

ROBERT N.
SHAFFER, MD
AT 90

An Oral History and Memoir

EDITED BY

William H. Spencer, MD

Published with the generous support of the
Glaucoma Research Foundation



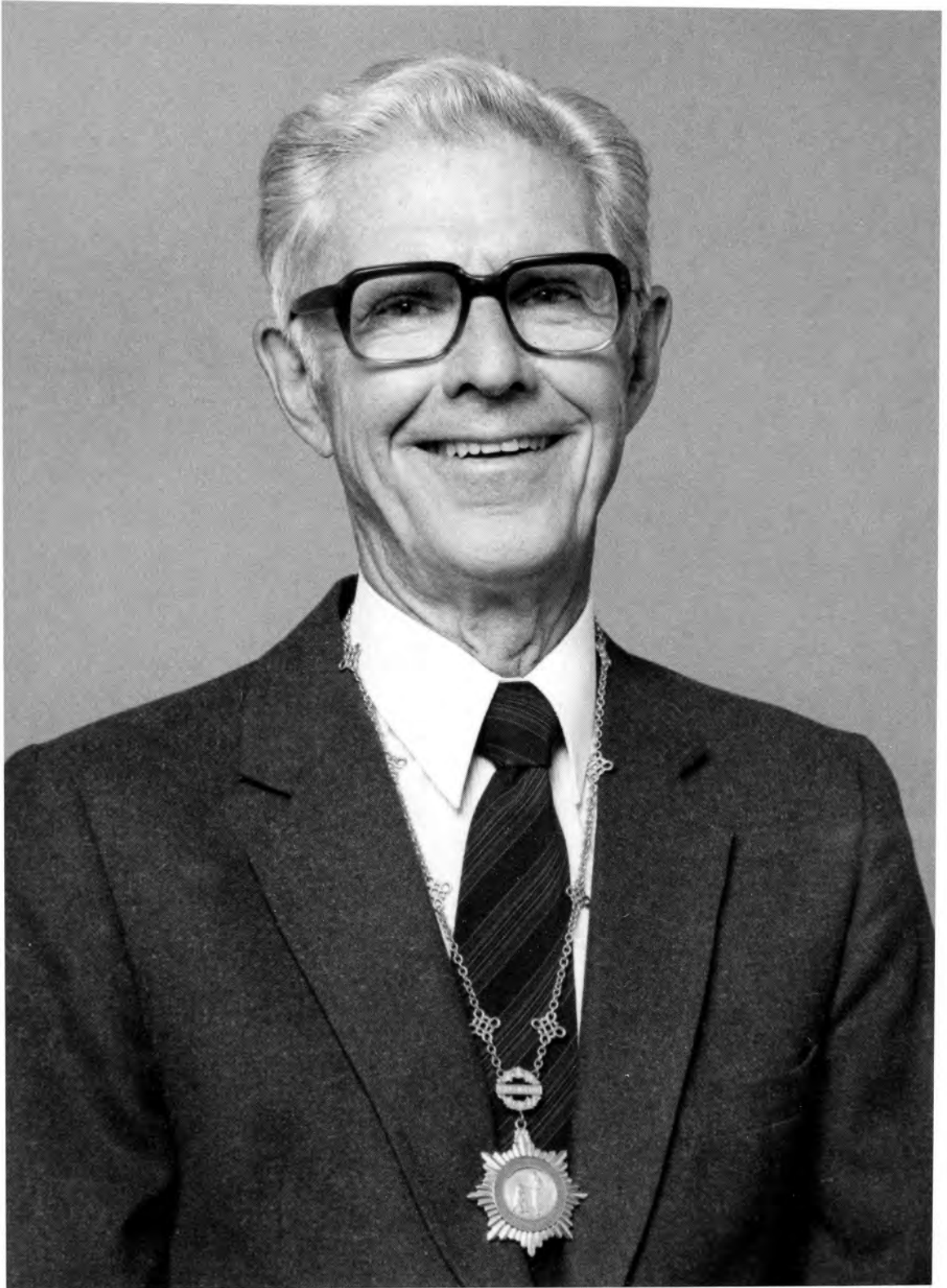
AMERICAN ACADEMY
OF OPHTHALMOLOGY

The Eye M.D. Association

Robert N. Shaffer, MD

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Dr. Shaffer with the Howe Medal.

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William H. Spencer, MD

Department of Ophthalmology
California Pacific Medical Center

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OF OPHTHALMOLOGY**

The Eye M.D. Association



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*To future ophthalmologists
who will find a cure for glaucoma*

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Biographical Information

Robert N. Shaffer – Oral History

Your full name Robert Nestit Shaffer
Date of birth January 18, 1912
Father's full name William Walter Shaffer
Occupation Physician EENT
Mother's full name Margaret Ethel Nesbit
Occupation Housewife
Your spouse Virginia Jane Miller Shaffer
Your children John Stuart William
Where did you grow up? Westville Pa.
Present community Granbrae, CA
Education Pomona College Stanford Medical
Occupation(s) Physician, Eye
Areas of expertise Glaucoma
Other interests or activities Travel, Theater, Tennis
Choir singing, boating
Organizations in which you are active Foundation
for Glaucoma Research.

Preface

Robert Shaffer entered the field of glaucoma over 60 years ago, at a time when awareness of the causes of elevated intraocular pressure and its detrimental effects on vision were rudimentary. He has since played a central role in the remarkable expansion of our understanding of the pathogenesis and treatment of glaucoma that characterized the latter half of the 20th century. In addition to his exemplary accomplishments as an ethical and caring physician, he has been a charismatic teacher and mentor to young doctors interested in pursuing the field of glaucoma. In order to ensure future continuing education activities and nurture glaucoma research, Dr. Shaffer established the Foundation for Glaucoma Research in 1978. (The Foundation's name was changed to the Glaucoma Research Foundation in 1994.) In so doing, he has shown his respect for the profession of medicine by safeguarding its basic tenets and turning over the body of medical knowledge to the next generation in an improved condition.

The Glaucoma Research Foundation has chosen to honor Dr. Shaffer on the occasion of his 90th birthday through its support of this combined oral history and memoir. The interviews begin with his account of his family background and childhood in a small northwestern Pennsylvania farming community. He tells of the chronic knee infection that altered his life and led him to recuperate in sunny southern California, where he fell in love with the West. Dr. Shaffer describes his two momentous decisions: to follow in his father's footsteps by pursuing a medical career at Stanford Medical School and to marry his childhood sweetheart, Virginia Miller. Dr. Shaffer then recounts his early days in San Francisco, where he and Virginia began to raise their fam-

ily and he took his general medical and ophthalmology training, initiated his private practice, and established the first glaucoma clinic in the West at the University of California Medical School.

Describing his years in residency training, Dr. Shaffer tells of his tutelage under Dr. Hans Barkan and his initial fascination with gonioscopy, a technique that had then been utilized by Dr. Otto Barkan to reclassify the glaucomas into open- and closed-angle types. He goes on to relate his entry into private practice and his initial interactions with leading glaucoma specialists in the East as well as his subsequent participation in landmark gatherings of American and international clinicians and basic scientists sponsored by the Josiah Macy Foundation. A glance at the titles of his publications over the years will provide the reader with an encapsulation of the steady progress that has been made in understanding and treating glaucoma.

Dr. Shaffer relates with pride his long association with the American Board of Ophthalmology and his devoted stewardship of the Board as its secretary-treasurer. He also comments on his interactions with several other prestigious medical organizations.

The initial interviews took place in June 2001 at a motel in Ashland, Oregon, between plays produced by the Oregon Shakespeare Festival Association. Five subsequent interviews were conducted in the Shaffers' pleasant apartment overlooking Mt. Tamalpais in Greenbrae, California. Before each session, an outline of topics for suggested discussion was developed and copies of pertinent publications were provided. The tapes were then transcribed and the text was delivered to Dr. Shaffer for editing, correction, and embellishment. Dr. Shaffer is quite modest about his accomplishments and, initially, was reluctant to pursue this endeavor. However, after reading other oral histories and a bit of urging, he consented. Before long, he became a wholehearted participant. The final portion of the history is composed of a mini-memoir about family life, travels, friends, and his thoughts about the responsibilities of physicians and the future of medicine.

The editor has thoroughly enjoyed working closely with Bob and Virginia, who have been wonderful friends for over 50 years. As he approaches 90, Bob has retained his sense of fairness and self-deprecating, gentle humor as well as an engaging twinkle in his eye when recounting memories of his very fruitful life.

William H. Spencer, MD

December 2001

Introduction: Personal Recollections of Robert N. Shaffer

Where to begin a brief introduction to Bob Shaffer's oral history? Here is a man who has had a major influence on the lives of thousands of glaucoma patients throughout the world and on the careers of the many ophthalmologists he has taught. Perhaps I can talk best about Bob Shaffer by recounting how much he has meant to me over so many years. And I must include my wife Carolyn and Bob's wife Virginia, because with the Shaffers it's always inclusive. Bob and Virginia are like one, and they have always treated Carolyn and me the same way.

We first met the Shaffers in Chicago at the Palmer House during what was then the American Academy of Ophthalmology and Otolaryngology Annual Meeting. I was accepted for Bob's glaucoma fellowship after a telephone interview. We had not met one another face to face. And, knowing Bob as I now know him, he surely wanted to have that happen before I came to San Francisco. So Carolyn and I were invited to join Bob and Virginia and some of their friends for dinner. We first went to a room in the hotel for a pre-dinner get-together. Trite as it seems, this first meeting set the stage for Carolyn and my feelings for the Shaffers for the rest of these many years. Welcoming, warm, engaging, and inclusive. Here we were, a third-year resident and his wife, being treated specially. And we have been treated that way ever since!

It's important for me to tell that brief story because it reflects the way Bob and Virginia treat everyone. It tells so much about Bob as a person

and why he is so effective as a teacher and mentor. His ability to make young people as well as seasoned professors and practitioners alike feel that their ideas were important and worthy made him such a wonderful role model and instructor. Bob's book on glaucoma, written with Dr. Bernard Becker, was the glaucoma bible. It presented in a clear yet thorough manner the then-current thinking on glaucoma diagnosis and management. His book on gonioscopy, with Diane Beeston's superb photographs, is a classic in interpreting the angle.

There are many ways to teach. But Bob's way is special. He is highly organized in his approach. Yet it always seems so spontaneous. He knows what he wants to teach you, but he lets you teach yourself by asking the right questions. His approach to making sure his patients understand their problem and the suggested way to treat it has served so many others and me so well in our careers. Bob taught us to write thorough and helpful letters to referring physicians and to write these letters promptly. In many ways, I think of Bob Shaffer's major contributions to glaucoma as helping his students think critically about this disease, but to do so in ways that recognize how much we didn't know about it. He taught best using patient vignettes and recognized the importance of considering the impact of glaucoma and its treatment on the whole patient long before it was fashionable to teach formally about quality of life. Bob had an interest in genetics in glaucoma well before the profession recognized the importance of such concepts. I remember as a fellow going through his slide collection and seeing copies of beautiful color photographs of double helices from a *Life* magazine article. Bob was using those slides in his talks over 40 years ago!

I cannot help but bring Virginia's teaching into this discussion because of the team approach the Shaffers took to everything they did and still do. Virginia was the public speaking expert and taught countless University of California residents and fellows how to prepare and deliver an extemporaneous talk. Her lessons proved invaluable to me and to others—including Bob.

For those who may not have known it, I want to mention that Bob Shaffer is competitive. Fellowship applicants who played tennis were preferred. Bob got great pleasure from tennis and from whipping his young fellows. He didn't enjoy the game just to play. He wanted to win. And, as a fellow, it was always an honor when Bob chose you as his partner, because he thought that would give him the best chance to win. It was all in good fun and contributed to a particularly special fellowship year and to countless reunions thereafter.

One last thing. The Shaffers love to travel. Carolyn and I certainly acquired some of our own travel curiosity through the many travelogues experienced at the Shaffers' home. Colorful photographs of Masai warriors always come to mind when recalling Shaffer trips. This is just one of the many ways in which Bob and Virginia have influenced our lives. Whatever I have done in ophthalmology I owe to Bob Shaffer. I am sure many others feel the same way. He taught us glaucoma, but so much more. And he gave us opportunities to conduct solid clinical research, to publish, to speak, to serve on committees, to take on leadership positions. Most of all, he helped us to be better physicians. In turn, this helped our patients, their families, and our own students. Without a doubt, Bob Shaffer is one of the 20th-century giants of glaucoma. This oral history is a fitting tribute to recognize this remarkable man. It is a particular honor to be asked to record these personal recollections about him and his life's partner Virginia.

*Paul R. Lichter, MD
Professor of Ophthalmology
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As administrators of the American Board of Ophthalmology (ABO), we have had the privilege of working for some of the finest physicians in ophthalmology. Without exception, they have possessed superior medical knowledge and judgment and have demonstrated kindness and fairness to the staff and Board candidates. No one better exemplifies these qualities than Dr. Robert N. Shaffer.

Bob Shaffer might be considered "Doctor ABO" because of his long and fruitful association with the Board. He was "certificated" on October 10, 1942, and initially served as an associate examiner in 1946, when the Board examinations took place in San Francisco. Bob was elected a Board member in 1960 and subsequently served as a consultant until 1969, when he was appointed assistant secretary-treasurer. In 1980, he succeeded Dr. Francis Heed Adler as secretary-treasurer. His management of Board activities and his commonsense approach to solving day-to-day problems were carried out with his special blend of care and understanding.

Several changes that materially strengthened the basic organization of the Board took place during his years at its helm. The position of consultant, which had more or less been a life term, was phased out. Consultants, who had chaired several important committees, now held an emeritus ex officio position and could be called upon when needed. Concurrently, the number of Board members was increased and term limits were instituted. A total revamping of the oral examination process took place and discussions of a recertification process were initiated.

At the time, there was considerable trepidation about many of the proposed changes, but they were smoothly accomplished as a result of Bob Shaffer's foresight, tact, and guidance. Of particular importance was his decision to find a permanent home for the ABO offices in Bala Cynwyd, just over the Philadelphia border. For many years the location of the Board office had been moved whenever a new secretary-treasurer was appointed. Bob Shaffer would become the first leader of the Board to manage its affairs from a remote site. The office had been

lodged in a wing of Dr. Francis Heed Adler's charming home in Chestnut Hill, Pennsylvania. As delightful as these offices were, a venue that was more accessible and less cottage-like was sought. Once he put the ball in motion, the move was readily accomplished and has proven to be quite successful during the past 20 years.

The move created a new and exciting atmosphere within the Board office. Because Bob Shaffer was in San Francisco and the ABO office in Bala Cynwyd, a way was needed to quickly transmit documents of importance across the country. Bob Shaffer purchased the first prototype of the fax machine and, early in the computer age, we started to explore this technology. Today, use of these devices does not seem remarkable, but in the 1980s we were truly on the cutting edge. This innovative approach was applied to every facet of his management style throughout his term with the ABO.

One cannot talk about Bob Shaffer's contributions to the Board without acknowledging the efforts of his wife, Virginia. Bob and Virginia give true meaning to the term "life partners." They have been inseparable since their early years in western Pennsylvania. Youth and curiosity took Bob west to California, where he eventually became a leader in the ophthalmic community. Always the perfect complement, Virginia educated young physicians in the rudiments of public speaking. They raised three sons there and eventually moved their home to San Anselmo, a lovely community outside of San Francisco. When visiting them in this private spot, you had a feeling of ascending to the top of the world into a secluded tree house. This warm, friendly home came equipped with an annex that fondly became known as the honeymoon house. Over the years, Bob and Virginia invited many new fellows and friends to stay there. Typical of the Shaffers' thoughtful foresight, they later decided to move into a nearby retirement community in anticipation of their twilight years so they would not be a burden to anyone. This "premature" move caused concern for friends who knew how vibrant they were and their lust for life. Bob and Virginia have

proven that there need not be any “retire” in the word *retirement*. In typical Shaffer fashion, they have totally immersed themselves in this new life and have held key positions in their community. They have also traveled widely and explored the world while visiting their many friends in other countries.

They are a remarkable couple who, in addition to sharing a tireless devotion to each other, have helped keep the global ophthalmic medical community on the high road. All who know the Shaffers have had the good fortune to experience this refreshing enrichment firsthand.

Mary and Rita Ladden
Administrators
American Board of Ophthalmology
Bala Cynwyd, Pennsylvania

One of the most important events in my life was the day I met Bob Shaffer. I went to the meeting of the American Academy of Ophthalmology in 1968 to interview for a glaucoma fellowship with Dr. Shaffer and Jack Hetherington. Bob greeted me at that interview like I was his long-lost son. I ultimately went to San Francisco to do a fellowship at the University of California San Francisco under Bob's direction. It was more than a fellowship. I became a member of Bob's family during that time and, subsequently, went into practice with him. Bob has many wonderful traits; perhaps the greatest of these is his generosity. He is generous with his time, with his praise, and with sharing his enormous experience. Bob's contributions to our field of glaucoma are well known, but he would say that his most important contribution exists in the individuals he trained who have gone on to contribute so much to our profession, not only in their technical expertise but also in their compassionate patient care. Bob is the complete physician: caring, skillful, and knowledgeable. A great role model for our future generations.

*H. Dunbar Hoskins, Jr., MD
Executive Vice President
American Academy of Ophthalmology
San Francisco, California*

Robert Shaffer, one of my three most-favorite teachers and medical mentors, always impressed me as extraordinarily calm, self-confident, and wise. Even when faced with an unclassified anterior segment anomaly associated with devastating infantile glaucoma, he always had useful insights to offer. The then-current sixth edition (1989) of his classic text, Becker-Shaffer's *Diagnosis and Therapy of the Glaucomas*, first published in 1961, was a constant companion during my fellowship with his group in San Francisco. Besides developing a successful practice and earning the respect of his peers as a glaucoma consultant, he made innumerable highly valued contributions to our peer-reviewed literature and to graduate and postgraduate education, including long service as a director and secretary-treasurer of the American Board of Ophthalmology. As a living testimonial to his efforts, the Glaucoma Research Foundation, which he founded, continues to fund basic and clinical research projects. In addition to his academic achievements, Dr. Shaffer has set a remarkably enviable standard for orchestrating gradual and controlled withdrawal from practice and teaching. He ceased doing surgery and eventually withdrew from consultative medical care of glaucoma patients at his own pace, well before anyone who knew him thought it might be time! I suppose I could say the same for tennis.

Donald S. Minckler, MD
Editor-in-Chief
Ophthalmology
Los Angeles, California

Interview with Robert N. Shaffer



Dr. Shaffer (right) being interviewed by Dr. Spencer in his home in Greenbrae, California, 2001.

Family Background and Education

SHAFFER: My parents and grandparents were from northwestern Pennsylvania. My [paternal] grandfather farmed a rocky bit of land near Pittsburgh, outside Cochranon. He was quite resourceful. Once while using a scythe on a side hill, it slipped and severed his patellar tendon and opened a cut into the knee joint. He told of the synovial fluid running out. There were no cars at the time; horse and buggy was the only transportation and the nearest doctor was 10 miles away in Cochranon. So he hobbled to the farmhouse, boiled up a heavy needle and linen thread and sewed up the tendon himself! It was amazing that he and my grandmother were able to educate three children through college; one became a doctor, one a lawyer, and the third was an artist. My mother's father was president of a bank in Franklin, Pennsylvania.

SPENCER: Where were your parents born?

SHAFFER: My mother [Ethel Nesbit] was born in Utica, Pennsylvania. She went to college at Bryn Mawr. My father [William Walter Shaffer] was born on a farm in western Pennsylvania.

SPENCER: When did your family come to this country?

SHAFFER: I really don't know. My mother was a member of the Daughters of the American Revolution, but I don't recall her discussing her forebears. I believe my father's side of the family came from Alsace-Lorraine several generations ago.

SPENCER: I understand your father was a doctor.

SHAFFER: Yes. My father finished high school and then taught at a small schoolhouse for 2 years. He then decided to become a doctor and went directly to the University of Pittsburgh, which was then called the University of Western Pennsylvania. I don't think he had an internship.

SPENCER: Did the curriculum at the University of Western Pennsylvania combine undergraduate as well as medical education?

SHAFFER: No. My father didn't go to college at all. He had 3 years in medical school and then started a small general medical practice in Utica, which was where my maternal grandparents lived.

SPENCER: Where was Utica?

SHAFFER: It was about 8 miles from the family farm. He and my mother married and soon moved to a larger village, Cochranon, where my father continued his practice. He had a horse and buggy and had to go out to take care of people in that 10-mile radius. Medications were very limited; there were no antibiotics. He always gave pink aspirin, because it was much better than white aspirin—the placebo effect. The treatment for iritis was by inducing a fever. He had been told to use milk injected into the patient's gluteus but found that it wouldn't induce a fever unless he put the milk on the radiator for a day. Then the bacteria multiplied beautifully and he would get an excellent febrile response. He tired of all the night calls and took some training in eye, ear, nose, and throat in Philadelphia and then in Chicago. The quality of training was questionable. He then moved to the metropolis of Meadville; it was all of 15,000 people. He preferred the eye, but took out most of the tonsils in Crawford County! As a child I would visit his office and this awakened my interest in the eye. He showed me retinal detachments as an example of an interesting condition with little chance of cure. Occasional reattachment occurred after a month of bed rest, with the

head held in a position to allow gravity to reattach the retina to the choroid and close the retinal hole.

SPENCER: But you were born in Cochranon, before the move to Meadville.

SHAFFER: Yes. I was born in the upstairs bedroom of our home in Cochranon. My father was helped in my delivery by an uncle, Dr. Clifford Cooper, from Titusville, which was where oil was first discovered in Pennsylvania.

SPENCER: Did you go to school in Meadville?

SHAFFER: I went through high school there. I was ill a bit with an undiagnosed fever and pain in my left knee. Eventually, in my senior year, it turned out to be an osteomyelitis in the head of the tibia.

SPENCER: It must have been a chronic infection.

SHAFFER: Yes. It was often painful and occasionally my knee became quite swollen. Frequent x-rays were always negative, until 4 years later when another x-ray showed the lesion.

SPENCER: How was it treated?

SHAFFER: They had no antibiotics at that time. At surgery it was found to be a colony of *Staphylococcus*. The only way they could control infectious agents was with Dakin's solution, which is a chlorine-based antiseptic. I was in the hospital in Erie, Pennsylvania, which is about 30 miles from Meadville, and the surgery that was done was a through and through incision. They curetted the head of the tibia. Dakin's solution was allowed to run through the knee joint every hour or so day and night for about a month and a half in the hospital.

SPENCER: That must have been painful.

SHAFFER: It sure was! The tubing would form a clot between irrigations and the clot would cause back pressure during the next irrigation. It would suddenly give way and there was a lot of pain involved then. For many years I would dream that I was in an elevator with my left leg hanging over the side of the cage. Eventually the infection was eliminated and, surprisingly, the joint remained stable, permitting me later to enjoy basketball, tennis, and hiking.

SPENCER: Did the illness interrupt your schooling?

SHAFFER: It changed it tremendously, and altered my life. Because I had been ill in my senior year, and I was a little young at the time, my parents sent me to a preparatory school in California. But, of course, once I was there wild horses would not get me back to Pennsylvania.

SPENCER: Where was the prep school?

SHAFFER: It was in southern California, in Covina, a small town outside of Los Angeles. So when the time came to choose a college, I never even looked at the East. I picked a small liberal arts college, Pomona College, and went there for 4 years.

SPENCER: When did you graduate?

SHAFFER: I graduated from Pomona in 1934 [cum laude, Phi Beta Kappa]. I had a wonderful time there. We had a group of ten men who had strict rules about dating. You could only date the same girl once, unless you wanted to ask her again. Pomona was a fine school. I did a little bit of athletics. I was the captain of the freshman basketball team and we played the neighboring colleges. In my sophomore year, I banged up my knee and I was hospitalized again in Los Angeles for several weeks. I recovered but never did get back again to major athletics.

SPENCER: I understand you sang in the glee club.

SHAFFER: I have always enjoyed singing and have continued to sing in church choirs all my life. As a junior, I was fortunate to have been chosen to sing bass in the Pomona College Men's Glee Club. The previous year, they had scraped together enough money to go to St. Louis to compete in the National Glee Club Championships. Pomona arrived by day coach and their main rival was Yale, who arrived by plane. Surprisingly, Pomona was the victor, so I have sung with the national champions for 2 years, because there has never been another National Glee Club competition to this day!

SPENCER: I have also heard that you took flying lessons.

SHAFFER: Oh, that was a happy time in my life. There was a tiny airfield about a mile or so outside of Claremont. It was an alfalfa field with buildings at one end and a ditch at the far end. So it was kind of a scary place to fly in and out of. We flew a monoplane and had to side-slip to get in over those buildings. After, gosh, I don't know how many hours of lessons, we landed and the instructor got out and said to me, "Shaffer, you take her up." I had never had such a terrible feeling of inadequacy before. I got out on the end of the runway and thought, My goodness, it's all up to me. Fortunately, I got the thing up and back down on the field successfully. The only time I had a similar feeling was in my first year of eye training when I came to assist Dr. [Hans] Barkan, who said: "Shaffer, take this cataract out." It was a left-handed Graefe incision, and I had the same feeling of inadequacy. Fortunately, the patient survived.

Medical Education

SPENCER: Did you decide to go into medicine after you graduated from Pomona because your father was a physician?

SHAFFER: After I decided not to be a fireman with a red truck, I had always intended to become an eye doctor. Of course, my dad was eye, ear, nose, and throat. By the time I was ready, the two specialties had become divided, so I headed directly toward an eye residency.

SPENCER: Where did you consider going to medical school?

SHAFFER: I never seriously considered going anywhere except in the West. At the time, Stanford was considered the outstanding medical school in the West, and I applied there.

SPENCER: Did you apply anywhere else as a backup?

SHAFFER: Yes. I applied at Harvard and received a very gracious note from the Dean at Harvard welcoming me and offering me a position in the freshman class at Harvard Medical School. I really didn't want to return to the East and I was hoping my application to Stanford would come through. It finally did, on a mimeographed form, which I was a bit unhappy about. But I paid them back because, when I responded by my letter of acceptance, I put in my check and it bounced. They still kept me!

SPENCER: Was Stanford a 4-year medical school at that time?

SHAFFER: Yes, it was a 4-year school. But the first year and a quarter was taught on the Stanford campus. We had that period of time in Palo Alto, which is a very pleasant place, covering the basic sciences.

We then moved up to San Francisco to complete the other 3 clinical years.

SPENCER: Was that at the Stanford Lane Hospital?

SHAFFER: Most of our time was spent at the old red brick medical school building at Clay and Webster.

SPENCER: Can you recall any of your outstanding teachers?

SHAFFER: At that time there were no full-time teaching doctors. They earned their living in their private offices and then donated their time to teach. We had an outstanding medical department. Dr. Arthur Bloomfield was the head and he was one of the nationally known research men in internal medicine. I was very fortunate to have him as my sponsor for internship. There were many others: Dr. Addis, who was a kidney expert, Dr. Holman in surgery, Dr. Newell in x-ray. They were all good men and interested in clinical research and teaching.

SPENCER: Did you have any vacation time?

SHAFFER: Yes, I spent a summer in North Warren, Pennsylvania, where I earned some money and gained clinical experience by working at an insane asylum. It was not unlike the tales we've all heard about Bedlam [in England]. I recall one man who would stand on his bed and declaim for hours; others were catatonic. I had been very proud of my election to Phi Beta Kappa, until the first patient I saw sat in a corner all day twirling his Phi Beta Kappa key. I've not worn mine since.

SPENCER: Where did you take your internship?

SHAFFER: I was fortunate to get my internship at Stanford Hospital. The chief was Dr. Arthur Bloomfield, who was a nationally known figure and a wonderful teacher. We rotated through all of the med-

ical specialties. I couldn't have had better training, I think. I had always planned to go into eye and was able to get acquainted with the head of the eye department, the famous Dr. Hans Barkan, who fortunately accepted my application for an eye residency, also at Stanford.

SPENCER: What was the duration of your residency training?

SHAFFER: It was 2 years. I was given a good deal of responsibility. Most of the education came from personal contact with the fine teachers. In the clinic, we treated many patients with trachoma using copper sulfate and made them absolutely miserable. Salvarsan was used to treat syphilis. There was a saying, "One night with Venus, two years with Mercury." I can recall being on call one night when the telephone rang about 10 or 11 o'clock and I heard this harsh voice saying, "Shaffer, sweat"! It took me a while to realize that it was the voice of Dr. Wilbur Swett, a member of the faculty who turned out to be a gentle and helpful teacher.

At that time the University of California faculty and the faculty from Stanford University alternated in giving joint lectures held at night. Again, my bad knee was of help to me. Professor Frederick Cordes, who was the head of the eye department at the University of California, was kind of impressed with my hobbling to his lectures on crutches, and when I finished my residency he offered me a faculty position at Cal. At that time there was a suspicion that Stanford Medical School was going to move down to Palo Alto. I had wanted to be associated with teaching, and I also wanted to be in San Francisco. So, when Dr. Cordes made his offer I, of course, grabbed the opportunity.

SPENCER: Was it during your residency that you first became interested in the field of glaucoma?

SHAFFER: Yes, I think you could say that. My professor, Hans Barkan, had a brilliant brother, Otto, who had just reclassified the glaucomas using the new diagnostic test of gonioscopy. The two brothers were estranged, so I could not see Otto, who was rather reclusive. However, I found a Koeppe lens in a dusty drawer in the clinic, and with that and a 10-power microscope taught myself to do gonioscopy.

SPENCER: While you were a resident?

SHAFFER: Yes, while I was a resident. I probably made a good many mistakes, but by the time I finished my residency, I was probably one of the few in the country doing gonioscopy. I was so convinced of its value that I think it was the main thing that encouraged me to go into glaucoma as a specialty. And, of course, I took this skill over to the University of California when I was through with my Stanford residency.

SPENCER: How important was the use of gonioscopy in differentiating angle-closure from open-angle glaucoma?

SHAFFER: Gonioscopy was absolutely vital. I don't think anyone was really using gonioscopy until Otto Barkan publicized its use. He reclassified the glaucomas. Before that, we knew there was acute glaucoma and chronic glaucoma, with no understanding of their different etiologies at all. Otto Barkan used gonioscopy and was able to assign the correct etiology of closed-angle versus open-angle glaucoma.

Virginia Jane Miller

SPENCER: Let me digress here to ask you about your first meeting with your future wife, Virginia Miller.

SHAFFER: Virginia lived with her family about one and a half blocks from where I lived and the two families had cottages at Conneaut Lake, about 10 miles from Meadville. We played together every summer. We played “Indian” a great deal. She was Swift Fawn and I was Little Beaver. Many years later we used our pseudonyms on our car license plates. My car had a license tag LTL BR—Little Beaver; Virginia’s was SWFT FN—Swift Fawn. However, Virginia didn’t care much for hers because she was afraid that people would think it meant Swift Fun.

SPENCER: What were Virginia’s educational interests?

SHAFFER: Virginia stayed in Meadville throughout her college career at Allegheny College. She was an excellent student. She graduated magna cum laude and Phi Beta Kappa and then went from Allegheny to Yale for postgraduate work in the School of Drama for 2 years. The severe economic depression of the late ’30s forced Virginia to leave Yale. She was able to get a teaching position in speech and drama at Simpson College, outside Des Moines, Iowa. Her salary was to be \$100 a month, but they could only pay her \$88 a month—and she claims she was able to save a little money.

SPENCER: Did she get her master’s degree there?

SHAFFER: By that time, I was an intern at Stanford. We had retained our love interest, so she transferred to Stanford, where she got her



Robert N. Shaffer and Virginia Jane Miller on their wedding day,
August 12, 1939.

master's in speech and drama, the same ceremony at which I received my MD degree.

SPENCER: Were you married in San Francisco?

SHAFFER: No, I was still in my internship when Virginia came out and lived in the home of a teacher in Palo Alto while she completed her studies. The following year we were married in Meadville. During my first residency year I was receiving \$25 a month. I didn't think I could get married on that. But in my senior year of residency I was getting paid \$75 a month. By that time, Virginia had a job at a local private school for girls and we were able to get married. We had a lovely wedding and a reception at the local country club [August 12, 1939].

We took off on our marriage trip just after one of the rainstorms that were typical of that area. We were on a dirt road and suddenly in front of us there was a beautiful rainbow. We stopped the car, rolled down the windows and decided this was a harbinger of our future bliss. Unfortunately, a truck went by just then and mud came flying through our open window. We decided that this was a sign that there would be good things and bad things in our future life. Our trip west went into southern Canada, where we stopped at the Hotel Kinney at Whitefish Lake, which had been a place where we had gone fishing as children.

We then continued our trip and got as far as the Black Hills of South Dakota, where we stayed overnight at a motel. Unfortunately, I made the mistake of trying to playfully kick Virginia out of bed. It wrecked something in my bad knee and from there on I was a cripple. I could not drive because I had to have codeine to keep the pain down and I saw double all the time. So the poor bride drove the whole way to San Francisco and put me into the hospital to have the knee taken care of. I had to stay in the hospital for a couple of weeks

before I was able to come out and resume my work at Stanford. Meanwhile, Virginia had to find an apartment for us to rent and move us in.

Three years after we were married, our first son, John, was born. He was followed, at 2-year intervals, by Stuart and William. Their childhood was less hectic than now, with the present emphasis on special classes in dancing, tutoring, swimming, etc. There were actually vacant lots in the neighborhood where they could make up their own games. When they were old enough, we took them with us on vacation trips. By then I was well established at the Glaucoma Clinic and in private practice.

As Virginia has said, they have all grown up as fine, contributing Christian citizens. The eldest went back to our home in Pennsylvania as president of the McCrosky Tool Corporation founded by Virginia's father. He is also chairman of the board of a large HMO in Pittsburgh. Stuart was the extrovert of the family. He was in charge of student activities at a large high school in San Diego and has continued to give motivational seminars throughout the country. He lives on a sailboat in San Diego harbor. The youngest, Will, was the most creative. He was deeply interested in Indian religion. He owned and operated a bookstore, which is still in operation, as is a photographic studio. Later he managed real estate in Grass Valley, California. Sadly, he died in a tragic fire in his home in 2001.

Virginia has been a vital part of my professional life. Her work at Yale in speech and drama meant that she was able to be of great help to me later on when I had to present talks around the country about glaucoma. Dr. Cordes found out about her speech training and asked her to come over to coach the residents at Cal in presenting their papers. She critiqued their talks at grand rounds, taught them to keep their thumbprints off the slides, and so forth. I think for 25

years the residents at the University of California gave the best presentations in the country. She provided similar assistance to my glaucoma fellows in preparing their presentations. Over the years, she has been a great help to me in preparing my publications and critiquing my oral presentations.

Private Practice of Ophthalmology

SPENCER: Where did you start your private medical practice?

SHAFFER: I was honored to be asked by Dr. Warren D. Horner to join his practice when I finished the residency. He had previously been a partner of Dr. Frederick Cordes. He had a thriving practice in downtown San Francisco, and like others on the faculty, he earned his living downtown and came back to the university on certain days and hours to help teach the residents. I was working in his office for about 6 months when, suddenly, the war years appeared. Dr. Horner was a captain in the Naval Reserve and immediately was called up and transferred to Pearl Harbor. I was left alone as a very green young ophthalmologist to try to take care of the busy office. So many of the local ophthalmologists were taken into the service that the poor patients had little choice but to come to me occasionally. So I was able to earn a living.

SPENCER: Did you also enter the service?

SHAFFER: I, of course, was expecting to join Dr. Horner in the service somewhere along the line. I had my army physical examination and had to sign about five different waivers because of my knee. Months went by without orders coming. Finally, an official letter arrived. The ladies in the office wrote "Goodbye" on the envelope and propped it on my desk. With fear and trembling I opened it and found it was an honorable discharge. So once again my knee had helped further my ophthalmologic career. All of my friends were out fighting the enemy and I've felt guilty ever since. It was certainly a lucky break for me.

SPENCER: During the war years, did you align your practice toward glaucoma?

SHAFFER: No, I didn't have a glaucoma practice then. I was merely the teacher in glaucoma at the Glaucoma Clinic, which I started in 1942.

SPENCER: Did Dr. Horner return to the office when the war ended in 1945?

SHAFFER: He returned from Pearl Harbor and rejoined me in the practice. We continued for about 4 years, but during that time he developed a malignancy and died in 1949. By that time I was really quite busy in the general practice. Dr. William Ridgway came through San Francisco on a Heed Fellowship and I was lucky enough to have him join the office. We continued as a team until 1953, when the Korean war intervened and he was called into military service. As a consultant at the San Francisco Public Health Hospital, I had earlier become acquainted with Dr. William van Herick. I found out that he had moved up to Portland, Oregon, and I phoned him to ask if he would be willing to take Ridgway's place, which he did. When Ridgway returned from the war in 1955, both of them stayed in the office. By then we had a second office in the Stonestown section of San Francisco and it served as our main general practice office. The downtown office had some general practice but mainly concentrated on glaucoma. Dr. Jack Hetherington joined our practice as a glaucoma specialist in 1966.

SPENCER: Had the approach to treating patients with glaucoma changed during the war years?

SHAFFER: Yes. The period between 1939 and 1945 seemed to provide a watershed division between the old, rather unschooled, practice of glaucoma and the more scientific approach achieved by new methods, new instruments, and a variety of new medications. In 1939,

when I started my residency, our medications were limited to pilocarpine, eserine, and carbachol. Occasionally, epinephrine was used with caution because acute glaucoma could be precipitated if eyes with narrow angles were not recognized by gonioscopy.

SPENCER: What were the preferred surgical procedures at that time?

SHAFFER: Surgery was largely limited to iridectomy, iridencleisis, sclerectomy, and trephining. Cyclodialysis was also done.

SPENCER: What was the rationale for using iridectomy?

SHAFFER: It had been found that iridectomy often cured the acute glaucomas, so it was used for all forms of glaucoma and, of course, it didn't help chronic glaucomas unless, fortuitously, a fistula formed.

SPENCER: This must have been before Otto Barkan used gonioscopy to differentiate closed-angle "acute" glaucoma from open-angle "chronic" glaucoma.

SHAFFER: Yes. After Otto Barkan introduced gonioscopy, we came to recognize that the high pressures found in eyes with "acute" glaucoma were caused by aqueous humor forcing peripheral iris against the trabecular meshwork, blocking aqueous outflow. An iridectomy permitted aqueous to bypass the relative pupillary block, the iris dropped away from the trabeculum, and the patient was cured. This proof of etiology was the main contribution of gonioscopy.

SPENCER: Please comment on other surgical procedures used to treat open-angle glaucomas.

SHAFFER: When iridectomy didn't help, ophthalmologists began to incarcerate a portion of the iris in the incision as a wick so aqueous could leak from the anterior chamber into the subconjunctival space [iridencleisis]. This helped to control the pressure in many of the eyes with open-angle glaucoma. The iridencleisis procedure under-

went many modifications, including the use of a trephine to produce a sclerectomy and [later] trabeculectomy. The cyclodialysis was a fairly popular operation and it often did produce a normalization of intraocular pressure. Unfortunately, it could also lead to severe hypotony accompanied by retinal edema and very poor vision. In these cases, it was very difficult to close the clefts produced by the cyclodialysis.

SPENCER: Can you comment on the surgical instruments that were then available?

SHAFFER: The sutures were much thicker than they are now, so they tended to produce more postoperative irritation and inflammation. We used the bulky Kalt needle holder, and the sutures had to be threaded to the needles; they were not swedged on, as they are now. Incisions were usually made with a scalpel blade or Wheeler knife. The Holth punch and the Elliot trephine were popular for sclerectomies. Bleeding at the edges of the wound was controlled with cautery using a hot copper ball that had been heated in the flame from an alcohol lamp [Todd cautery]. We later had a battery-operated [Hildreth] cautery. Of course, we used optical loupes for magnification; the lighting and magnification were nowhere near as good as is now available.

SPENCER: How was intraocular pressure measured?

SHAFFER: For eons, the intraocular pressure was estimated digitally. The Norwegian ophthalmologist Hjalmar Schiøtz developed a tonometer that was accepted for many years. Many were not carefully manufactured and this led to the American Academy [of Ophthalmology and Otolaryngology] establishing centers for standardizing all tonometers. One such center was established at the University of California's Glaucoma Clinic, with Jack Hetherington and myself

in charge of the standardization process. An electronic version of the Schiøtz tonometer was developed later by Professor Hans Goldmann in Switzerland. This permitted an estimation of the rate of outflow of aqueous from an eye by recording the pressure decrease caused by the weight of the instrument resting on the anesthetized cornea for 4 minutes. The procedure was termed "tonography." Morton Grant at Harvard did much pioneer research work using tonography to measure aqueous outflow in animals and humans, and Bernard Becker, at Washington University in St. Louis, popularized its clinical use. It was very popular for a few years. Unfortunately, it gradually lost favor.

SPENCER: Did you use tonography in your own practice?

SHAFFER: I sure did. My technician did aqueous outflow studies on almost all patients with open-angle glaucoma. On one occasion, tonography almost ruined my reputation in the community. I had examined a woman in consultation, who went back to her referring doctor and told him that Dr. Shaffer's office did "pornography." I can also recall a day when my technician brought me a most bizarre tonogram. The patient was a well-known Chinese woman physician [Dr. Chung], who always came to the office carrying a canary in a cage wrapped in exotic animal furs. The technician said that the tonography had been proceeding normally and, while she was holding the tonometer on the eye, the bird suddenly said, "Come and kiss sweetheart!" She had to laugh, causing the tracing of the tonogram to bounce. As I was explaining the irregularities in the tonogram to Dr. Chung, she opened the birdcage and the canary flew up and landed on the frame of her glasses. I was alarmed, but Dr. Chung reassured me, "Don't worry, she is housebroken. Do you want to see?" With this, she held a Kleenex in an appropriate position and proved it!

SPENCER: How did ophthalmologists follow the course of their patients' glaucoma?

SHAFFER: It was not very much different than now. We were able to measure intraocular pressures with the Schiøtz tonometer. The higher the intraocular pressure, obviously, the greater was the risk of damage to the nerve. Probably the most important indication of nerve damage was ophthalmoscopic observation of the degree of optic nerve cupping. Field examination was also important in order to record the effects of nerve damage on vision. We measured field loss with the tangent screen, but it required a really skilled operator to get consistent results. About 1950, Hans Goldmann developed his bowl perimeter. It was later automated. This proved to be a much more standardized and sensitive way of following changes in the visual field over time. Goldmann also developed and introduced applanation tonometry. It soon replaced the less accurate Schiøtz tonometer.

Starting the Glaucoma Clinic at the University of California

SPENCER: When did you join the faculty at the University of California?

SHAFFER: My appointment to the faculty was in 1942 as a clinical instructor in the division of ophthalmology.¹ At about the same time, Professor Cordes had just returned from a visit to a group of eastern eye centers and found that they were beginning to organize their clinics along specialty lines. He decided to do the same at UC and asked me if I would take care of external diseases. At that time, a common treatment for conjunctivitis was to paint the eyelids with malachite green, which turned the patient's face an awful green color. I didn't like the looks of it. I had just learned to use the Koeppe lens and had become interested in glaucoma, so I said: "No, I'm not really interested in external disease. I'd rather try to start a glaucoma clinic here."

SPENCER: Who were some of your contemporaries when you entered the field of glaucoma?

SHAFFER: About 1943, I arranged to leave the clinic for a month and spent this time touring the eastern eye clinics. We first stopped in Chicago, where Peter Kronfeld was the principal glaucoma specialist. He was a wonderful man who was very kind to me. He had a remarkable memory. He would go into a dark room where he couldn't really see the patient, look at the patient's fundus, and say, "Oh yes, you're Mrs. Smith from Terre Haute." His resident at that

¹ Ophthalmology functioned as a division of the Department of Surgery until 1949, when it achieved status as a separate department.

time was Joseph Haas, who subsequently became one of the finest glaucoma specialists in the Midwest. I was known to have been working with the Koeppe lens and publicizing its use for gonioscopy. The instrument we used in the West was devised by Otto Barkan. It had a friction-balanced microscope that you had to give quite a push to move from one position to another. I was asked to gonioscope one of their patients, but their microscope stand was not counterbalanced. I gave it the same push that I would have done in San Francisco, and over went the microscope with a crash into the floor. I picked it up and started to look through the Koeppe lens. But I saw two angles. I thought I had ruined their microscope. But Joe Haas took it home and brought it back the next morning in good working condition and I was saved. Ever since, we have been devoted friends.

SPENCER: Whom else did you visit?

SHAFFER: We continued our tour and went to the Massachusetts Eye and Ear Infirmary in Boston. It had an excellent glaucoma faculty that included Paul Chandler and Morton Grant. Their views of glaucoma coincided closely with ours, and, as is often the case, when someone agrees with you, you like them very much. We've had a long and fruitful cooperation with the Boston group. We then went down through New York to Baltimore, where we met Dr. Jonas Friedenwald at Johns Hopkins. He was scientifically well ahead of others at that time. He was a very gracious man and helped me to understand his theories of aqueous production.

The Josiah Macy Glaucoma Forum

We maintained a close association with Peter Kronfeld, who was responsible for getting me appointed as one of the participants in



Josiah Macy Foundation Conference, Princeton, New Jersey. *Front row:* David Nachmansohn, George K. Smelser, Margaret Tyne, Frank Fremont-Smith, Peter C. Kronfeld, Bernard Becker. *Second row:* David O. Harrington, Russell L. Carpenter, Paul A. Chandler, D.V.N. Reddy, Elizabeth Purcell, Robert N. Shaffer. *Third row:* Winston Roberts, Thomas H. Maren, Frank W. Newell, H. Saul Sugar. *Fourth row:* Ludwig von Sallmann, Patrick Hayes. *Fifth row:* Lorenz E. Zimmerman, Melvin L. Goldman, Ross S. McConnell. *Back row:* W. Morton Grant, Ernst Barany, Irving H. Leopold, V. Everett Kinsey.

the Glaucoma Forums, which were supported by the Josiah Macy Foundation. They were, undoubtedly, the most important scientific meetings that I attended. They consisted of a series of 3-day meetings, held annually for 5 years at Princeton University. The group consisted of a few clinical ophthalmologists like myself, Saul Sugar, Paul Chandler, Morton Grant, and Harold Scheie. The rest were scientists from many different disciplines. About 20 to 30 discussants attended each meeting. I first met Bernard Becker there and our meeting led to a very fruitful future association. The roster of participants changed each year and several guests came for only one or two meetings. There were men from abroad; Ernst Barany comes to mind. He was a wonderful scientist who challenged anything that pertained to one of his many areas of expertise. I can also recall Norman Ashton. He, along with Levon Garron and Lorenz Zimmerman, discussed the histopathologic changes associated with glaucoma.

I was very impressed with the way that a member of a small group such as this could interrupt a presentation to challenge another person's viewpoint. I found it a very stimulating method of learning. The leader of the discussions was Dr. Frank Freemont-Smith, who was an Englishman living in New York City. He kept programs flowing smoothly and discouraged enthusiastic speakers from monopolizing discussions. If one of the participants described an experiment he had done and obtained a certain result and another participant said he had done the same experiment and found just the opposite, Freemont-Smith would interrupt and say: "Now gentlemen, let's discuss this. If exactly the same experiment is done, it is impossible to obtain different results. Now let us find out how your experiments differed." This same protocol was adopted at our research conferences when our Foundation for Glaucoma Research was founded later on (see page 36).

More on the Glaucoma Clinic

SPENCER: Let us return to our discussion of the Glaucoma Clinic at UC. How often did you meet?

SHAFFER: During the war years, it was strictly a place where I could examine glaucoma patients in the clinic with the residents whenever time was available. There were only a few residents then. It wasn't until after the war, when many of our former faculty and ophthalmologists from the surrounding areas returned, that we began to hold weekly conferences. One of the residents would present problem cases for discussion by the audience made up of other residents, interested staff physicians, and ophthalmologists from the area. Residents also took turns in presenting interesting cases and new developments in glaucoma at the weekly grand rounds. The entire eye department would meet for grand rounds every Thursday morning and we were responsible for presenting unusual glaucoma cases once a month.

The Donaldson Camera

SPENCER: Tell me about your acquisition of the Donaldson camera.

SHAFFER: My secretary in the Glaucoma Clinic was Diane Beeston. She was an avid photographer of sailboats on San Francisco Bay. When we learned about the stereo camera invented by David Donaldson of Harvard, Professor Cordes agreed to buy one for the department. He followed through on the commitment by paying Dr. Donaldson to come to San Francisco to instruct Diane and me in the use of the camera. He arrived at the clinic in pain from a large pus-filled boil at the apex of his scalp. It obviously needed to be evacuated. I got a Bard Parker knife and neatly incised the boil, but forgot about the vascu-

larity of the scalp. Poor Dr. Donaldson sat bent over in a clinic chair, dripping blood on the floor. Finally he looked up and plaintively asked, "Can't I see a real doctor?"

SPENCER: As I recall, you put the stereo camera to good use in your teaching sessions.

SHAFFER: The Donaldson camera was a great teaching tool for illustrating the anterior portion of the eye, and by adding a gonioscopic contact lens to neutralize the corneal curvature, the anterior chamber angle could be seen and photographed in stereovision. Before we took these photos, teaching gonioscopy to residents was difficult because only one person at a time could look through a microscope at the anterior chamber angle. Diane and I put together a selection of stereo photos, and a stereo manual was produced to illustrate the normal stereoscopic appearance of the anterior chamber angle structures as well as abnormalities that could occur with pathologic conditions. A View-Master stereo viewer was attached inside the back cover. The beautiful stereo photos and text were combined with excellent drawings and diagrams prepared by our staff artist, Joan Esperson. The manual made the anatomy of the anterior segment and the pathologic problems much easier to understand.²

Continuing Education Conferences

SPENCER: I also recall that you organized and presented large continuing education glaucoma conferences.

SHAFFER: We would put on courses every year or so, sponsored by the University of California continuing education group and our office,

² *Stereoscopic Manual of Gonioscopy: Photography by Diane Beeston, Medical Illustration by Joan Esperson.* St. Louis: C.V. Mosby Company; 1962.

to help general ophthalmologists throughout the state keep up to date. The courses were well received and, on one of my more optimistic days, I decided to give a course limited to ophthalmologists who were teaching glaucoma in the various universities throughout the country. By that time, we had an outstanding glaucoma faculty. Levon Garron and Lynnette Feeney had studied the ultrastructure of the trabecular meshwork; David Harrington was our expert on perimetry; William McEwen and Vicente Jocsin were doing animal studies of aqueous outflow; and William Casey had studied aqueous pharmacology. But we did not have anyone who was particularly skilled in clinical tonography, which was the newest area of interest in glaucoma. As I mentioned earlier, tonography had been developed by Morton Grant to measure aqueous outflow, and Bernard Becker in St. Louis was the strongest and most experienced advocate of tonography's clinical value. So I asked Dr. Cordes if we could invite Dr. Becker to come as a visiting professor. To my dismay, Dr. Cordes said: "No. We put on our own courses!" Fortunately, Earle McBain, who was an excellent scientist, in addition to being a fine clinician and a member of our faculty, agreed to read up on tonography and discuss the subject at the course. He did well.

To our surprise and pleasure, some 75 glaucoma teachers from all over the country came to the course. Among the attendees was Bernard Becker, who came as a student! Needless to say, our faculty was well stimulated and put on an excellent course. It was also the first time stereoscopic photographs of the eye were shown. The course led to a lasting friendship with Bernie Becker and to our co-authorship of our glaucoma textbook, which is now in its 7th edition.³

³ *Diagnosis and Therapy of the Glaucomas*. St. Louis: C.V. Mosby Company; 1961. Revisions have been made by Bernard Becker and Robert N. Shaffer (2nd edition, 1965), Allen E. Kolker and John Hetherington, Jr. (3rd to 5th editions; 1970, 1976, 1983); H. Dunbar Hoskins, Jr., and Michael A. Kass (6th edition, 1989), and by Robert L. Stamper, Marc F. Lieberman, and Michael V. Drake (7th edition, 1999).

SPENCER: So, the first edition of the Becker-Shaffer textbook preceded publication of your manual on gonioscopy.

SHAFFER: Yes. I was heavily involved in clinical glaucoma and teaching during the war and for several years after, so I really had not published very much. Dr. Michael Hogan had followed Dr. Cordes as head of the department about the time that Bernard Becker and I were beginning to write our book. One night in the euphoria of a cocktail party, Dr. Hogan took me to task for not writing more papers. When the Becker-Shaffer textbook was published [1961], I sent a first edition to Dr. Hogan with the inscription: "To Dr. Michael Hogan, without whose alcoholic urgings this book might never have been written." Back came a thank-you letter from Dr. Hogan: "I worry about the long-term effects of alcohol. You have inscribed my book upside down and backwards!" I had enjoyed working with the editors at Mosby, who encouraged me to proceed with writing the gonioscopy manual. It was published the next year [1962].

The Glaucoma Fellowship Program

SPENCER: When did you start to train glaucoma fellows?

SHAFFER: By 1962, the office files were full of worthwhile material for research and the Glaucoma Clinic at UC had grown. Jack Hetherington had completed his eye residency at UC in 1964 and had spent the succeeding year in charge of the Academy's Tonometer Standardization Station. He joined me in our glaucoma consulting practice shortly thereafter. So we had the manpower and educational resources needed to start a glaucoma fellowship program. Dr. Daniel Weiss, fresh from his residency at New York University, asked to spend a year as a fellow in our office and at UC. Jack Hetherington and I soon found that the questions asked by this young, intelligent ophthalmologist were a great stimulus to us. His presence caused us to justify the rationale of our diagnostic and surgical methods and led us to look at glaucoma problems in new ways. Incidentally, in 1970, Dan Weiss co-authored a textbook with me on the congenital and pediatric glaucomas.⁴

Working with a fellow was an enjoyable and educational experience and we have continued to accept glaucoma fellows ever since. Each year, a new fellow has been chosen who has just completed 3 years of residency at a good teaching hospital. In the early years, in addition to having strong references, it was a point in their favor if they played tennis! Jack Hetherington, and later Dunbar Hoskins, and I would complete the day's work and then go to a convenient tennis court with the fellow for an hour or two of strenuous relaxation.

⁴ *Congenital and Pediatric Glaucomas*. St. Louis: C.V. Mosby Co.; 1970.

Especially in the early years, when life seemed less complicated, the fellow became part of the Shaffer family. Virginia helped them with their publications and presentations and has been called the “Mother Superior”!

SPENCER: As a former eye resident at UC, I can attest to the value of Virginia’s constructive criticism. Before we move on, let me ask you to say a bit more about the way fellows were integrated into your office and teaching activities.

SHAFFER: Over the years, three former fellows—Dunbar Hoskins, Christopher Dickins, and Andrew Iwach—have joined Jack Hetherington and me as glaucoma specialists in the “Shaffer Associates.” We had a nucleus of glaucoma patients for whom we cared, but most of our practice consisted of difficult problem cases referred by other doctors. In the early years our records were on punch cards, but the records have long been completely computerized. Statistical analysis of almost all glaucoma problems became possible, and the data has formed the basis of our teaching as well as research papers written by my partners and fellows.

We continued to teach in the Glaucoma Clinic at UCSF and helped to put on glaucoma conferences and teaching seminars for West Coast ophthalmologists every year or so. The Foundation for Glaucoma Research [now called the Glaucoma Research Foundation] served as our research arm. When the Foundation office was moved downtown, the glaucomatologists in our office formed their own research organization, GREG—Glaucoma Research and Education Group. GREG supervises the work of the foreign fellow for the year. The fellow can examine patients and conduct in-house research, but because of licensing and insurance regulations, surgery is not permitted. He does get one week of surgical experience in Guatemala and his expenses are also paid to medical meetings such



Glaucoma fellows, 1971. *Back row, left to right:* Paul Lichter, Dan Weiss, Richard Kanter, Ken Richardson, Robert N. Shaffer, Gerry Rosenthal, Dunbar Hoskins, Harry Roth. *First row:* Jack Hetherington, Bob Read, Joseph Kadi, Don Morin, Norman Ballin, Elliott Frankelson.

as the American Academy of Ophthalmology. Every February, GREG hosts a one-day refresher course for West Coast ophthalmologists, where the fellow presents a summary of his research. Drug companies help support the expenses of the course, which includes invited guest speakers. Each year the attendance has been over 200.

SPENCER: How many fellows have you trained?

SHAFFER: As of 2001, there have been 42 fellows. Most of the fellows have become teachers in various medical schools. Some half dozen have become heads of departments. Two, Paul Lichter and Don



The First Robert N. Shaffer Glaucoma Lecture, delivered by Dr. Bernard Becker, 1980. *Left to right:* Drs Dunbar Hoskins, Bernard Becker, Robert Shaffer, Paul Lichter.

Minckler, have become editors-in-chief of the Academy's journal *Ophthalmology*. The fellows have formed the Society of Shaffer Fellows, which meets for dinner every year at the American Academy of Ophthalmology's annual meeting. By unanimous consent, Steven Litinsky and his lovely wife, Laura, arrange a congenial place for dinner and reminiscences. For the past 22 years, the Society, in partnership with the National Society to Prevent Blindness (now Prevent Blindness, America), has paid the expenses for a prominent glaucoma teacher in North America or abroad to give the annual Shaffer Lecture during the Academy meeting.⁵

⁵ See Appendices B and C for the roster of Shaffer Fellows and list of Shaffer Lecturers.

SPENCER: Has the fellowship been limited to graduates of American training programs?

SHAFFER: No. Ten of the 42 have been from outside the United States. Five of them were from Canada. The others were from Japan, Indonesia, Peru, New Zealand, England, and South America. They are considered members of the Society of Shaffer Fellows.

In 1990 it was generally accepted that the United States' training programs were producing a national plethora of glaucoma specialists. Our office stopped choosing fellows from the United States and began to appoint only foreign-trained ophthalmologists, mainly from South America. They serve in the office under the auspices of our office research arm, GREG. They are included in the Society of Shaffer Fellows and continue to have partial financial support from the Foundation for Glaucoma Research (FGR).

Not to be outdone, FGR initiated the "Shaffer International Fellowship." Various training programs in the United States have offered to accept foreign ophthalmologists for one year. The cost is born by FGR. It is hoped that they will return to their home countries to help raise their standard of practice.

The Foundation for Glaucoma Research

SPENCER: How did the Foundation for Glaucoma Research come about?

SHAFFER: Mrs. Blanche Matthias had been a patient of Professor Cordes, and he had referred her to me for consultation. Upon his death, she became a patient of mine and of Dunbar Hoskins, who had joined the office following his fellowship in 1970. Mrs. Matthias was a very wealthy widow, and in talking with Dunbar, the idea of a research foundation to study glaucoma was mentioned. In 1978, Mrs. Matthias and her good friend, Berenice Hauck, contributed almost a million dollars apiece to found the Foundation for Glaucoma Research. The Foundation has thrived and is spending nearly a million dollars a year to support glaucoma research by prominent scientists in the United States, Canada, Europe, and Japan. The Foundation has helped fund the GREG foreign fellows and has also sponsored the Shaffer International Fellowship. FGR has published many pamphlets, including some directed toward patients with glaucoma. One, *Understanding and Living with Glaucoma*, has had over a half-million copies distributed. The Foundation also publishes a monthly bulletin, *Gleams*, that is mailed to all contributors. In addition, the Glaucoma Research Eye Donor Network has been established to provide researchers access to glaucomatous eye tissue.

Memorable Contributions to the Ophthalmic Literature

Malignant Glaucoma

SPENCER: How did your interest in uncovering the pathogenesis of ciliary block (malignant) glaucoma come about?

SHAFFER: It happened that both Michael Hogan and I had seen several patients who had had cataracts removed and had developed acute glaucoma, with the vitreous forced against the cornea by aqueous trapped in the vitreous. Incising the hyaloid allowed aqueous to reach the anterior chamber, and the glaucoma was cured. Serendipitously, I had several patients with acute glaucoma referred to me. They had developed typical angle-closure glaucoma, but had not been cured by iridectomies, iridencleises, sclerectomies, cataract extraction, etc. After cataract extraction, the vitreous remained plastered against the cornea. Lens removal often broke the block, but only if vitreous was lost. It seemed to me that this must mean aqueous was being trapped and forcing the vitreous forward. Subsequent study of pathologic specimens showed that, indeed, vitreous was adhering to the anterior ciliary body, forcing aqueous to flow backward into the vitreous. We named the disease "ciliary block glaucoma." Incising the hyaloid during lens removal, or vitrectomy often cured the disease.⁶

⁶ Weiss DI, Shaffer RN. Ciliary block (malignant) glaucoma. *Trans Am Acad Ophthalmol Otolaryngol* 1972;76:450-461.

Reversible Cupping of the Optic Nerve Head in Congenital Glaucoma

SPENCER: Please tell me about another new observation that you and Ken Richardson made regarding the reversibility of optic nerve head cupping following successful goniotomy in infants with congenital glaucoma.⁷

SHAFFER: Oh, that was a wonderful surprise. Thanks to Otto Barkan and my interest in gonioscopy, we were sent many cases of infantile glaucoma for goniotomy. We used a contact lens at surgery and could easily view the optic nerve head through the contact lens using a direct ophthalmoscope. So we had the opportunity to compare the appearance of the optic discs before and after successful goniotomy. To our surprise, unless the glaucoma was very advanced, successful surgery resulted in marked reduction in the degree of optic nerve head cupping. Everyone assumed that the cupping was permanent, as it usually is in advanced chronic open-angle glaucoma in adults, where increased intraocular pressure gradually produces the cupping. In infantile glaucoma, the disc is quite elastic and marked cupping can be produced in a few weeks or months.

SPENCER: Is the cupping in infants with congenital glaucoma not as likely to be associated with severe loss of nerve fibers as it is in adults?

SHAFFER: We could not be sure that nerve fiber loss had not occurred in these infants because we were unable to test their visual fields until they grew up. However, on follow-up exams when the children were older, we were pleased to find that the optic cupping did not

⁷ Richardson KT, Shaffer RN. Optic nerve cupping in congenital glaucoma. *Am J Ophthalmol* 1966;62(3):507-509.

redevelop and the visual fields were quite good in most of the children who retained normal intraocular pressure for years after surgery.

Microsurgery of the Outflow Channels

SPENCER: You organized and chaired a memorable symposium on microsurgery of the outflow channels at the 1972 meeting of the American Academy of Ophthalmology.⁸ As I recall, the symposium served to usher in the trabeculectomy operation and more or less ushered out full-thickness sclerectomy and trephine procedures.

SHAFFER: When the operating microscope came into use in the late 1960s, its magnification and lighting allowed us to see the structures of the limbus and chamber angle much better than we had in the past. This led to the development of so-called microsurgical procedures, such as trabeculectomy and trabeculodialysis, designed to use small instruments to open the inner wall of Schlemm's canal through small incisions. The discussants at the symposium showed that these operations worked by allowing aqueous to drain externally along the incision sites rather than internally via openings into Schlemm's canal. Trabeculectomy removes only the inner portion of the limbal sclera so the opening into the anterior chamber is covered by a thin outer scleral layer. Trabeculectomy became popular because it is less likely to cause postoperative hypotony and a shallow anterior chamber than is full-thickness sclerectomy or trephine operations.

⁸ Shaffer RN. Symposium: microsurgery of the outflow channels [introduction and conclusion]. *Trans Am Acad Ophthalmol Otolaryngol* 1972;76:367-411.

The American Board of Ophthalmology

SPENCER: Please tell me about your long association with the American Board of Ophthalmology (ABO).

SHAFFER: Of all the organizations to which I have belonged, the most worthwhile and the most rewarding has been the American Board of Ophthalmology. In 1942, one year after completing my residency, I climbed aboard a steam-engine train headed for Chicago, where I was scheduled to take the certifying examinations of the American Board of Ophthalmology at the Illinois Eye and Ear Infirmary. At that time, there was a written test in the morning and an oral examination in the afternoon. Microscopes and slides of pathologic problems were used. The examiners were kind to me and I became a diplomate of the Board.

In 1946 the Board examinations were held at the University of California Hospital in San Francisco. To my delight, I was asked to be an associate examiner. By that time, the Board had separated its written and oral examinations, and the candidates qualified for this oral examination by a written test given previously. As you know, the Board has upgraded the reliability of its tests every year since then. I served as an associate examiner several times before I was elected to the Board as a director in 1960, where I served for two 4-year terms.

SPENCER: You were appointed assistant secretary-treasurer of the Board in 1969. How did that occur?

SHAFFER: From the outset, the executive officer of the Board was the secretary-treasurer, and the Board office was located near his office.

The first secretary-treasurer was Frank Todd [1916-1917]. He was followed by William Wilder [1918-1935], John Green [1936-1947], Edwin Dunphy [1948-1954], Merrill King [1955-1965], and Francis Heed Adler [1965-1980]. These men were all very busy ophthalmologists and could not possibly have handled the details of Board business without help. In one of his wisest moves, Dr. Wilder hired Lea M. Stelzer in 1924 as registrar [administrator] of the young Board. During the tenure of five secretary-treasurers [1924-1967], she handled the routine business of the Board almost single-handedly. From 1968 to 1980, Emily Ann Adler was administrator. She had a distinguished business career before she married Dr. Adler and ably applied her experience and knowledge to Board activities. She showed her sagacity by hiring Mary Ladden in 1980 and her younger sister Rita Ladden shortly thereafter to help solve the intricacies of the expanding Board. On Dr. and Mrs. Adler's retirement in 1980, Mary accepted Mrs. Adler's role as administrator and Rita as associate administrator of the Board. They have been largely responsible for converting the Board into a streamlined, modern organization.

The Board office was housed in the three upper rooms of Dr. Adler's mansion in Chestnut Hill, just outside of Philadelphia. In a park-like setting, it was a delightful place to work. In 1967, my 8 years as a member of the Board terminated. But Dr. Adler's health became somewhat tenuous and the Board appointed me to be his assistant, a position I held until his retirement in 1980, when I was elected secretary-treasurer [1980-1985].

SPENCER: The Board office stayed in Philadelphia during your term as secretary-treasurer but you remained in San Francisco. How did this departure from the tradition of moving the Board office to the city in which the secretary-treasurer resided come about?

SHAFFER: It posed a major conundrum when I accepted the position of secretary-treasurer. Should the Board office remain in the East or be moved to the West? Such a move would have been most difficult. It was decided to move the Board headquarters to a space that would be expandable and permit the staff to grow in the future. An office building in Bala Cynwyd, a suburb of Philadelphia, was selected. Moving and cataloging all the records of directors, candidates, diplomates, and past examinations to the new location was a formidable task. Fortunately, Mary and Rita Ladden and their staff were completely capable of handling all the routine business of the Board.

SPENCER: How did you communicate with the staff?

SHAFFER: The computer age was in its infancy but was obviously the wave of the future. In my home in the West, I was equipped with a precursor of the fax machine, "Quip." The Laddens had a similar machine at the office, so that almost instantaneously written matter could be sent coast to coast. By using Quip, as well as frequent phone calls and visits to Bala Cynwyd, the business of the Board progressed smoothly. Since then, all the affairs of the office have become completely computerized and Quip has been retired.⁹

⁹ For more information about Dr. Shaffer's tenure as secretary-treasurer of the American Board of Ophthalmology, the reader is referred to the introduction to this oral history written by Mary and Rita Ladden. An authoritative history of the Board was written by Dr. Shaffer in honor of the Board's 75th anniversary—*The History of the American Board of Ophthalmology: 1916–1991*; privately published in 1991.

Other Organizations

The San Francisco Ophthalmological Round Table

SPENCER: What other ophthalmology organizations stand out in your memory?

SHAFFER: Over the years, I have been a member of many of the major eye societies as well as state and local medical societies. The San Francisco Ophthalmological Round Table was my first membership. Ophthalmologists in the Bay Area and surrounding counties gathered for dinner at the Bohemian Club or Family Club a few times each year to listen to presentations by guest speakers on some topic of eye interest, for good fellowship, and for occasional off-color stories.

SPENCER: The San Francisco Round Table meetings were delightful. I remember one occasion when you invited Professor Hans Goldmann from Switzerland to attend and speak to the group.

SHAFFER: I had forgotten that. He had a good time at dinner and had not remembered that he was scheduled to speak and did not bring any slides with him. So when he was introduced, he merely asked for a blackboard and chalk and gave a wonderful talk on how he developed applanation tonometry. There was a lively discussion—a great evening!

The American Academy of Ophthalmology

SPENCER: Please comment about your association with the American Academy of Ophthalmology.

SHAFFER: The American Academy of Ophthalmology has been the major eye organization in the country, both educationally and politically. I was never involved in the politics, but I was appointed first vice president one year. I attended most of the national meetings. The Shaffer office doctors have taught educational courses every year and have usually been on the meeting program, presenting papers on glaucoma. At present, one member of our office, Dunbar Hoskins, is the executive vice president of the Academy.

SPENCER: You were chosen to deliver the Edward Jackson Lecture.

SHAFFER: Yes, I was particularly pleased to be invited to deliver the Jackson Lecture in 1964.¹⁰ It had been only a few years since the double helix structure of DNA had been described and there was great interest in the heredity of all diseases. One of them, of course, was glaucoma. It so happened that *Life* magazine had just devoted one issue to advances in understanding heredity. It included wonderful drawings illustrating the double helix of DNA. With difficulty, I obtained permission from *Life* to brighten my talk with these drawings. My summary of the chemistry and the potential for better understanding of the heredity of the glaucomas in the future was well received. However, I was told afterwards that Ed Maumenee, in the back of the hall, praised the presentation, but commented, "Listen to that Shaffer. He doesn't know a thing about DNA." How true!

The American Ophthalmological Society

SPENCER: You also became a member of the American Ophthalmological Society (AOS).

¹⁰ Genetics and the congenital glaucomas. *Trans Am Acad Ophthalmol Otolaryngol* 1965;60:981-984, and *Am J Ophthalmol* May 1966;61.

SHAFFER: The AOS has been the most prestigious eye society in the country. It was founded in 1864 and is limited to 250 active members. To be considered for active membership, one has to be proposed by two members, to have made significant contributions to the scientific literature, and, finally, to publish a thesis acceptable to the Thesis Committee and Council. I was proposed for membership and had to select a subject for my thesis.

SPENCER: I find it interesting that you did not choose to write about glaucoma but decided, instead, to study the effects of a radioactive element upon a postoperative epithelial cyst of the anterior chamber.¹¹ How did this occur?

SHAFFER: In the late 1940s, a patient with cataracts, Mr. Oscar Geballe, was referred to me. He had a profound influence on my professional life. In 1950, we removed his cataract, but, sadly, a small implant of epithelium into the anterior chamber formed an epithelial cyst. Surgical removal was dangerous. In looking for an alternative, I contacted personnel at the Cyclotron on the campus of the University of California in Berkeley to see if radiation offered an alternative therapy. Standard radiation had much too great a depth of penetration and would ruin the eye. They suggested the radioactive element astatine. It is close to iodine in the periodic table. In its decay, it emits pure alpha irradiation that has only a millimeter of penetration.

Astatine sounded useful, but it had never been used on an eye and it was necessary to determine the potential for adverse ocular effects. All the research had to be performed on the University of California's Berkeley campus, an hour's drive from San Francisco. For a whole year, we kept the cyst from enlarging by periodically evacuating its fluid. During that year, we tested astatine's effect on the eyes of a group of colobus monkeys. We learned a lot, and so did the

¹¹ See Appendix A, reference 3.

monkeys! We had a colony of ten animals in separate cages whose eyes were injected with various concentrations of the drug over a period of a year. In the winter, we found the poor animals huddled as near to the heaters as possible. They were shivering from hypothyroidism! We had not realized that astatine, like iodine, was deposited in the thyroid gland, and radioactivity had destroyed these glands in the monkeys.

We finally thought we had a dosage that, logically, should be effective. An added problem was that astatine had a half-life of only 8 hours. I had to cross the Bay Bridge, obtain the drug, and get back to surgery at the University of California Hospital in San Francisco to inject the eye. Sadly, the corneal endothelium could not survive the insult and eventually the eye had to be removed. Fortunately, cataract extraction in the other eye was completely successful and that wonderful patient remained my staunch friend.

SPENCER: Wasn't it unusual for a clinical ophthalmologist to engage in basic research in those days?

SHAFFER: I suppose it was. In spite of the negative result, my paper was accepted by the Thesis Committee of the AOS and I was elected to membership in 1952.

SPENCER: Did you find the meetings of the AOS stimulating?

SHAFFER: I sure did. Most of the meetings were held at the Homestead, a lovely resort hotel in Virginia. Most of the better-known ophthalmologists in the US attended. After a morning of scientific presentations, afternoons were for play, with golf, fishing, and tennis. The evenings were spent dining with friends and dancing in the beautiful dining room. After many years, I became president [1984] and was awarded the Howe Medal [1986].



Tennis at the American Ophthalmological Society (AOS) Meeting, 1970.
Drs Marvin Sears, Lorenz E. Zimmerman, Robert Shaffer.

SPENCER: I well remember the year you were president and the meeting was held in Puerto Rico.

SHAFFER: I certainly do remember the Puerto Rico meeting, and I remember that you were in charge and the recipient of lots of criticism! Members were very conservative and suspicious of change, and to choose an almost foreign island was past their belief. The troops arrived and were immediately captured by the sparkling blue waters, the palm trees, and the graciousness of the Puerto Ricans. They were completely bowled over on entering the President's Reception. There was a balcony at one end of the reception area; looking from it to the other end of the hall, one saw a huge, magnificently carved ice sculpture—"AOS"—which Bill Spencer had somehow made. To add to the wonder, it was so designed that, seen from the balcony, its size subtended an angle equal to 20/200! It turned out to be one of the best meetings we have had, both scientifically and socially.

The Pan-American Association of Ophthalmology and the Pan-American Glaucoma Society

SPENCER: Perhaps you could comment on your association with ophthalmologists in South America and with the Pan-American Glaucoma Society.

SHAFFER: After the publication of the Becker-Shaffer textbook in Spanish, I began to receive invitations to be a guest speaker at some of their meetings. I had always admired the speakers from South America and Europe who came to the United States and spoke quite good English. So, for a couple of years, Virginia and I attended the Berlitz Language School to learn Spanish. She was a better student than I and was soon able to carry on easy conversations in Spanish with the doctors' wives and families. I rarely attempted to use Spanish in formal meetings. Fortunately, simultaneous translations of English to Spanish soon became the rule, and outside the meetings, I could use a bit of limping Spanish.

We began to attend the Pan-American Association of Ophthalmology, which meets yearly in many of their fine cities. Several of the best-known ophthalmologists in South America were especially interested in glaucoma. Discussions with two of them, Roberto Sampolesi of Argentina and Francisco Rodriguez Vasquez of Colombia, led to the founding of the Pan-American Glaucoma Society in 1964. It continues to meet at the same time as the Pan-American Ophthalmology Society each year.

SPENCER: I have heard that Dr. Harry Gradle helped organize the Pan-American Association of Ophthalmology.

SHAFFER: Yes. Harry Gradle was a prominent and much-respected ophthalmologist in Chicago who was of great help in organizing the

Pan-American. In his honor, a member of the Society or a visiting ophthalmologist is invited each year to give the Gradle Lecture. I was flattered to give this lecture in Lima, Peru, in 1983. In about 1990, I had the added honor of receiving the Gradle Medal for service to the Society in Caracas, Venezuela.

Our travels led to our having a profound respect for South American medicine and culture. We traveled extensively from Mexico, Venezuela, and Colombia in the North, to Punta Arenas, Chile, and Argentina in the South. It is a beautiful continent and the people are most friendly and charming.

Family Life and Leisure Activities

The question and answer format has been replaced in this portion of the history by a mini-memoir written in response to the editor's request that Dr. Shaffer reminisce about his family life and recreational activities.—Ed.

Family Life

Our family home was in western San Francisco, near enough to see the sand dunes but not the ocean. Especially in the summer, the fog would roll in much of the time. Meanwhile, I was working in downtown San Francisco in beautiful sunshine. We decided that our three boys deserved a brighter summer and began looking for property outside the city. One development, Kent Woodlands, was across the Golden Gate Bridge in Marin County. It had been the estate of a pioneer family and was now being developed for home sites. We found a beautiful meadow on two lots with a great view of Mt. Tamalpais and bought it for \$8,000. We made the mistake of having an architect make extensive drawings of a gorgeous home, but he estimated the cost of such a house would be over \$60,000. This was far more than we could afford and we sold the lots for only a bit more than our original price. Such lots are now selling for over 10 times our purchase price.

Soon thereafter, we found a small tree-covered hill in San Anselmo, looking up at Mt. Tamalpais and isolated from neighbors by a city street that surrounded it. A roadside office was selling a four-room pre-cut house of western cedar for \$12,250, and we bought it. The house came from Seattle in a big box: living room, two bedrooms, and a sleeping

porch for our three boys, plus a concrete garage and storage space underneath. Windows, doors, and cabinets were included. It became our dream house. Our architect friend Harold Wagstaff supervised the building and many renovations that were made over the years. Eventually, we had a huge redwood deck, under which was a guest house. In back was a combined badminton, basketball, and shuffleboard court as well as a horseshoe range—everything to help the children and their guests to enjoy our hill. In all, over many years, there were nine alterations, all supervised by Wagstaff. When Virginia phoned him concerning the ninth addition, his comment was, “All right, Mrs. Winchester!” (I hope the reader knows that Mrs. Winchester of rifle fame had a mansion and continued to add rooms because she believed she would die if her house were ever completed.)

Our hilltop was so isolated that it attracted birds, raccoons, and, unfortunately, deer. I tried to raise flowers and vegetables, but usually found that the deer had eaten them. Virginia and I finally decided that the animals were more beautiful than my digs could produce and we would live companionably with the deer. One November morning I looked out the back window and saw three or four does and a magnificent buck with the sun glinting on his antlers. I grabbed my camera and hurried out the back door, hoping to get a photo as he ran down the hill. Instead, he began to walk toward me, so I couldn't use the camera. At about 6 feet, he suddenly lowered his antlers and came into me full blast, hitting my thighs. I threw myself between his antlers, pinning his head to the concrete. He couldn't move and neither could I! Finally, I managed to get a double-handful of dirt and leaves, stepped back, and threw them in his face. At that moment, Virginia looked out of the back window and called, “Bob! I thought we were going to be nice to the deer!” He was finally discouraged by a blast of water from a hose and he and his harem disappeared over the hill while I headed for the hospital. Moral: Keep away from bucks in the rutting season!

Leisure Activities

Although I was kept quite busy with my medical responsibilities, I was able to find time for pleasurable extraneous activities in the early years. Virginia and I played quite a lot of golf with two good friends, Roly and Mary Pinkham. He was a surgical resident. Probably once a month, having completed ward rounds, we would take our clubs and drive north to Jack London's "Valley of the Moon" in the Sonoma Valley. We would climb into the hills, throw down an old blanket and our sleeping bags, and have a picnic dinner. We would play bridge by candlelight until tired, sleep until morning, and then head for the Sonoma golf course. It is now hard to believe, but we would play 18 holes in the morning, have a light lunch, and then play 18 more holes in the afternoon. Then, after a picnic dinner, we sleeping-bagged and bridged again, and next day repeated those 18 holes morning and afternoon before returning to the city to face the real world.

For a short time during the war years, the owners of the 1200-acre Jack London Ranch, Jack and Mildred Shepherd, operated the property as a guest ranch. We became close friends of the Shepherds. Mrs. Jack London was still living in her home on the ranch, "House of Happy Memories." We and the Pinkhams each had three young children and the ranch was a wonderful place to stay. There was a lake filled with bass where we could fish and swim. Horses were available to ride trails in the mountains above the ranch. Our children learned outdoor living in beautiful surroundings.

Years later, when our boys were in their 20s, we still kept in touch with the Shepherds. One of their customs each fall was to invite all their friends in the valley to the ranch for a deer hunt. We were never hunters, but my brother Bill loved to hunt. I arranged for him to come up for a weekend on the ranch. To our amazement, Bill spent his time hunting the daughter of the ranch, Joy Shepherd. He was eminently successful and they are living in the Sonoma Valley, as are their several children.

As a comment on the changing mores of our country, I want to tell you about my brother who is 15 years younger than I. My mother was in her 40s when she unexpectedly became pregnant. She was so ashamed that she took to her bed at about the seventh month. Everyone thought she had some chronic illness. Only about four people knew she was pregnant and this did not include me! She even went to the hospital under an assumed name. I returned from high school one noon after taking a Latin test to learn I had a brother. I sat down at the piano and very soulfully played "Miserere." We are now devoted friends.

Over the years, I have played a lot of mediocre tennis with my partners and fellows. At medical meetings we were usually able to find time for a quick set or two with friends. One special friend has been DuPont Guerry, chairman of the eye department at the University of Virginia. He trained two of my tennis-playing partners, Dunbar Hoskins and Chris Dickins. Like me, he continued to play into his 80s, but he played tournament tennis. I recently asked him how his tennis was doing. "Oh, Bob, it's much better! That son of a gun who kept beating me died!"

The Russian River Navy

Our longest-valued association with friends has been with four couples of the "Russian River Navy," which had its maiden voyage in 1957 with an exciting 3-day canoe trip shooting the rapids of the Russian River, 40 miles north of San Francisco. The "Navy" consisted of my Stanford classmate Philip Westdahl, a surgeon, and his wife, Georgia; my partner, Bill van Herick and his wife, Louise; our architect, Harold Wagstaff, and his wife, Eleanor; and Virginia and me. By common consent, the "Admiral" of the fleet was Phil Westdahl, mainly because he would raid the pathology laboratory and liberate enough dry ice to keep beverages cold for the 3 days of our voyage. As a reward he was

permitted to paint our motto, "D.P." (Don't Panic), on the bow of his canoe. With wild tales of burned dinners, foaming rapids, fallen trees, and irate farmers, we would return to our wives and a delicious reunion dinner and an eager wait until next year.

After several years, the Russian River began to seem a bit "tame" to us seasoned river men, and for 20 years we tried out several much wilder rivers to the north—the Eel, the Trinity in the Trinity Alps mountains, and the mighty Sacramento River. Having proved our manhood, we then came back to the Russian River, bought two more canoes, and for another 10 years shot the rapids with our wives. Those were wonderful, hilarious times with all the complications one would expect.

The only problem was that we were getting older and soon were too stiff to get in and out of canoes when the inevitable emergencies occurred. We deserted the Russian River and headed east for our summer outings to hike in the meadows and granite cliffs of the Sierra Nevada mountains. Eventually it was agreed that mountains had become a bit too challenging and we began staying in comfortable lodges with sleeping quarters and food provided!

As these words are being written, the Russian River Navy is slowly sinking. We can boast a fine array of incapacities, mental and physical, but we carry on bravely, true to our motto "DON'T PANIC!"

Travels

The British Isles and Ireland

We have had a number of trips to Europe, some professional and some for pleasure. We have driven through most of the British Isles. The Oxford Ophthalmologic Congress was our main professional interest in England. The Congress is very British and very structured. At the inaugural banquet, the incoming master must deliver a formal speech.

At one meeting I attended, the master began his oration but we found it incomprehensible. Suddenly, there was a crash of a fist at the head table and Sir Stuart Duke-Elder stood up and shouted, "Well, I'll be goddamned!" The master was giving his speech in Latin!

At one of the Congress meetings, I had the pleasure of attending with my 80-year-old father. While the family was staying at an Oxford inn, he and I stayed in Balliol Hall, Oxford. It was a thrill climbing the stone steps hollowed out by generations of students' feet. At another time, I was invited to give the Montgomery Lecture in Dublin. We tried, unsuccessfully, to find a bed-and-breakfast inn and ended up chartering a small boat for 3 days on the Shannon River before the meeting. We reached the meeting on time. Yes, we kissed the Blarney Stone!

One major trip deserves to be mentioned. When the boys were between 8 and 12, we took the whole family to England—and I mean "the whole family"!—the five of us, plus my father and mother and Virginia's mother. This meant we had to be in two small English cars. Virginia had to drive one and I, the other. The boys behaved like boys. My father in particular took it upon himself to try and enforce discipline. Virginia and I, in separate cars, could not modify the rules effectively, so we had some steamy times as we drove through England.

One hot, humid, summer day in the summer of 1952, in two small English cars, without air-conditioning, and with eight unhappy passengers, we were driving through southern England. We drove over the brow of a hill, and there was a beautiful blue bay, sparkling in the sun. Sailboats were bobbing on the waters docked at the quaint English Inn at Fowey—heaven! The three boys were all good swimmers and couldn't wait to dive into that appealing water.

We checked into the inn and headed for the harbor. Swimming strongly toward us was a Capetown woman, who clambered onto the pier and exclaimed, "Oh, American boys! Can you show me the American crawl stroke?" The boys strutted toward the water, put one foot into

the frigid English water, and recoiled in horror. "Oh, we swim in heated pools at home." The American flag was at half-mast! Actually, in retrospect, we all thoroughly enjoyed our visit to England. In London we had the privilege of having tea with the great English eye pathologist Norman Ashton in his apartment in Westminster Abbey. He was amazed at the quantity of orange pop that the boys could consume.

Continental Europe

JOYS OF THE FRENCH CANALS

Of all the vacation pleasures we have had, undoubtedly the best were trips with friends or family running our own boats on the canals of France. Once, we tried the English and Welsh canals, but they were a bit too strenuous. The locks were old and rusty and there were no lock keepers stationed to help us, as there are in France. One of our earliest voyages was on the Canal du Midi in the South of France, with Bill and Anne Spencer in one boat and our son John, his wife Sue, Virginia, and me in the other. This canal has been operating for nearly three centuries and represents a triumph of engineering. The canal runs through tunnels in mountains, and by bridges over rivers on the way to the Mediterranean Sea. We thoroughly enjoyed the countryside, the vineyards, learning to handle the boats in the locks, and buying food from lock keepers and village stores. We could cook our meals in the galley of the boat or stop at quaint villages and bicycle to eat in local restaurants. A special treat was spending a day wandering the crooked streets of the medieval, turreted town of Carcassonne, the staging place for the Crusades. There was always adventure around the next bend of the canal, such as a huge commercial barge heading toward our boat and, seemingly, occupying most of the canal.

On a later voyage with Mary and Rita Ladden and the Spencers, I ran along the catwalk to retrieve a line in the stern of the boat, tripped, and fell into the lock between the boat and the stone wall, where I was

in danger of being crushed. If there were no friends to help, I would be there yet!

The most significant and most enjoyable voyage we ever had was on the Canal du Nivernais in early August of 1989. We had ten Shaffers in two large boats.¹² We had survived the long air flight and shambling with all our baggage through the subways of Paris, and were delighted to embark on the canal, which winds through beautiful pastoral lands, past picturesque, small villages, and then through the foothills of the Morvan mountains. On August 12th, the boats were moored for the night and Virginia and I took a walk through a lovely village. On our return, we were amazed to find the boats ablaze with lights, banners, balloons, and gifts in celebration of Virginia's and my golden wedding anniversary. What a wonderful and thoughtful family!

Switzerland has always been one of our most-loved countries in Europe. In addition to its beautiful mountains and meadows, it is the home of our special friends, Heinrich and Marianne Konig. They first came to San Francisco almost 50 years ago on their honeymoon. He came to study in the Department of Ophthalmology at the University of California. Through them we have seen many wonderful and unusual places in Europe. Several years ago, the Konigs arranged an outstanding vacation on the canals of France and Germany. There were eight old friends—from Switzerland, Heini and Marianne Konig, Hans and Marianne Gassmann; from San Francisco, Stacy and Nancy Mettier, Charley and Pat Hoffner, Bill and Anne Spencer, and Virginia and me. Most of this group had previously had a wonderful trip together through the baroque countryside of Germany. Stemming from that trip, we called ourselves "The Baroque Ophthalmological Society" because that year I happened to be president of the American Ophthalmological Society (AOS). Our pennant flaunted the "BOS" with a Swiss cow, rampant, which we flew over our canal boats.

¹² Eldest son John and his wife, Sue; their daughter, Tracy; our middle son, Stuart; our youngest son, Will, and his wife, Kim; and their two teenagers, Justine and Jordan.

The Konigs had chartered two diesel-powered cabin cruisers for a voyage through Alsace-Lorraine, with its charming blend of French and German influences. One marvels at the skill of the old-time builders who created the huge network of canals and waterways that bound Europe together long before good roads were built. They extended from the Netherlands, France, and Germany to the Mediterranean as well as Russia. At one point, there was a mile-long tunnel. At another, there had originally been a series of 23 locks in a row to get the boats down from a plateau into the next valley. This had been a difficult and time-consuming task in the past. An ingenious device solved the problem. It employed a single movable lock that looked like a bathtub. The boats entered the lock, the gates were closed, and then the whole lock slid sidewise down a counterbalanced ramp into the valley in just a few minutes. There the gates opened and we sailed on our way. It was a great trip with wonderful friends.

Medical meetings in Germany, France, Spain, and Italy have all been most enjoyable. In all of these, we have managed to spend a bit of extra time before or after the meetings to enjoy the people and the countries. In Heidelberg we had trouble sleeping because of the church bells ringing all night. At a meeting there, I presented some research by my partner Jack Hetherington and me. We had compared the long-term visual results of medical versus surgical treatment of open-angle glaucoma. Our advice was to use medical treatment as long as possible. I had presented the paper and was walking up the aisle when I was stopped by one of Europe's premier eye surgeons, Boberg Ans. He grabbed my hand and shook it warmly and said, "Dr. Shaffer, I could not agree with you . . . less!"

We have boated the Baltic Sea to St. Petersburg, the Atlantic on the route of the Vikings, the Mediterranean to Istanbul, the North Sea, past North Cape to the ice cap, only 6 degrees from the North Pole. What a life!

Africa

In Africa, we have been on several safaris in Kenya and Uganda that were most exciting. Our first trip was to Johannesburg in South Africa, where I was the guest speaker of the first South African Congress. Jack Hetherington and I had just completed a study showing for the first time the amazing recovery of the optic discs of children with congenital glaucoma after their cure by goniotomy. The photographs were quite spectacular. I had just finished the talk when a phone call came from the States that my father had just died. It took us 29 hours to get back to California. It was a sad ending to a fine trip.

Japan, New Zealand, and Indonesia

We have many friends in Japan. Several have either visited the University of California or spent time in the office as fellows. Two of them, Shiroaki Shirato and Misato Adachi, now teach in Tokyo. A special friend is Professor Yoshi Kitigawa of Gifu and Tokyo. Through them, we have celebrated the tea ceremony, slept in ryokans, and explored many beautiful areas of Japan. Two Japanese students, the Nakaizumi brothers, spent a year at UC. Nobody could pronounce their first names, so they were known as "Yuki-1" and "Yuki-2." On one of our visits to Japan, we were whisked to the south aboard the bullet train to a quaint inn, where we promptly found ourselves disrobed at the hot bath in the basement. Virginia was like Salome and her seven veils, hoping the Japanese attendant would go away. He didn't! Nevertheless, we came to enjoy the hot tubs and sleeping on the floor.

We have also visited and spoken in beautiful New Zealand, where a former fellow, Justin Mora, lives and teaches, and in Indonesia, where one of my first students, Djien Kadi, lives with his family. He, with Jack Hetherington's help, organized a fine meeting, in Surabaya, of the East Asian Ophthalmological Society. Surabaya is at sea level and is hot and humid. At about 10 o'clock at night, after a well-presented meeting,

Djien arranged to take several of us by bus up into the mountains behind Surabaya to cool off. We drove for hours, dodging buses, rickshaws, bicycles, pedestrians, and various animals. Soon there was no more traffic. It got darker and darker and colder and colder. Finally, close to midnight, we saw one small light in the dark shape of a building, where we stopped. We left the bus and then heard "clip-clop, clip-clop," as a string of mountain ponies were led toward us by turbaned outlaws! We were each assigned a pony and an outlaw. We all clambered aboard our assigned pony and headed up this frigid mountain on an ill-defined trail with vague, huge, menacing rocks on each side. We bounced along for chilly hours. I began having foreign bodies hitting my face, presumably from the pony ahead. At dawn, the path led over a huge sandy plain, and in the middle was the plume of a live volcano, the source of my foreign bodies. It was a beautiful sunrise!

One of our most interesting trips was under the aegis of the East Asian Ophthalmological Society. The main meeting was in Bali in a lovely hotel. The scientific presentations were excellent, but the memorable aspects were the times spent with good friends who attended, and viewing the beauties of the South Seas. We had done some snorkeling on the Great Barrier Reef and were able to do some more with the help of Lucy Kadi, Djien's wife. A side trip with friends took us to Thailand and its turreted temples. On our way home by boat, we stopped at Pitcairn Island and met the families of the survivors of the *Bounty*. On our return we spent 2 days on barren, but beautiful, Easter Island and wondered at the ability of the natives to carve such huge statues out of native stone and then move them across the island.

Central America, South America, and Antarctica

Virginia and I have always enjoyed the beauties of Central and South America and the kindness of the people. Thanks to the Berlitz School of Language, we have managed to carry on limping conversations in

Spanish. We were able to travel throughout most of the continent from Panama to Colombia, Machu Pichu in the Peruvian Andes, Punta Arenas in Chile, and, finally, to Antarctica in the south. On that last trip, we were joined by the van Hericks. By chance, our boat reached that fascinating continent on my 75th birthday. The event was celebrated on the boat, complete with gifts, balloons, and streamers. One special gift had been found by Louise van Herick as she picked her way through the debris of a penguin colony. Virginia and I had the thrill of toasting our future with a penguin wishbone!

After a Pan-American Association of Ophthalmology meeting in Valparaiso, Chile, Francisco Gonzales Bouchon, of Concepción, who had spent some time with me in San Francisco, arranged a remarkable voyage on a tiny freighter down the inland passage of Chile. The members of the crew were all Chileans, as were a dozen of Francisco's family and some 20 other Spanish-speaking passengers. The English-speaking contingent consisted of the Shaffers, the van Hericks, and the Haases. The boat unloaded miscellaneous cargo at numerous small villages along the west coast. The voyage ended at the magnificent glacier of San Rafael. One midnight hour I was awakened by Francisco knocking on our cabin door: "Bob, Bob, venga, venga! . . . los dolfinos, los dolfinos!" We crawled out of our warm bunk and gasped at one of the most beautiful sights we have ever seen. A family of dolphins was performing a ballet in the phosphorescent water of the bow wave of our boat. What a thrill! With the help of copious Chilean wine, we were all speaking excellent Spanish by the end of our voyage.

Thoughts About the Future of Medicine

From time immemorial, the “Medicine Man” has been looked upon with admiration and respect. In primitive societies, with secret charms, potions, and rituals, he was expected to control not only disease but also natural phenomena. The modern physician does not pretend to control Nature’s calamities, but he is often aided by fortuitous successes no matter what treatment he has prescribed. As my father often reminded me, “Man has an incurable tendency to get well, no matter what one does!”

As time has gone by and knowledge has increased, the physician has had to continue to keep pace with increasing knowledge of physical and mental problems and better methods of dealing with them. This has resulted in a tendency for doctors to be among the older, better educated and respected members of society. The doctor is expected to live by the Hippocratic Oath: He swears by whatever he holds most sacred “to lead his life and practice his art in uprightness and honor, and that whatever house he enters, it shall be for the good of the sick to the utmost of his power.” As the years passed, great physicians and scientists have gradually developed a clearer understanding of anatomy and physiology as well as better methods of treating the ill and infirm. Following World War II, the growth in our knowledge has been phenomenal. Cellular, molecular, and genetic research is already revolutionizing our understanding of disease processes and pointing the way to better ways of treatment or even effecting a cure. Scientifically, we can certainly be proud of this progress.

Unfortunately, the last 30 years have seen an astronomic increase in the cost of medical education. No longer can the graduate of a medical school take specialty training and then open an office, expecting to have

a satisfying and lucrative practice for the rest of his or her productive years. The mere establishment of an office and fitting it with appropriate medical, surgical, and clerical equipment is an enormous expense for the young doctor. The power of deciding about health care delivery has shifted from the physician to the government and the insurance companies. Too much of a doctor's time is devoted to cost containment instead of patient care. "Cost-effectiveness" takes precedence over personal care of patients. Most doctors are adapting to the new order of business while trying to provide conscientious medical care, but they have little time for the reassuring talk to the patient, which is so important, especially in chronic diseases like glaucoma.

The American Board of Ophthalmology is doing all it can to assure the public of the competence of its diplomates, as do all Boards belonging to the American Board of Medical Specialists (ABMS). Directors of training departments must inform the ABO of a candidate's "satisfactory completion" of residency training. The public is protected from poorly trained doctors, but not from those with an "ethical bypass"! Continuing competence is now ensured by requiring recertification every 10 years. Of more importance than any examination is the quality of the young physician who will be entering ophthalmology. It is to be hoped that training programs will nurture moral integrity as well as cognitive and physical skills.

Ophthalmologists of the future will have to keep abreast of an avalanche of new information that will flood the molecular, cellular, and research literature. Spectacular advances in understanding and controlling disease processes can be expected. One hundred and fifty years ago, a French doctor, Trudeau, said that the duty of all physicians is, "To cure—sometimes; to relieve—often; to comfort—always." The modern ophthalmologist should keep this maxim and the Hippocratic Oath in mind. If all our professional actions are for the benefit of the patient, we will be skilled, caring physicians and not just technicians and mercenary businessmen and businesswomen.

Thanks

I would like to end this memoir by expressing my sincere thanks to all the marvelous people who have been so kind to Virginia and me over the years. It has been a wonderful ride!



Dr. and Mrs. Shaffer on their 50th wedding anniversary.

Appendix A

Curriculum Vitae

Name: Robert Nesbit Shaffer, MD
Date of Birth: January 18, 1912
Cochranton, Pennsylvania
Spouse: Virginia Jane Miller
Marriage: August 12, 1939
Children: John, Stuart, William
Home: The Tamalpais
501 Via Casitas
Greenbrae, California
(415) 461-0241

Education

1930–34	Pomona College Claremont, California	AB
1934–38	Stanford University Medical School San Francisco, California	MD
1938–39	Stanford Lane Hospital San Francisco, California	Intern

1939–40	Stanford Lane Hospital San Francisco, California	Assistant Resident in Ophthalmology
1940–41	Stanford Lane Hospital San Francisco, California	Resident in Ophthalmology

Academic Appointments

1942–48	University of California School of Medicine San Francisco, California	Clinical Instructor in Ophthalmology
1942–72	Glaucoma Clinic University of California Medical Center	Director
1948–54	University of California School of Medicine San Francisco, California	Assistant Clinical Professor of Ophthalmology
1954–62	University of California School of Medicine San Francisco, California	Associate Clinical Professor of Ophthalmology
1962–79	University of California School of Medicine San Francisco, California	Clinical Professor of Ophthalmology
1979 to present	University of California School of Medicine San Francisco, California	Clinical Professor Emeritus of Ophthalmology

Consultant in Ophthalmology
(all in San Francisco, California)

US Marine Hospital

US Public Health Hospital

Veterans Administration Hospital

San Francisco General Hospital

St. Mary's Hospital

Professional Activities and Memberships

American Academy of Ophthalmology and
Otolaryngology

Standardization of Tonometers Committee 1950-65

First Vice President 1968

Planning Committee Member

Member of the Council

American Board of Ophthalmology

Diplomate 1942

Member 1959-67

Consultant 1968

Assistant Secretary-Treasurer 1969-80

Secretary-Treasurer 1980-85

American Board of Medical Specialties

Member 1975-85

Committee on Long Range Planning 1975-80

American College of Surgeons	
Fellow	
Governor	1967–71
American Medical Association	
Committee on Drug Evaluation	
American Ophthalmological Society	
Member	1952–present
Program Committee	1972–74
Chairman	1973–74
Member of the Council	1974–78
Chairman	1977–78
Representative to the Pan-American	
Association of Ophthalmology	1975
President	1984
Howe Medal Recipient	1986
California Medical Association	
Chairman, Eye Section	1960
Canadian Ophthalmological Society (Honorary)	
Guest of Honor	1967
Frederick C. Cordes Eye Society	
President	1969
Clinical Faculty Service Award	1984
Foundation for Glaucoma Research	
Founder and Chairman	1978
Chairman Emeritus, Board of Directors	Present
Glaucoma Forum: Josiah Macy Foundation	
Princeton, New Jersey	1950–55

Highlights of Ophthalmology, Panama Board of Directors	
International Congress of Ophthalmology Glaucoma Club	
Mexican Ophthalmological Society (Honorary) Guest of Honor	1973
National Board of Medical Examiners Diplomate	
National Institutes of Health Glaucoma Research Committee	
National Society for the Prevention of Blindness Director	1945–80
Association for Research in Ophthalmology Trustee	1966–71
Chairman	1972
Oxford Ophthalmological Congress	
Pacific Coast Oto-Ophthalmological Society	
Pan-American Association of Ophthalmology Member of the Council	1975–87
Gradle Medal Recipient	1993
Pan-American Congress of Ophthalmology Visiting Professor	
Pan-American Glaucoma Society Co-organizer	1974
Secretary for North America	1974–76

- Pan-American Ophthalmological Society
- National Society for the Prevention of Blindness
Medal 1979
- San Francisco Medical Society
Member
- San Francisco Ophthalmological Round Table
President 1955
- That Man May See
Director

Teaching and Lectures

Over 200 lectures and teaching seminars in the United States, Canada, United Kingdom, Europe, Central and South America, Japan, Indonesia, and New Zealand

Named Lectures

- Jackson—American Academy of Ophthalmology and
Otolaryngology, 1964
- Wright—University of Toronto, 1951
- Schoenberg—New York Society of Clinical Ophthalmology, 1966
- Snell—University of Rochester, 1973
- Fralick—University of Michigan, 1974
- Costenbader—American Association of Pediatric Ophthalmologists,
1975
- Doheny—University of Southern California, 1975

Gifford—Chicago Ophthalmological Society, 1976
Chandler—Harvard University, 1976
Asbury—University of Cincinnati, 1978
Proctor—University of California San Francisco, 1980
Spaeth—Philadelphia, 1980
Adler—University of Pennsylvania, 1982
Montgomery—Irish Ophthalmological Society, 1983
Gradle—Pan-American Association of Ophthalmology, 1983
Chandler-Grant—New England Ophthalmological Society, 1986

Visiting Professorships

George Washington University, 1967
Syracuse University, 1969
University of Texas, 1970 and 1972
Universities of Venezuela, Colombia, Peru, Paraguay, Argentina, 1971
University of Oregon, 1972
Montefiore Hospital (New York City), 1974
Harvard University, 1976
University of Pittsburgh, 1978
University of Missouri, 1984
Tokyo University, 1986

Research Activities

Principal Investigator: Collaborative Glaucoma Study
National Institutes of Health, Grant # EY-00083

Program Co-Chairman: Glaucoma Research Conference
National Institutes of Health, Grant # EY-0020

Co-Investigator: Analysis of Aqueous Humor Dynamics in Diabetic Patients Before and After Pituitary Ablation with Alpha Particles by Deuteron Beam

Co-Investigator: Investigation of the Mode of Action of Cyclodialysis

Co-Investigator: Physiology and Pharmacology of Aqueous Humor

Journal Publications and Books

1. Shaffer RN. Neuroblastoma of the adrenal gland with orbital metastases. *Am J Ophthalmol* 1947; 30(60): 733–740.
2. Shaffer RN. Inverse cyclodialysis. *Am J Ophthalmol* 1947; 30: 860–868.
3. Shaffer RN, Ridgway WL. Furmethide iodide in the production of dacryostenosis. *Am J Ophthalmol* 1951; 34(5): 718–720.
4. Shaffer RN. Alpha irradiation: effect of astatine on the anterior segment and on an epithelial cyst. *Trans Am Ophthalmol Soc* 1952; 50: 607–627.
5. Shaffer RN. The role of vitreous detachment in aphakic and malignant glaucoma. *Trans Am Acad Ophthalmol Otolaryngol* 1954; 58: 217–231.
6. Shaffer RN, Tour RL. A comparative study of gonioscopy methods. *Am J Ophthalmol* 1956; 41(2): 256–265.
7. Shaffer RN et al. Glaucoma detection in private practice and the hospital. *Sight Saving Review* 1957; 27(3).
8. Shaffer RN. Operating-room gonioscopy in angle-closure glaucoma. *Am J Ophthalmol* 1958; 59: 532.
9. Shaffer RN. Goniotomy technique in congenital glaucoma. *Am Ophthalmol* 1959; 47(5): 90–97.
10. Shaffer RN, Schwartz A. Gonioscopy. *Surv Ophthalmol* 1959; 2(5): 389–409.
11. Shaffer RN. A new classification of the glaucomas. *Trans Am Ophthalmol Soc* 1960; 58: 219–225.
12. Shaffer RN. Gonioscopy, ophthalmoscopy and perimetry. *Trans Am Acad Ophthalmol Otolaryngol* 1960; 64(2): 112–127 (abstracted and translated into Spanish)

- and Portuguese for Central and South America by the Pan-American Association of Ophthalmology).
13. Becker B, Shaffer RN. *Diagnosis and Therapy of the Glaucomas*. St. Louis: The C.V. Mosby Co; 1961.
 14. Vaughan D, Shaffer RN, Riegelman S. A new stabilized form of epinephrine for the treatment of open-angle glaucoma. *Arch Ophthalmol* 1961; 66: 232–235.
 15. Shaffer RN, Weiss DI. Concerning cyclodialysis and hypotony. *Arch Ophthalmol* 1962; 68: 25–31.
 16. Weiss DI, Shaffer RN, Wise BL. Mannitol infusion to reduce intraocular pressure. *Arch Ophthalmol* 1962; 68: 341–347.
 17. Weiss DI, Shaffer RN. Mydriatic effects of one-eighth percent phenylephrine. *Arch Ophthalmol* 1962; 68: 727–729.
 18. Shaffer RN. Indications for operation in glaucoma. *Calif Med* 1962; 97(6): 343–345.
 19. Shaffer RN. *A Stereoscopic Manual of Gonioscopy*. St. Louis: The C.V. Mosby Co; 1962.
 20. Weiss DI, Shaffer RN, Harrington DO. Treatment of malignant glaucoma with intravenous mannitol infusion. *Arch Ophthalmol* 1963; 69: 154–158.
 21. Shaffer RN. Congenital glaucoma. *Internat Ophthalmol Clin* 1963; 3(1): 107–116.
 22. Shaffer RN. Filtering procedures in open-angle glaucoma. *Int Ophthalmol Clin* 1963; 3.
 23. Shaffer RN. Glaucoma research conference, Del Monte, California, September 1962. *Am J Ophthalmol* 1963; 55: 821–828.
 24. Shaffer RN. Open-angle glaucoma symposium: indications for surgery in glaucoma: open-angle glaucoma. *Trans Am Acad Ophthalmol Otolaryngol* 1963; 67: 467–475.
 25. Shaffer RN. Glaucoma research conference, Hot Springs, Virginia, May–June 1963. *Am J Ophthalmol* 1963; 56: 440–476.
 26. Shaffer RN. Eye cues in general practice. *J Nat Med Assoc* 1964; 56: 82–84.
 27. Shaffer RN. Side-mounting perimetry wand. *Trans Am Acad Ophthalmol Otolaryngol* 1964; 68: 908.
 28. Shaffer RN. An easily used lacrimal needle. *Trans Am Acad Ophthalmol Otolaryngol* 1964; 68: 909.
 29. Shaffer RN. Autonomic ocular drugs. *Invest Ophthalmol* 1964; 3(5): 498–503.
 30. Shaffer RN. Genetics and the congenital glaucomas. *Trans Am Acad Ophthalmol Otolaryngol* 1965; 69: 253–268, and *Am J Ophthalmol* 1965; 60: 981–984.
 31. Shaffer RN. Pathogenesis of congenital glaucoma; gonioscopic and microscopic anatomy. *Trans Am Acad Ophthalmol Otolaryngol* 1965; 69: 217–231.
 32. Spencer WH, Ferguson WJ Jr, Shaffer RN, Fine M. Late degenerative changes in the cornea following breaks in Descemet's membrane. *Trans Am Acad Ophthalmol Otolaryngol* 1966; 70: 973–983.
 33. Shaffer RN. Posterior sclerectomy with scleral cautery in the treatment of expulsive hemorrhage. *Am J Ophthalmol* 1966; 61: 1307–1311.

34. Richardson KT, Shaffer RN. Optic nerve cupping in congenital glaucoma. *Am J Ophthalmol* 1966; 62(3): 507–509.
35. Shaffer RN, Hilton GF. Electron applanation tonometry. *Am J Ophthalmol* 1966; 62(5): 838–843.
36. Shaffer RN, Hetherington J Jr. Anticholinesterase drugs and cataracts. *Trans Am Ophthalmol Soc* 1966; 64: 204–216, and *Am J Ophthalmol* 1966; 64(4): 613–618.
37. Shaffer RN. Classification of the glaucomas. *Anales Instituto Barrequer* 1966; 7.
38. Richardson KT Jr, Ferguson WJ Jr, Shaffer RN. Long-term functional results in infantile glaucoma. *Trans Am Acad Ophthalmol Otolaryngol* 1967; 71: 833–837.
39. Shaffer RN. New concepts in infantile glaucoma. *Trans Am Ophthalmol Soc* 1967; 65: 296–297, and *Can J Ophthalmol* 1967; 2(4): 243–248.
40. Hetherington J Jr, Shaffer RN. Tonometry and tonography in congenital glaucoma. *Invest Ophthalmol* 1968; 7(2): 134–137.
41. Shaffer RN, Hetherington J Jr. The case for conservatism in open-angle glaucoma management. *Can J Ophthalmol* 1968; 3: 11–18.
42. Lichter R, Shaffer RN. Interstitial keratitis and glaucoma. *Am J Ophthalmol* 1969; 68(2): 241–248.
43. Shaffer RN, Hetherington J Jr. The glaucomatous disc in infants; a suggested hypothesis for disc cupping. *Trans Am Acad Ophthalmol Otolaryngol* 1969; 73: 929–935.
44. Van Herick W, Shaffer RN, Schwartz A. Estimation of width of the angle of the anterior chamber. *Am J Ophthalmol* 1969; 68(4): 626–629.
45. Shaffer RN. The role of the astroglial cells in glaucomatous disc cupping. *Doc Ophthalmol; Adv Ophthalmol* 1969; 26: 368–370.
46. Shaffer RN, Weiss DI. *Congenital and Pediatric Glaucomas*. St. Louis: The C.V. Mosby Co; 1970.
47. Shaffer RN, Rosenthal G. Comparison of cataract incidence in normal and glaucomatous population. *Am J Ophthalmol* 1970; 69(3): 368–370.
48. Lichter PR, Shaffer RN. Diagnostic and prognostic signs in pigmentary glaucoma. *Trans Am Acad Ophthalmol Otolaryngol* 1970; 74: 984–998.
49. Lichter PR, Shaffer RN. Iris processes and glaucoma. *Am J Ophthalmol* 1970; 70: 905–911.
50. Hoskins HD Jr, Shaffer RN. Evaluation techniques for the congenital glaucomas. *J Pediatr Ophthalmol* 1971; 8(2).
51. Shaffer RN, Hetherington J Jr, Hoskins HD Jr. Guarded thermal sclerostomy. *Am J Ophthalmol* 1971; 72(4): 769–772.
52. Weiss DI, Shaffer RN. Ciliary block (malignant) glaucoma. *Trans Am Acad Ophthalmol Otolaryngol* 1972; 76: 450–461.
53. Shaffer RN. Symposium: microsurgery of the outflow channels [introduction and conclusion]. *Trans Am Acad Ophthalmol Otolaryngol* 1972; 76: 367, 411.
54. Shaffer RN. Glaucomatous cupping of the optic disc in the young. *Trans Asia-Pacif Acad Ophthalmol* 1972.
55. Shaffer RN. Surgery of aphakic glaucoma. Second Indonesian Congress, 1972.

56. Hoskins HD Jr, Shaffer RN. Rieger's syndrome: a form of iridocorneal mesodermal dysgenesis. *J Pediatr Ophthalmol* 1972; 9: 26-30.
57. Shaffer RN. A suggested anatomic classification to define the pupillary block glaucomas. *Invest Ophthalmol* 1973; 12: 540-544.
58. Shaffer RN. Glaucoma and the ARVO. *Invest Ophthalmol* 1973; 12: 717-718.
59. Shaffer RN, Layden WE. Exfoliation syndrome. *Trans Am Ophthalmol Soc* 1973; 71: 128-151; and Layden WE, Shaffer RN. *Am J Ophthalmol* 1974; 78: 835-841.
60. Frankelson EN, Shaffer RN. The management of coexisting cataract and glaucoma. *Can J Ophthalmol* 1974; 9: 298-301.
61. Shaffer RN, Ridgway WL, Brown R, Kramer SF. The use of diagrams to record changes in glaucomatous discs. *Am J Ophthalmol* 1975; 80(3): 460-464.
62. Shaffer RN, Cohen JS. Visual reduction in aniridia. *J Pediatr Ophthalmol* 1975; 12(4): 220-222.
63. Shaffer RN. Problem cases in glaucoma. In: *Clinical Ophthalmology*. New York: Harper & Row; 1976.
64. Shaffer RN. Flat anterior chamber and choroidal detachment. In: *Controversy in Ophthalmology*. Philadelphia: W.B. Saunders Co; 1976.
65. Cohen JS, Shaffer RN, Hetherington J Jr, Hoskins HD Jr. Revision of filtration surgery. *Arch Ophthalmol* 1977; 95: 1612-1615.
66. Litinsky SM, Shaffer RN, Hetherington J Jr, Hoskins HD Jr. Operative complications of goniotomy. *Trans Am Acad Ophthalmol Otolaryngol* 1977; 83: 78-79.
67. Shaffer RN, Hoskins HD Jr. Ciliary block (malignant) glaucoma. *Ophthalmology* 1978; 85: 215-221.
68. McMahon CD, Hetherington J Jr, Hoskins HD Jr, Shaffer RN. Adverse effects experienced by patients taking timolol. *Am J Ophthalmol* 1979; 88: 736-738.
69. Armaly M, Kruger JR, Maunder G, Becker B, Hetherington J Jr, Kolker A, Levine R, Maumenee AE, Pollack, I, Shaffer RN. Biostatistical analysis of the collaborative glaucoma study. *Arch Ophthalmol* 1980; 98(12): 2163-2171.
70. Shaffer RN. *Therapy of Open-Angle Glaucoma: Current Ocular Therapy*. Philadelphia: W.B. Saunders Co; 1980.
71. McMahon CD, Hetherington J Jr, Hoskins HD Jr, Shaffer RN. Timolol and pediatric glaucomas. *Ophthalmology* 1981; 88: 249-252.
72. Hoskins HD Jr, Hetherington J Jr, Shaffer RN, Welling A. *Developmental Glaucomas. New Orleans Academy Symposium on Glaucoma*. St. Louis: The C.V. Mosby Co; 1981.
73. Shaffer RN. Prognosis of goniotomy in primary infantile glaucoma (trabeculodysgenesis). *Trans Am Ophthalmol Soc* 1982; 80: 321-325.
74. Shaffer RN. Glaucoma: it can take your sight away. *Trans Am Acad Ophthalmol Otolaryngol* 1982.
75. Shaffer RN. Glaucoma for the family physician. *Consultant* 1982.
76. Shaffer RN. Toxic side effects of timolol. *Revista Oftalmologia* 1982.
77. Shaffer RN. *Manual de Gonioscopia*. Privately published, 1983.

78. Shaffer RN, Hoskins HD Jr. Montgomery lecture. Goniotomy in the treatment of isolated trabeculodysgenesis (primary congenital [infantile] developmental glaucoma). *Trans Ophthalmol Soc UK* 1983; 103(6): 581–585.
79. Hoskins HD Jr, Hetherington J Jr, Minckler DS, Lieberman MF, Shaffer RN. Complications of laser trabeculoplasty. *Ophthalmology* 1983; 90: 796–799.
80. Hoskins HD Jr, Shaffer RN, Hetherington J Jr. Anatomical classifications of the developmental glaucomas. *Arch Ophthalmol* 1984; 102: 1331–1336.
81. Hoskins HD Jr, Shaffer RN, Hetherington J Jr. Goniotomy vs. trabeculotomy. *J Pediatr Ophthalmol Strab* 1984; 21: 153–158.
82. Shaffer RN. Open-angle glaucoma. In: Fraunfelder FT, Roy FH. *Current Ocular Therapy*. Philadelphia: W.B. Saunders Co; 1985.
83. Shaffer RN. Nerve fiber loss and display of disc and field changes in glaucoma. *Trans New Orleans Acad Ophthalmol* 1985; 33: 129–133.
84. Shaffer RN. Problems and prognosis of the developmental glaucomas. *Trans New Orleans Acad Ophthalmol* 1985; 33: 10–14.
85. Shaffer RN. Unilateral shallow anterior chambers and glaucoma. *Trans New Orleans Acad Ophthalmol* 1985; 33: 219–225.
86. Migliazzo CV, Shaffer RN, Nykin R, Magee S. Long-term analysis of pigmentary dispersion syndrome and pigmentary glaucoma. *Ophthalmology* 1986; 93: 1528–1536.
87. Dickins CJ, Shaffer RN. The medical treatment of ciliary block glaucoma after extracapsular cataract extraction. *Am J Ophthalmol* 1987; 103: 237.
88. Bostwick JE, Shaffer RN. Asymptomatic acute angle-closure glaucoma. *Ophthalmic Surg* 1988; 19: 452.
89. Iwach AG, Hoskins HD Jr, Hetherington J Jr, Shaffer RN. Analysis of surgical and medical management of glaucoma in Sturge-Weber syndrome. *Ophthalmology* 1990; 97: 904–909.
90. Shaffer RN. Remembrances of things past: fifty years in ophthalmology. *Surv Ophthalmol* 1990; 36: 236–238.
91. Shaffer RN. *The History of the American Board of Ophthalmology: 1916–1991*. Privately published, 1991.
92. Williams RD, Hoskins HD Jr, Shaffer RN. Trabeculodialysis for inflammatory glaucoma: a review of 25 cases. *Ophthalmic Surg* 1992; 23: 36–37.
93. Shaffer RN. The centennial history of glaucoma (1896–1996). American Academy of Ophthalmology. *Ophthalmology* 1996; 103(8 suppl).

Appendix B

Shaffer Fellows

John Hetherington, Jr., MD
490 Post Street, Ste. 608
San Francisco, CA 94102

Daniel Weiss, MD
3755 Henry Hudson Way
Riverdale, NY 10463

Josef Kadi, MD
Jalan Tidar 90
Surabaya, Indonesia 60251

Kenneth T. Richardson, MD
Box 112207
Anchorage, AK 99511-2207

Norman Ballin, MD
10 De Bel Drive
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The following Shaffer Fellows are deceased: Gerald Rosenthal, 1990;
Donald Morin, 1993; and Elliott Frankelson, 2001.

Appendix C

Robert N. Shaffer Glaucoma Lecturers

1980	Bernard Becker	“Glaucoma”
1981	Morton Grant	“Why Do Some People Go Blind From Glaucoma?”
1982	A. Edward Maumenee	“Causes for Optic Nerve Damage in Glaucoma”
1983	H. Saul Sugar	“Pigmentary Glaucoma, Exfoliation-Pseudoexfoliation Syndrome Update”
1984	Stephen Drance	“The Early Signs of Damage in Chronic Open-Angle Glaucoma”
1985	John Hetherington, Jr.	“Unilateral Glaucoma”
1986	Allan Kolker	“The Decade of the Laser”
1987	Douglas Anderson	“Automated Visual Fields—Practical Considerations”
1988	Richard Simmons	“Glaucoma Surgery—My View After 25 Years”
1989	Irvin Pollack	“Unusual Problems in the Diagnosis and Management of Angle-Closure Glaucoma”

1990	George Spaeth	“Glaucoma—A Disease Paradigm”
1991	Harry Quigley	“How To Improve Glaucoma Management”
1992	Lorenz Zimmerman	“Glaucoma and Unilateral Iris Melanocytic Lesions”
1993	Bruce Shields	“A Lesson from the Study of Secondary Glaucomas”
1994	H. Dunbar Hoskins, Jr.	“Glaucoma—Are We Winning or Losing?”
1995	David Epstein	“The Glaucomas—Lessons for a Clinical Scientist”
1996	E. Michael Van Buskirk	“The Evolution of Glaucoma”
1997	Richard F. Brubaker	“Decisions, Decisions”
1998	Steven Podos	“Neuroprotection and the Nerve of Glaucoma”
1999	Paul Lichter	“Thecureforglaucoma.com”
2000	Roger Hitchings	“Glaucoma Management: What Is the Outcome of Our Treatment?”
2001	Robert N. Weinreb	“Reflections from the Nerve Fiber Layer in Glaucoma

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- ABO. *See* American Board of Ophthalmology
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