gain comfort with her roots, only to repeat negative experiences with Shawn, her parents and other family members. Succeeding at Oxford, albeit with intermittent personal crises she earned a PhD and went on to a post-doc at Harvard.

Despite achieving a remarkable education both in and out of the classroom, we sense that Westover remains chronically troubled by real and self-imposed ties to her past. Although there are obvious similarities to "Hillbilly Elegy" by J.D. Vance, those familiar with his book will note a difference in how the two authors have managed their past.

Kenneth C. Swan, MD: The Ophthalmologist at the End of the Oregon Trail

John C. Morrison, MD

In many ways, Dr. Kenneth C. Swan's career has paralleled the development of medical education in the Pacific Northwest and that of vision research at the national level.

Born Jan. 1, 1912, in Kansas City, Mo., Dr. Swan moved with his family in 1913 to Portland, Ore., where his father, Carl Swan, was vice president of the Pacific Coast Division of Bausch & Lomb. Following high school, he attended the University of Oregon as an undergraduate.

In 1932, spurred by early contact with science and medicine through his father, and his desire to help contribute to society, he entered what was then the University of Oregon Medical School, located in Portland. He graduated in 1936 in a class of 56 students.

Dr. Swan began his medical research career while in medical school. Supported by a $30-per-month Rockefeller student research assistantship, he worked with Harold B. Myers, MD, professor and chairman of the Pharmacology Department, studying the effects of a component of the pituitary gland on the iris.

This experience introduced him not only to research, but may have influenced his later decision to seek an academic career. Because there were then no full-time chairmen of any clinical departments at the medical school and residencies were still in development, he knew by his junior and senior years that in order to specialize in anything other than medicine or surgery, he would have to go elsewhere for further training after medical school. He subsequently obtained an internship at the University of Wisconsin, aided in part by Dr. Meyers, himself a Wisconsin undergraduate, and who was by then assistant dean.

Despite his father's optical background with Bausch and Lomb, Dr. Swan was not immediately drawn to ophthalmology. However, while an intern, he noted that ophthalmology was a rapidly changing field, offering opportunities to make specific diagnoses with specific treatments along with developing surgical methods, all directed toward restoring vision.

Coupled with his medical school research studying the action of drugs on the iris, he found all of this intriguing. Following internship, he obtained an appointment in the ophthalmology residency at the University of Iowa under C.S. O'Brien, MD, the department chairman. This was aided in part by a good word from E. Merle Taylor, MD, an Oregon native who had been Dr. O'Brien's first resident at University of Iowa and with whom Dr. Swan had worked as a medical student.

Initiated by Dr. O'Brien in 1928, the Iowa ophthalmology residency program incorporated basic science lectures with clinical training so that, throughout residency, organized classwork would occur along with clinical work to help tie the two together. This was to be a model for the program that Dr. Swan himself would later establish when he returned to Oregon.

Despite a demanding schedule in the clinic and classroom, Dr. Swan still found time in 1938 to get married on a weekend in Omaha to Virginia Albertina Grone. This was only after he had "proven" himself to Dr. O'Brien, who at that time did not accept married residents into the program. Over the years, they had three children: Stephen Carl Swan (born 1940), Kenneth Richard Swan (1942) and Susan Swan Guntner (1951).

Following residency and then a four-year program, Dr. Swan stayed on in Iowa in 1941 as an assistant professor with the aid of a grant from the John and Mary Markle Foundation, now known as Markle, which concentrated on expanding talent in academic medicine by supporting young, basic research-oriented individuals.

Photo provided by Susan Swan-Guntner

Dr. and Mrs. Swan on an Iowa farm.

These years were marked by patient care, teaching and a very active research program. Most notably, he worked with Norman White, then a chemistry graduate student. They synthesized and tested a group of compounds related to pilocarpine (then one of the few, available glaucoma medications), to which they added hydrophobic groups, hoping to make them "surface active" and improve ocular penetration. To their surprise, these new compounds caused dilation of the pupil and relaxation of the ciliary muscle, the exact opposite of pilocarpine.

Swan and White recognized that this represented an early demonstration of an inhibitory analog, in that seemingly minor changes in chemical structure could dramatically alter a drug's pharmacologic effect. Quoting from their 1944 paper, "This reversal of action … by the addition of hydrophobic groups is unprecedented in autonomic pharmacology." Further evaluation of several related compounds never did reveal a specific clinical niche

for these "Swan-White analogs." However, because they had properties similar to atropine, but with a shorter duration of action and less toxicity, this work represented a significant step in the development of the diagnostic and therapeutic cycloplegic agents used today. Dr. Swan continued his interests in pharmacology, but time for basic research would soon be consumed by the next stages of his career.

In 1944, receiving offers to go to Stanford Medical School, as well as New York, Swan wrote to David W.E. Baird, MD, dean of the University of Oregon Medical School, with whom he had had contact while doing patient research as a medical student. Dr. Baird, in his second year as dean and seeing the growth and future needs of the Northwest, felt that the medical school should broaden out into a true medical center that would serve a large population, with research and graduate teaching in all areas.

After interviewing Dr. Swan and reviewing the Iowa program, where the full-time faculty saw private and indigent patients, and residents saw patients at all levels, Dr. Baird named the 32-year-old Swan as the first full-time chairman of a clinical department at the medical school. Years later, Dr. Swan would recall being told, "You have no facilities there, just a little clinic; and only the financing that you bring with the Markle grant; but the thing you have a lot of is opportunity!"

Initially, the ophthalmology department consisted of a room with a single slit lamp and partitions for patient examinations, a converted storage room for visual fields, a room with a treatment chair for minor surgery and a 10-foot by 10-foot office for Dr. Swan, the sole faculty member. By the time of his formal appointment as chair in 1945, there were only three board-certified ophthalmologists in Oregon who only practiced ophthalmology. Many regions had no ophthalmologists at all. From the very beginning, Dr. Swan was faced with the challenges of developing facilities, assembling a faculty and creating a residency training program that would be able to fill the ophthalmic needs of the population, reducing the need for doctors to go elsewhere for advanced training.

All of these challenges had to be confronted simultaneously. Displaying a knack for fundraising shortly after his arrival in Oregon, Dr. Swan captured the interest of the Oregon State Elks Association in providing support to study and treat visual disorders in children, one of several interests he developed at Iowa. This, along with an ever-growing list of individual community donors, ultimately led to the creation of the Elks Children's Eye Clinic, an area of emphasis that continues to this day. Thus began a career of fundraising that provided critical support, including a gift in 1991 for the Casey Eye Institute, a project initiated and guided by Frederick T. Fraunfelder, MD, a 1965 graduate of the Oregon residency who succeeded Dr. Swan as chairman in 1988.

Swan's early years as chairman were aided greatly by support from retired New York City ophthalmologist John E. Weeks, MD, co-discoverer of the Koch-Weeks bacillus and an early member of the American Board of Ophthalmology. Dr. Weeks, who had moved to neighboring Oregon City in his 90s to live near his daughter and her husband, was a strong supporter of medical education and basic research at the medical school at the University of Oregon. Through meetings with Weeks and Dean Baird, Dr. Swan formulated his goals for developing the ophthalmology department. Aided by occasional home visits where he would show surgical movies, a new development at the time that Dr. Weeks greatly enjoyed, Swan built a relationship that resulted in generous bequests from the Weeks family to develop faculty and resident clinical facilities. It was followed by a state-of-the-art basic research facility: the John E. Weeks Memorial Ophthalmology Laboratory.

Although the residency program began small, early residents displayed strengths and specific interests that led to their remaining on faculty, such as Leonard Christensen, MD. Following residency, Dr. Christensen obtained ophthalmic pathology training at Columbia University through an early Heed fellowship and then the Illinois Eye and Ear Infirmary before returning to the Oregon medical school as Dr. Swan's first faculty member.

John E. Harris, MD, first met Dr. Swan in Iowa while working toward his PhD in biochemistry and joined Oregon's Department of Ophthalmology in 1946 as a research associate while at the same time completing his medical degree. He would remain on the faculty until 1957, the year he received the inaugural Friedenwald award and was recruited as chairman of ophthalmology at the University of Minnesota. He was the first of five Swan-trained residents to become departmental chairs. From these beginnings, the residency gradually expanded so that by his retirement in 1978 he had trained 101 ophthalmologists, a number that at the Casey Eye Institute has since grown to over 250 from all over the country.

In the early 1950s, Dr. Swan was introduced to James Shannon, MD, a friend of Dr. Baird's who later became director of the National Institutes of Health. Through such contacts and on the advice of Dr. Baird, Dr. Swan accepted a series of NIH appointments, beginning in 1951 with two terms on the NIH Sensory Diseases Study Section, a post he held until 1959. This was followed by six years on the advisory council for the National Institute of Neurological Diseases

and Blindness, chairing the Visual Science Study Section from 1962 to 1964. In 1969, Dr. Swan was selected as a charter member of the advisory council for the newly formed National Eye Institute and remained on until 1972. Through these experiences, he helped shape national vision research priorities in those early years and was better able to help guide research in his own department.

Despite all of his administrative, teaching and fund-raising duties, Dr. Swan maintained a steady academic output throughout his career, encompassing a broad range of research. Initially, after moving to Oregon, he continued his pharmacology research. In 1945, from work begun initially at Iowa, he published in the *Archives of Ophthalmology* the first description of the use of methylcellulose in ophthalmology. He noted its lack of toxicity, the fact that in pure solution it did not support bacterial or fungal growth and suggested its potential as an artificial tear substitute as a delivery vehicle for topical ocular medications and as a "cohesive medium" to use with gonioscopic prisms. He provided basic instructions on how to get this compound, purchased originally as "methocel" in powder form, into solution, including the fact that it was heat-stable and could be sterilized.

He also noted that, on boiling, it coagulated and became cloudy, a fact that, many years later he admitted nearly caused him to abandon the project. Fortunately, he noted that, upon cooling, the solution became crystal-clear, resulting in a discovery that is the basis of 30-40% of all artificial tears in use today. In 1953, he provided an early, thorough description of the clinical properties of benoxinate, highlighting its short duration of anesthetic action. To this day, benoxinate remains the active anesthetic agent in fluorescein solutions commonly used for Goldmann tonometry.

As time passed, his academic output by necessity was increasingly dictated by his clinical interests. This included clinicopathologic correlations covering a wide variety of ocular conditions, such as limbal and corneal wound healing, accidental lens trauma, fibrous downgrowth and epithelial downgrowth and cysts. He also contributed significantly to our understanding of ocular anatomy relevant to both cataract and glaucoma surgery and provided many observations on binocular perception and the surgical management of strabismus. Dr. Swan also maintained a steady, strong interest in glaucoma. This included ongoing contributions to glaucoma pharmacology and surgical treatments of open angle and angle closure glaucoma. His most lasting contribution consisted of the development, description and use of the Swan goniotomy knife and Swan-Jacob surgical gonioprism. Both are still used for congenital glaucoma surgery over 50 years after his original publication.

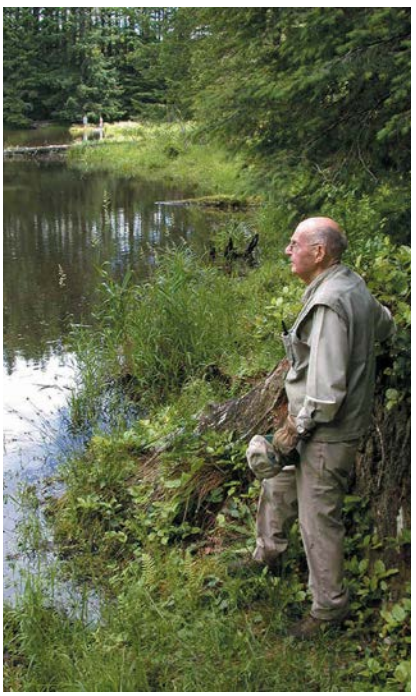
In 1954, Dr. Swan was the first Northwest ophthalmologist named to the American Board of Ophthalmology. He became vice chairman in 1957 and chairman in 1960. He retired from the board in 1961. He served as president of the Association for Research in Ophthalmology (now ARVO) in 1951 and in 1953 received the Proctor Medal for outstanding contributions to vision research. In 1977, he received the Howe Medal from the American Ophthalmological Society for distinguished service to ophthalmology. His curriculum vitae of 160 publications, spanning eight decades from 1936 to 2001, includes 10 invited and named lectures on a far-ranging list of subjects.

Outside of ophthalmology, Dr. Swan loved the Pacific Northwest and the outdoors. This was exemplified by his John Yeon-designed Northwest Regional style home on a wooded lot in the Southwest Portland hills, in which he and Virginia lived for over 50 years. Many residents also recall weekends camping and fishing with the physician they called "chief" on his tree farm in the foothills of the Pacific Coast Range, 30 miles west of Portland, replete with a small body of water, which he, true to form, named "Swan Lake."

Although slowed in later years by Parkinson's, he maintained an active interest in scientific and medical progress, regularly passing along interesting and important articles to faculty members up until the last few months of his life. On Feb. 23, 2007, Dr. Swan died at his home, two months after Virginia's passing. They were married for nearly 70 years.

About the author: John C. Morrison, MD, worked with Dr. Swan from 1979 to 2007, as a research fellow, resident and faculty member. This remembrance is based on personal reflections, discussions with his daughter, Susan Swan Guntner, and a 1997 interview with Dr. Swan that can be found in repository Kenneth C. Swan Papers, collection No. 2007-011, Historical Collections and Archives, Oregon Health and Science University http://archiveswest.orbiscascade.org/ark:/80444/xv11325/. It can be read online as part of the OHSU Oral History Collection at http://doi.org/10.6083/M4639NG8.

Dr. Swan at Swan Lake on his Oregon tree farm.



Foundation Update

Gregory L. Skuta, MD, Chair, Foundation Advisory Board

As the momentous 2020 begins, it's important to reflect upon the Academy Foundation's accomplishments over the past year. Thanks to you, in 2019 we achieved many notable milestones in our mission to advance quality patient care.

The 2019 Orbital Gala Was a Sold-Out Success

By all measures, the 16th annual Orbital Gala was a success. More than 400 guests attended the Hollywood-themed fundraiser at the Palace Hotel in San Francisco during AAO 2019. We honored our beloved friend and colleague, Bruce E. Spivey, MD, MS, MEd, as guests savored wine from Jessup Cellars and chocolates by Eye Candy Chocolatier. The sold-out event raised more than $180,000 in support of the Academy's new Truhlsen-Marmor Museum of the Eye™, currently under construction at Academy headquarters in the heart of tourist-rich San Francisco Fisherman's Wharf.

Almost There! $11 Million Raised For New Museum

In late 2017, the Foundation launched a campaign to raise $12 million for a new, brick-and-mortar museum at Academy headquarters. Two generous gifts from members Stanley M. Truhlsen, MD, and Michael F. Marmor, MD, challenged our members, companies and private philanthropists alike to join in this investment. To date, we are proud to announce we have reached over $11 million thanks to many generous doctors.

Your generosity allows us to build a world-class Truhlsen-Marmor Museum of the Eye, featuring the latest technology. Visitors will be especially enthralled with our virtual reality (VR) headsets. Created by the Academy's eLearning team for U.S. ophthalmology residents, the educational VR experiences demonstrate the visual pathway of a human eye and show how new technology can impact medicine.

Now, as we near an opening date in early 2020, we hope you will help us cross the $12 million finish line by donating to the museum.

We offer a variety of opportunities and ways to give — from named gifts and pledges to legacy gifts — for members who would like to support the Museum of the Eye. Visit aao.org/museumcampaign. Questions? Contact the foundation's executive director, Tina McGovern, at tmcgovern@aao.org.

Giving Tuesday Raises Over $9,000 For Education

On Giving Tuesday, Dec. 3, the foundation raised over $9,000 via online donations. Thank you for participating in our first annual text-to-give program. A special shoutout goes to our very generous matching donors Samuel Masket, MD; Virginia and Timothy Olsen, MD; and Drs. David Hunter and Constance West. These funds support the Academy's educational, quality of care and service programs.

As always, thank you for supporting the Academy's many innovative products and programs. Feel free to contact me any time at gskuta@aao.org.

Hail and Farewell

M. Bruce Shields, MD

In my Navy years and in academic medicine, the changes of command, saying goodbye to departing members and hello to newly arriving students, residents and fellows, were always bittersweet occasions.

We have recently experienced another time of sadness and of joy with the change of leadership in the American Academy of Ophthalmology's Senior Ophthalmologist Committee.

For the past five years, the committee has been under the leadership of Susan Day, MD. With her outstanding record of service to the Academy, as president and as a "mover and shaker" in so many Academy affairs, not to mention her great sense of humor, it was no surprise that she took the reins from outgoing chair, Dr. Harry Zink, and continued to advance the cause of our senior ophthalmologists with many new and improved programs.

Those of us who were fortunate to serve on the committee with Dr. Day as our chair, will miss her leadership abilities and her relaxed, humorous style that made working on the Committee with her such a pleasure. I know that I speak for all of us in thanking Dr. Day for yet another excellent contribution to our Academy. She will surely be missed.

Although these "hail and farewells" have their melancholy side, there is also the pleasure of welcoming new blood into an organization. Samuel Masket, MD, has been a valued member of the SO Committee for the past several years and now takes the baton from Dr. Day as its new chair. Like Dr. Day, Dr. Masket comes into this role with a distinguished record of service to the Academy.

Samuel Masket, MD

Dr. Masket has served as a member of the Board of Trustees (1998-2001), the Bylaws and Rules Committee (2003-07), the *EyeNet*® Editorial Advisory Board (1998-2008) and the Membership Advisory Committee (1998-2001). He has served as chair of the Preferred Practice Pattern panel for Cataract and Anterior Segment and as Academy councilor representing the American Society of Cataract and Refractive Surgery (ASCRS). He also served as president of ASCRS in 2006-07.

In addition to his excellent credentials in the Academy and ASCRS, Dr. Masket brings a proven leadership ability, as well as a style of warmth and good humor to his new position. He follows in the footsteps of a short and highly distinguished list of past chairs.

Along with Drs. Zink and Day, the SO Committee has been led since its beginning in 1996 by George Garcia, MD, Stanley Truhlsen, MD, and Bruce Spivey, MD. We have no doubt that Dr. Masket will carry on the quality of leadership that these five individuals have provided, and we congratulate him on this latest appointment and look forward to the continued support of our senior ophthalmologists under his guidance.

SCOPE

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