The Foundation of the American Academy of Ophthalmology
Museum of Vision & Ophthalmic Heritage

Conversation Between George Spaeth, MD and M. Bruce Shields, MD
New Orleans LA, November 18, 2013

Drs. George Spaeth and Bruce Shields recorded this conversation on November 18, 2013 during the Annual Meeting of the American Academy of Ophthalmology, in New Orleans, LA.

In this excerpt **Dr. Spaeth** recounts his work in homocystinuria and a very special patient. (.mp3 file)

Here, **Dr. Shields** discusses the founding of the American Glaucoma Society. (.mp3 file)

The Foundation of the American Academy of Ophthalmology
Museum of Vision & Ophthalmic Heritage

Conversation Between George Spaeth, MD and M. Bruce Shields, MD
New Orleans LA, November 18, 2013

GEORGE SPAETH: My name is George L. Spaeth and this is the 18th of November 2013 and I'm in the room here with Dr. Bruce Shields, and it's a delight.

BRUCE SHIELDS: I'm Bruce Shields and it is still the 18th, and I'm here with two very special people, Jenny [Benjamin] and George.

Well, George, I've got to tell you that for me this is a tremendous joy and a privilege to be able to share this oral history with you. You have been such an integral part of our profession now for over half a century. Even back when I was a resident, you were already one of the leading figures in our profession and have continued to be over all these years. Not only have you been a leader in our profession, but you have had so many other interests and done so many things—classic piano, dance, soccer. But I know that one of the things that was so important in your life early on was your father. I wonder if you could just tell us a little bit about your early life and life with your father.

SPAETH: Certainly, Bruce. My father was certainly important, as was my mother. Father was a very laconic man. I can only recall one piece of advice he ever gave me and that was when I was at college. He and mother dropped me off at college and he said to me: "Just remember, you didn't come here just to study." Other than that, the way he gave advice was because he was so clear in his own life as to how he lived—what he believed in, what he didn't believe in. He was such a strong role model in that way that it was really very clear what he expected of us, and he expected a lot. He was certainly one of my role models, Bruce, no question about that, but almost invisibly, intangibly, because as I say, it was never "do this, do that," and so forth. And I was the youngest of four, all very different. The oldest went into law against my father's preference but father supported it. And then the next one became a physician and practiced with father, and then

another one went into law. It was two older ones and two younger ones and I was very close with the younger one—still am very close.

But my mother, actually, Bruce, was the one who probably formed me more than my father. She was sort of the classic world-class mom. She also was a believer in a persuasion method rather than a forced method. But she was constantly teaching—constantly. We would be walking outside and she would say, "Oh, isn't that a lovely cardinal over here," or, "Oh, look at the blue vetch there." She was very knowledgeable and would constantly point out these things in a way that made them wonderful and full of mystery and full of interest and excitement. As a result of her teachings, I memorized many poems; learned all kinds of things that still stay with me and are such a fundamental part of who I am. So they were both huge influences.

SHIELDS: And I can say that you obviously are a perfect combination of the two parents because on the one hand you're so disciplined in your profession and have contributed so much as a clinician/scientist, but at the same time you're such a humanitarian and you have such a love for nature and all the things that make life beautiful. So I can see you in both father and mother.

You mentioned your father and mother leaving you off at college. I know Yale was a very important part of your life. I remember a little incident when I was on the faculty at Yale and you were there visiting and staying at your secret society house. I came over to pick you up and was ushered into a little living room in front of the building to wait. I looked over at the mantle and saw nothing but one object and it was a rather old pewter mug. I walked over to look at it and it said George Spaeth, MVP in soccer—sometime back in the '50s. Can you tell us a little bit about your life at Yale and some of the memories?

SPAETH: Bruce, I did have a good time at Yale, but not at the start. I went to Yale because I didn't really know where else to go. I had one brother that had gone to Harvard, and one went to Yale. I knew I didn't want to be a physician, but I didn't know what I wanted to do. The first year I worked very hard but didn't do very well in grades and was kind of lonesome. I didn't really want to stay. And then I met some friends. In my sophomore year, I started to recognize what a resource the place was; how beautiful it was; what amazing opportunities it opened, and I started playing soccer. I

fenced in the first year, but I didn't really enjoy fencing very much. But I loved the team aspect of soccer and had a wonderful time playing soccer, and was fortunate enough to be with a group of people that were good soccer players so we had a good team. The coach was from Glasgow and he was a very good coach—really very good for learning skills, team play—and that was certainly an important part of my Yale experience. But the most important part really was what you just mentioned: it was the senior year when I joined one of the senior societies and made really good friends.

Four or five days from now, I'm going to be meeting with my class council from Yale. We meet every year before the last football game weekend. This year it's going to be a little bit different because this year we're going to talk about things which are more than just a class reunion– how do we raise more money and things like that. This year, we're going to have a focused discussion on, what is the mission of Yale, and is it fulfilling its mission? And how can we, as members of a now quite senior class, fit into that? One of the things that we've been all thinking about is… Well, some of the people are very unhappy because "Yale continues to be beaten by Harvard and Princeton, and the football team isn't doing as well as they should." And "there are lots of gays and lesbians at Yale and that's not what the college is supposed to be about." Furthermore, "it's not as strong in science as it should be and it doesn't win the engineering prizes as it should," and finally "the humanities seem to have become less important."

But as I have been thinking about this… and I'll get to the point now… I think the most important things that happen in college are the development of friendships and the opportunity for mentoring. It's not information transferred that's the real treasure of college, in the usual sense. It's that opportunity to expand who you are by being challenged by people who are peer role models or peer non-role models, and then to have the opportunity to develop close relationships with truly outstanding mentors. As I look back at my Yale experience, that's what made it really wonderful—the friendships I made there, that continue. Our club still gets together every year—all of us. Interestingly enough, of the 15 members, there hasn't been a divorce in the group. So I treasure my Yale experience as I think anybody treasures good college experiences.

SHIELDS: Well, you certainly had an illustrious formative education, not only an undergraduate at Yale, but medical school at Harvard, your

residency at Wills Eye Hospital, your fellowship at the NIH, and that obviously gave you a firm foundation on which you built a remarkable career in medicine. The list of things you've accomplished, we could spend the next several hours talking about, but there are a few things that sort of stand out in my mind—contributions you've made to our profession. I remember fairly early on, when I was learning about the appearance of the optic nerve in glaucoma, that it seemed like all the terms that I was using to describe the disc were terms that you and some of your distinguished fellows had coined. Could you tell us a little bit about how you came to develop that nomenclature?

SPAETH: Yeah, I will, Bruce. I'd like to use that, though, as a vehicle for more general understanding. I think what you're referring to is an article I published with Bob Read. Bob Read was a fellow of Bob Shaffer's and he and I would talk at meetings and said, you know, we ought to get together and look at some discs. So he came down to Philadelphia and he spent a long time down there, and we looked at hundreds of disc photographs and analyzed and went through things and then came up with this paper. But I mention it because I didn't initiate that. That came from Bob. Throughout my career, throughout my life, there are very few things that I've initiated. I've been very fortunate, and it's taken a long time, really only in the last ten years, that I started trying to think, well, what can I do that I really believe in?

I went to Yale as I mentioned because I didn't know where to go. I majored in history because I didn't do very well in English in my first year. I would have loved to have majored in English, but I didn't think I could do well in that. I took pre-med courses simply to sort of leave the door open. And then when it came time to finish Yale, I thought, well, what am I going to do? Well, I wanted to be a composer, but I didn't think I could really do a good job and probably wouldn't be able to support myself—not very courageous. And I thought maybe it would be nice to be a poet, but that would be even more difficult. My father, I learned later, hoped that I would stay on at Yale and continue in the field of my major, which was history, and become a history professor. But I chose what I thought was really the safe course because everybody can make a living in medicine. So I was looking for medical schools and went to apply to Harvard because somebody encouraged me to do that.

I remember the interview there. I was interviewed by Otto Krayer, who was the head of the pharmacology department. I was nervous, and as I walked into the room where he was, I said my name and then I said, "Oh, you know, it's a German name." I thought to myself as I said it, "Otto Krayer? I need to tell him that this is a German name?" And he said to me, "Oh, do you speak German?" "Yes, I do." And I spoke German fairly well, not fluently, but fairly well. So our whole interview was conducted in German and we talked about Goethe, and Schiller and Konrad Lorenz and I thought, gosh, if this is what Harvard is about, this is where I would like to come. So I went to Harvard simply because I had a great interview with somebody who talked about philosophy.

Then I went from there to the University of Michigan for my internship because I didn't know whether I wanted to stay in the East; I didn't know whether I wanted to go to the West, so it was sort of halfway in between. Then I chose ophthalmology really because I had such a difficult time with neurosurgery and the other specialties, and ophthalmology was pretty. It was beautiful. And I still… you know, gosh, you're sitting there looking through a slit lamp at an iris and the structure of it is so beautiful. So esthetically, it fit into where my real interests are, which are in the arts. And so I chose ophthalmology and went back to Wills simply because it was where my family was from.

And then, this particular thing about the disc is a perfect example. I was interested in the disc and I was looking at things, but it happened because Bob took the initiative to say let's do this together, so I did that with him.

Now, there are a few things which I did early on, alone. One of them was certainly looking at the anterior chamber angle. And there I was concerned that the standard angle grading system was not adequate, so I developed a new system, on my own, and tested it on younger people. That is something which I think I can take credit for originating, though as I look back, Busacca many years before, really developed it the same way. Just fortunately, from my point of view, am getting credit for myself because I hadn't realized that he had done it.

SHIELDS: Well, I think I would be on firm ground to say that you are recognized internationally as the dean of glaucoma. Your contributions to that part of our profession are endless it seems, even though you're awfully

gracious to give recognition to your students and collaborators. You mentioned what moved you into ophthalmology, what was it that made you decide to focus more on glaucoma?

SPAETH: Bruce, that's a perfect example of what I was trying to get across. I grew up in the Quaker tradition. Mother and father were Unitarians. They both came from Lutheran families but when they came to Philadelphia, they joined the Unitarian Church of Germantown which was an extraordinary church. They had guest ministers there. Father and mother were the people who arranged that and they would frequently stay at mother's and father's house when they came, so as a boy I met Reinhold Niebuhr and Paul Tillich and I would sit on their lap and they would tell me about things. That was an extraordinary, wonderful, liberal religious background. And then I went to a Quaker school and I came to feel very comfortable with the basic Quaker beliefs. My wife, Ann, who we'll of course talk more about, exemplified this marvelously, and that everybody should be respected—respect for every creature. Everybody is essential.

Then, during the time that the Korean War was starting, I didn't want to go to war. I didn't believe in war; I didn't want to go; and so I enrolled in the public health service. That's why I went to the NIH—not because I was interested in research—I just wanted to stay out of the war. I wanted to do something that was acceptable. When I was at the NIH, Dick Green was there doing pathology, and Vernon Wong was there doing immunology, and Ron Carr was doing electrophysiology. And the other unit that they had was glaucoma– so I did glaucoma. I never chose it. You know, I was plugged into the glaucoma plug, and that's how I started on glaucoma.

One of the things, Bruce, I should say here, what mother and father got across to us constantly—the way they lived and what they expected—that whatever you do, whether it's playing soccer or playing the piano, or anything: you try to do it very well. So when I entered the field of glaucoma…well, that's where I am, I'll just try to do it as well as I can.

SHIELDS: Well, it's interesting, isn't it, how the winds of fate blow us in various directions in our lives, and I think those who succeed in life are those who accept the challenge, whatever it may be. In your case, you just happened to be directed towards glaucoma. I think that was a very fortunate

thing for all of us in ophthalmology and for the world because your contributions, I think, are probably unequalled.

SPAETH: I think you're being overly generous but, you know, I think it is so interesting, Bruce, because when I finished the NIH, Dr. Cogan asked me to come up and interview at Harvard. I went up to Harvard. Ann went up with me. We loved the Boston area. We found a house out in Swampscott right on the water. Oh, it was so beautiful, and we said, "Oh, this is going to be perfect." But there was something that just didn't seem to fit, so we didn't go there and came back to Philadelphia and entered into a totally different type of culture. I often wonder what would have happened differently had I been to Harvard. I think, paradoxically, perhaps, the fact that I went to Wills, where they didn't even have a glaucoma unit, where there was very little research, where I had no mentor other than my father in a different field and my brother in some ways. And then I had what I would call a negative mentor in watching Dr. Scheie, who was a great physician but couldn't give things to other people. In contrast, Dr. Norton, who I didn't know very well, and Dr. Shaffer, those two people—Dr. Shaffer and Dr. Norton—I watched and said, "They're developers. They're bringing on younger people. They're sharing their knowledge all the time in a wonderful way…" so they became my mentors.

But at Wills, I was free just to develop any way I wanted. And so it gave me a tremendous freedom to study what I wanted to study and to develop a fellowship program. I think it is a really good one, but it's quite different from any of the others, in that we stress, first of all, being a good person. That's the major thing we try to get through in our fellowship, and then the glaucoma parts come later. I don't think that would have happened if I had been to Harvard, but who knows? Who knows?

SHIELDS: I'm sure you would agree with me that one of the best things that ever happened in your life was meeting your lovely wife, Ann. You lost her earlier this year after a long, beautiful marriage. I wonder if you could just tell us a little bit about how you met Ann and your life with her.

SPAETH: Bruce, earlier I said I really didn't take the initiative for many things. The overwhelming exception of that was Ann. When I first met Ann, I was in college. She was at Smith. We met on a blind date sort of thing. I was with a girl that my brother was dating. He was in the Navy in

Germany at that point and he asked me to make sure I kept the family name in front of Grey. So I had asked her to go skiing with me in Stowe and Ann and I met while I was there. One of my Yale buddies saw Ann and asked her out for that evening and so I met Ann by chance that evening, and I just was smitten immediately. I remember she was wearing a blue sweater and a green kilt, and she had that kind of radical innocence about her that was… I had never seen anything like that. And so then I called her up. I sent her a Valentine's card that said – when you turned a little crank – and it said "let me call you sweetheart."

I called her up a couple of weeks later and I said, "Hello, this is George." And I heard… I got this… "George?" She had absolutely no recollection of who I was. Well, that started a really, really vigorous courtship. There were so many phone calls to Ann when I was in medical school that the phone company required us to put down a pre-monthly deposit. There were many trips from Boston or Philadelphia or Michigan, and a real convincement that this was the person who I wanted to share my life with, and it took a long, long time. I asked her to marry me and she said, "Oh, I couldn't possibly," but I persisted, and then, obviously, we did get married. She has been my major mentor throughout the rest of my life. And yes, you're right, that part of my life has been enormously important. I loved her gentleness, but her tremendous toughness, her integrity, her complete distain for titles, fame, but her absolute reverence for justice, integrity and kindness. Those things, despite my own resistance to them, gradually worked into me and certainly have affected me.

SHIELDS: Well, the two of you made a wonderful team over the years. George, before we leave the scientific realm and talk about other aspects of your life, let's go back for a moment. We talked about your contributions to understanding of the optic nerve in glaucoma and of the anterior chamber angle. But that only touches the surface of your contributions and we really can't go into all of them, but as you look back over your profession, what are the contributions that you and your colleagues together made that you feel are the most significant and that you're most proud of?

SPAETH: Bruce, you know, maybe the only way I can answer that is, for example, people having a beer with somebody and they say, "What's your favorite beer?" And the answer would be, "The one I'm drinking!" I don't think I could… really, just list one or so. But maybe, generically, the

thought that what I've tried to do is to be a good observer and to make contributions that I think are… that move us closer to understanding what the world is really like. Focusing on that; trying to understand reality, validly, and to try to make those observations relevant. It's that process that I think, maybe, I'm most happy with. I really have tried to stick with that and not do the study simply because it was voguish or could get funded. That's not, perhaps, the answer that you were wanting.

SHIELDS: Well, actually, I would say that to my way of thinking, that is probably your greatest contribution. As I think back over the many lectures that I've heard you give over the years, the ones that stick in my mind the most are the ones that focus on just what you were talking about. In a way, that sort of segues into another area of your life that I wanted to touch upon and that is, in addition to all of your scientific contributions, you were so, and still are, so important in teaching young physicians how we should think about our practice and our patients, and how we should approach them. I guess that's why, when many years ago a few of us were thinking about forming the American Glaucoma Society, the very first thought we had was to go to you to see what you thought about the idea, and if you agreed with it, to really be the leader, and you did just that. Could you tell us a little bit about your thoughts on the American Glaucoma Society?

SPAETH: Sure, and as you know, you were actually seminal in that initiation. And you'll remember, I'm sure, it really grew out of discussions we were having, a bunch of us who were in fellowship training, about a very simple matter which was that some of the fellowship programs were asking their candidates to interview at a very early stage in their residency, and then requiring them to say yes or no. Some of us thought that was just not fair or wise. There's a group of wonderful glaucoma people, I don't need to tell you that. Talk about good fortune—the fact that I ended up in this field which is populated by individuals who are so lovely, thoughtful, caring, my gosh, look at that group of people! There was Max Forbes. What more wonderful human could there be? And Harry Quigley—how bright—and Doug Anderson—oh, my God, how honest Doug is. And on and on… you know, the whole group of people that were there. It was such a strong group—Dick Simmons—every one of them.

So then they decided that it would make sense to have an organization that would look into issues related to glaucoma. I was particularly interested in

the fellowship area. And so, then they had to choose a person who would be the first in charge of the organization. I don't think for one moment that I was chosen because I was the most talented. I wasn't from Harvard where Chandler and Grant, of course, had developed such a strong, wonderful leadership. I wasn't from Wilmer; I wasn't from Bascom Palmer; I wasn't from Wash-U, where Becker, you know, was the star of the program in many ways; I wasn't from UCSF; I wasn't from California, where Dr. Shaffer had his entourage and more of those fellows. I was kind of a non-entity from a program that hadn't developed much of a strength and so I think the feeling was, well, maybe he'll be neutral, and maybe it's a safe thing to start with him! And I did try to be neutral. I'm proud of the early years of the American Glaucoma Society in which we were inclusive, in which we did try to talk about excellence and focus it on what was going to be good for education, and eventually what was going to work for the patients. I think it did that, and I think that's a wonderful group. What an exciting organization it is now.

SHIELDS: It is indeed, and I think that, as usual, you're being far too modest in your role and the reason why all of us wanted you to be our first president. You remember that I once equated you with another George in our country's history, George Washington. I've always thought that we were fortunate to have two people that had the ability to take some nascent entity and to mold it into something that became what it is today. But I think it's true what you were saying about yourself. When we think of George Spaeth, we don't think of… well, of course, we think of Wills today because you created Wills glaucoma, but we don't think of you so much in connection with some other key glaucoma program around the country. You were George Spaeth. You were the one person who just stood out from all the rest. I know I speak for all of our colleagues in saying how fortunate we felt to have you as our leader. You mentioned a little bit earlier about your Spaeth fellowship, which as I understand it is the largest society of glaucoma fellows from one institution, probably in the world. I know you have fellows from at least 23 or more countries, six continents, probably 50 that are academic leaders worldwide. I wouldn't dare ask you to tell me who you think are the best, but I wonder if any stand out in your mind as people who have gone on to be world leaders and that you're particularly proud of.

SPAETH: Bruce, it's a little bit like the beer analogy. I have some people who trained with us at Wills who I'm sorry have the Wills George Spaeth

fellowship label on them because I'm not proud of what they do or how they act, but not many. Most of the other ones, whether in private practice in rural Virginia or leading a department in Italy, I revere them equally. One of the nicest things that ever happened to me in ophthalmology does relate to a particular fellow I trained. Roger Hitchings was an early fellow and he went back to Moorfields and of course developed a very strong program there. He became a research director at Moorfields and he trained the person who is now their leader and who has recently been knighted, Peng Khaw—Sir Peng Khaw. So Peng sort of became a grand fellow of mine and then Peng trained Peter Shaw, who is now doing glaucoma in Birmingham. At the 100th anniversary of the Oxford Ophthalmological Congress, they set up a glaucoma symposium, and it was really nice because the people who were talking at it were me, Roger, Peng, and Peter—four generations of fellows—and it was really fun.

But yes, I am very, very excited by the fellows that I've had the opportunity to work with and continue to. Ann and I were, you know, old folks, and we would think, "Well, what are we going to do?" when we would go down and visit some of our friends in some of the retirement homes in Philadelphia. As we would leave the place and thought we were able to talk quietly without anybody hearing us, we'd say, "Oh, my God, let's hope we don't ever have to come into some place like this—all these old folks!" And the opportunity to work with young people who are vibrant and challenging has been so priceless. I think back on a slight paraphrase of something that a Rabbi said in Israel many, many years ago: "Much have I learned from my teachers." And then I'll modify it a little bit: "Much have I learned from my teachers, more from my students, but most from my disciples." It's those people who we really bond with, so that the mentoring relationship reaches its full flowering in which the mentor then becomes mentored. And that is so lovely.

SHIELDS: Isn't that the truth? I think that's why you and I have probably both enjoyed our careers in academic medicine and the privilege of working with so many bright, young people. I always say that I feel like I learned more from them than they learned from me.

SPAETH: But, you know, Bruce, you've been asking me questions, and very graciously, but you know that in the whole field, there's nobody who is

more respected for his graciousness, his kindness, and his contributions than you, so to be interviewed by you is a great privilege for me. Thank you.

SHIELDS: Well, thank you for saying that. I consider myself very fortunate to have had the privilege of working in our profession with so many wonderful people. I think you know you're at the top of that list. But, before we injure our backs patting each other too hard, let's move on…! You actually alluded to this earlier, George, to some of your other interests, things that you might have actually gone in to as a vocation. You mentioned music composition and poetry. And, of course, I know that those have been avocations for you that you have excelled at. I wonder if you could just tell us a little bit about those areas that have been most important in your life, outside of medicine.

SPAETH: I love gardening. My mother was a great believer that we humans need to have our hands in the dirt and recognize, as the Bible says, that's what we are. We need to remember that we're not quite so fancy as we think, often. I love gardening because it keeps me tied closely to the soil and because it's so wonderfully rewarding. You put a bulb in the ground; you give it a little bit of fertilizer; and you watch it, and it rewards you far beyond what you deserve. Gardening is wonderful. I love gardening. I continue to play the piano and I continue to love music. My proudest accomplishment in that regard is: I wrote a version of the 23rd Psalm, which seems to have been accepted by some people. Some churches now use it fairly often. It was sung in Chartres Cathedral at one point. So that's something I'm proud of.

My family comes from a group of people who loved words. Recently, I brought together a book of writings of 20 members of our family—four generations—my mother and her brother and then some of my cousins and my brothers, and some of my nephews and nieces, and so forth. So this is a book of almost 600 pages of poetry and prose, and some of it is pretty good. But it's nice in that it's a collection, all from one family.

So what will I be doing in the years to come? Well, in the first place, I hope there are years to come. I think I would like to try to do something that continues to be a little outrageous. I want to continue to challenge the medical system. I think we can do much better. And I think maybe the best way to do that is through novels and through commentaries. But those gifts,

Bruce, were given. The only thing that I think we can take any credit for is what we do with the gifts we've been given. I'm aware that I have many areas in which I have a lot to develop still in that regard.

SHIELDS: It seems like every time that we're together I learn something new about your tremendously diverse interests. I must confess I was not aware about your version of the 23rd Psalm. My goodness, I would love to hear that one of these days. As you know, I have a copy of your book of family poems and have loved receiving your poems over the years. I can say for a fact that, had you chosen to be a poet instead of a physician, I think you would probably have been quite successful. But let me ask you this maybe rather difficult question, but for which I suspect you will have an answer: what have been your greatest joys in your life?

SPAETH: Bruce, I think the source of the greatest joy is the awareness of how lucky I am, how blessed I've been, and how wondrous the world is. And that is what fuels me. That fuel, I think, was placed in me, in a quiet way, by my father; in a more articulate way by my mother; and then nourished consistently, sometimes in a way that was pretty direct and critical by Ann. She also shared a belief in the wondrous mystery of the world. She loved Lao Tzu—the translation of Lao Tzu's works… he may not have been a person, of course, it might have just been a collection; but his first poem in "The Way of Life" ends with, a translation: "From wonder into wonder, existence opens." I think that awareness of this amazing wonder in which we all live, and the ability to have at least an oblique appreciation of it, is what I treasure most and the wonder of relationships: how they can work; the wonder of a connection to looking at a tree and just saying, "Oh, what a glorious thing!" That's kind of a diffuse answer, but I think maybe that would be the best answer I could give at the moment at any rate.

SHIELDS: As I was listening to you, George, you brought to mind one of my favorite poems. William Blake said:
He who binds himself to a joy
Does the winged life destroy;
He who kisses the joy as it flies.…

TOGETHER: *Lives in Eternity's sunrise.*

SHIELDS: And you surely do that. You kiss every joy and make the most of it.

SPAETH: That's a great poem. Ann introduced me to that.

SHIELDS: Well, we talked about a lot of things, and I guess to come full circle, we might just come back for a moment and talk about the profession of ophthalmology and glaucoma, which you have been at the forefront of now, really for about half of a century. I just wonder if you could tell us what you think were the most important advances in glaucoma during the 50 years that you were practicing and studying.

SPAETH: I think probably the most important ones that changed our ways of thinking and certainly absolutely key to that was the contributions made by Mansour Armaly in Iowa, and then also by [Edward] Perkins in England and [Ulf] Stromberg in Scandinavia and a variety of other people. That was to challenge the whole idea of a magic number of 21, and to try to figure out, how could you tell that a person had a progressive disease that was going to damage their optic nerve? That's been a huge change. I mean, totally, a totally new way of thinking. It has benefited so many people.

And the pharmaceutical companies certainly have to get a lot of credit for the drugs that they developed in conjunction, often, with academic departments—Carl Camras, Marv Sears—people who made real contributions and changed the way people get care. So I think the new drugs, the new way of thinking about what glaucoma really is, I would say those are probably the two top changes. Then, of course, coming along we have the imaging techniques. But we still have photography, which still is fine, but in the future the ability to look at ganglion cells individually is going to be fantastic.

SHIELDS: So, George, I just have two more questions I'd like to ask you. The first of those is, where do you think or see our profession heading in the future, both in terms of scientifically, as well as culturally?

SPAETH: I'm going to change your question a little bit. Where do I see it heading, and where do I hope to see it heading?

SHIELDS: Yes.

SPAETH: I see it heading in a direction which I think is very unfortunate, which is a continuing misunderstanding of what constitutes normal and abnormal; a continuing reliance on algorithms, which are simplifications of reality; a continuing emphasis on standardization and interest in big data rather than a recognition that every person is unique and different, and that what's right for the goose isn't right for the gander; and that we have to personalize medicine. I think there is a sub culture which is moving in that direction and as is often the case, those things simply happen because of advances that make it possible to happen. And I believe that one of the off shoots that may come from the ability to understand the human genetic composition may be the ability to recognize a little more fully the uniqueness of each individual.

There's real danger there, though. If I had to pick one really important paper of mine, I think probably the most important paper grew out of my interest in homocystinuria. As you know, I discovered homocystinuria and I found a treatment for it. It was along the same lines that we were talking about, one gene-one enzyme, and so forth. But as I learned more about homocystinuria, I realized that one gene-one enzyme doesn't work. It's not the way disease works—only superficially. So I wrote a paper called "Homocystinuria and the Passing of the One Gene-One Enzyme Concept of Disease." Disease is this amazingly intricate interworking of genes, environment—all these things put together in ways which are literally incredibly complex.

I think we can develop an increasing awareness of that complexity and study it digitally, but what we must not do, and we have been doing, is losing the power of patterns, the power of Zen-like Gestalt understandings of the whole. So, you know, a person comes into the office and you look at them, you say to yourself, "This person is sick." That's very powerful, and we're losing that ability. You look at an optic nerve and say, "That nerve has a disc hemorrhage and therefore…" No, it's not a disc hemorrhage and therefore. The nerve has a disc hemorrhage and we can fit that into a pattern. But what we're losing is, that nerve looks like a glaucoma nerve.

So I see the medical profession moving in a way which is increasingly based on standardization, on a misunderstanding of what's normal, rather than a recognition that what we need to do is—what many people have been saying for a long time, but hasn't been listened to—is do studies of enzyme-1. What could be right for this person, how do we treat this individual person,

and how do we study that so we can learn how to treat each individual person to the best of our ability? Now, that's certainly one area.
The other area which I have to add is: we've got to figure out some way to improve access to care. That has to be done, and we have to recognize that we can no longer continue to escalate the costs. It's already unsustainable so we just can't continue to develop toys. We have to think, what's going to work to help people that are going to be reasonably cost effective?

SHIELDS: To go back to what you were saying just a moment ago about our approach to the individual patient. My maternal grandfather was a country doctor, and it was said that he could often diagnose an illness when he would go out on a house call simply by walking into the house and smelling. In his day, they had almost no diagnostic tools at all. I mean, it was all how you evaluated the patient, the house they were in—the whole situation. I'm sure that my grandfather would be pleased to see that today we have so many wonderful diagnostic tools. But I think he would be a little concerned to notice that maybe we're paying a little too much attention to these diagnostic tools we have, and maybe not enough attention to the individual patient.

SPAETH: I think that's very well said, Bruce. I believe that. My gosh, how wonderful an MRI is. Am I suggesting we should have a world without an MRI? Of course not. But what I am suggesting is, let's not lose those other skills, that were so powerful, and that we're losing now.

SHIELDS: George, my last question may be a little superfluous because I think we've already touched on this, but let me just ask you again, what words of advice or caution do you have for the present and future generations of physicians?

SPAETH: Remember why you started, why you decided you wanted to be a physician. Remember that, and don't ever forget it. And don't let your teachers pervert that, because you went into medicine because you wanted to help people. You were hurt by their pain and you wanted to do something to be of help to them. And always keep that beacon in front of you, that your goal is to be of help to people who need help and want help. And many people need help who don't even know they need help, and what you're trying to do with all the techniques and things you learned, the only purpose of them, the only purpose of doing research, is to allow you to accomplish

that goal of helping other people. It's not for the research itself; it's so that what you learn through that can be actualized into making the lives for other people better, or, better said, so people learn how to, and can, care for themselves better. Good self-care is the goal.

SHIELDS: George, this has just been a wonderful privilege for me to share thoughts from your beautiful life, and I thank you very much.

SPAETH: Thank you, Bruce.

JENNY BENJAMIN: I'm hoping you won't mind if I ask you some additional questions. I'm not a physician so these might be very simple.

SPAETH: Of course not.

BENJAMIN: You mentioned homocystinuria and I don't know very much about that. Is that related to glaucoma? It's not every day that you meet somebody who has discovered a disease and I just wanted to know, how did that come about, and what was it like to realize that you had discovered it?

SPAETH: It's a good story. When I was a resident at Wills, Wilfred Frey had admitted a patient for removal of her dislocated lenses which were causing her to have painful eyes and she didn't look like any little girl I had ever seen. I thought, "I wonder what she has?" Well, at that point, there was, in the research department at Wills, a gentleman by the name of G. Winston Barber. I spoke to him and said, "Why don't we collect some urine and see what's in her urine? Maybe she's got some sort of metabolic problem." So we did and she had urine that was loaded with an amino acid: homocysteine. Now homocysteine is in a chain of conditions that go from methionine and then go through a variety of things and end up being metabolized and perform important roles in the body. But if the homocysteine builds up in the blood, then it tends to do bad things. It makes the blood clot. It makes the proteins that you need to form, not form. Well, she had homocystinuria, and that was probably accounting for why she was mentally retarded and had these other abnormalities which were manifestations of abnormal proteins. Well, the metabolism of the homocysteine and methionine requires an enzyme and there's a vitamin that you need to have with that enzyme to make the enzyme work—just Vitamin B6— pyridoxine. So we thought, "Why don't we give her some pyridoxine

and see." Well, it worked. She stopped putting homocysteine in her urine and her serum homocysteine came down. So we were pretty excited by that and we thought maybe there are other people like this, so we started getting… we got urine samples from institutions for the mental retarded and found it was a very common disease.

I'll finish the story by… oh, about 25 years after that first foray; I got a call one day. The receptionist said, "Oh, there's a woman on the phone who would like to talk to you." "Oh, yes, sure." So I took the call and she said, "This is Mrs. such-and-such. You probably don't…" "Of course I remember you. You're Laura's mother." Well, Laura was the third patient we found with homocystinuria. The second one was her older brother who was in a mental institution… or an institution for the retarded. And when we found him we thought, well, since this is familial we ought to screen other people in the family. He had a younger sister, Laura, who was two, and she was beautiful and perfect, but she was loaded with homocysteine and she was going to become retarded and get all the other problems. So we started her on pyridoxine at that point. So here it's now 25 years later and I'm getting a call from her mother… and she said, "I just wanted to call you because I thought you'd like to know that Laura was just admitted to medical school."

SHIELDS: Oh, my gosh.

BENJAMIN: That's incredible.

SHIELDS: Isn't that wonderful? What a story!

BENJAMIN: Did she become an ophthalmologist?

SPAETH: I don't know.

BENJAMIN: Because that would be perfect, wouldn't it?

SPAETH: Wouldn't that have been perfect?

BENJAMIN: My other question for you is something I'd be remiss if I didn't ask: what is your first memory of coming to the Academy meeting?

What's your first memory of, maybe, giving a paper? What year was it that you first started attending… since we're here [at the meeting now].

SPAETH: I don't remember the first one, but I do remember coming to the Academy with my father and going to the Palmer House. The details were different. One of the things that has always been good at the Academy was the instruction courses—they were existing then. There were always wonderful opportunities to speak with somebody who knows a lot about something and learn in detail what you can't learn from a two-minute talk or a ten-minute talk. I'm very glad the Academy still has those instruction courses. I think probably those are the things that I remember best about the Academy.

BENJAMIN: How did you get there? Did you fly or did you take the train?

SPAETH: Well, if it was in Chicago, we would fly.

BENJAMIN: What specialty was your father? Was he a general practitioner?

SPAETH: Bruce alluded to my father earlier. My father went directly from high school to medical school. He never went to college, and he became a field surgeon in the war… the First World War. He came back. He started the Department of Ophthalmology at Walter Reed. And how could he have done that? He never even had ophthalmology training! But he came back and was doing plastic surgery, largely related to the burns that occurred from the tank injuries, and he got fascinated in that, and he became very good at it. He wrote one of the first books on plastic surgery; started the American Board of Plastic Surgery; and then he moved gradually up towards the face and then got into ophthalmology and started the American Board of Ocular Plastic Surgery. He wrote probably the best of the text books in ocular surgery. It was called *Principles and Practice of Ophthalmic Surgery*. When I wrote my first really good book… I wrote *Ophthalmic Surgery: Principles and Practice*.

BENJAMIN: I was going to ask you about publishing.

SPAETH: I just changed that a little bit.

BENJAMIN: That's terrific. So publishing runs in your family.

SPAETH: Yes.

BENJAMIN: I know there's some joy, and maybe not so many joys, in publishing. When did you decide to write a text book, getting into that labor of love?

SPAETH: What you may have gotten a hint at here is, I'm not sure how much you decide much of anything. I decided about Ann. But other than that, you kind of put one foot in front of the other and, you know, I got to be a good surgeon. I thought, well, I might as well put a text book out about it.

BENJAMIN: How many editions have you gotten out?

SPAETH: The fourth one came out last year.

BENJAMIN: Oh, my goodness.

SPAETH: And I just got an email from one of my Chinese fellows. It said the Chinese translation has just been completed. Bruce, how many editions of your book have come out?

SHIELDS: It's in its sixth right now.

SPAETH: Six. See, I'm way behind Bruce.

BENJAMIN: I was going to ask you the same question about the joys of publishing… maybe the dubious joys of publishing, Dr. Shields.

SHIELDS: And there are pros and cons. I've had more than my fair share of rejections in medical publishing, but I have to say that it was also one of my greatest joys because for me, at least, it opened up so many doors that allowed me to do things in our profession that I probably wouldn't have been able to do otherwise.

BENJAMIN: Can you elaborate on that? Is it because of the opportunity to collaborate with others?

SHIELDS: Well, that was part of it – collaboration with colleagues in writing other books. But just the fact that once you've written a book…people think you know more than you do, and so then they begin to think, "Well, let's invite him to be our guest speaker." So invitations to speak nationally and internationally began to open up, and then one thing led to another. People thought, "Well, gosh, if he's doing all this stuff, he must be special." And even though I wasn't special, people thought I was, and so that was kind of how it all evolved—all from just a little book that I happened to publish a long time ago.

BENJAMIN: I was going to ask you both, also, a little more about AGS and the forming of that group because the Academy, in my opinion, tries to be a lot to everyone. But it seems to me that a lot of these groups, the retina group, the glaucoma group, really are members seeking each other out. I don't know much about the genesis of AGS but it seems like…

SHIELDS: Well, actually…

SPAETH: He was very much involved in it.

SHIELDS: It's really very interesting. I suspect, Jenny, that a lot of people had thought about the concept of developing some sort of a society. We had something before that was called "Angle." This was a meeting that mostly Doug Anderson had developed. It was a relatively small group that would meet once a year and focus on specific questions of science within the field of glaucoma. They were wonderful meetings, but it was not a structured organization. It was just a meeting that brought us all together. And I suspect that a lot of us began to think, well, maybe we should have a society that not only can be involved in advancing science, scientific knowledge, but also serve as an advocate of our profession. So it just so happened that I was in Puerto Rico. I was going to my first meeting of the AOS—American Ophthalmological Society—and I just happened to be sitting beside Max Forbes, who George alluded to earlier, and as we were just chatting, Max said… and I'll never forget these key words… he said, "You know, I've been thinking that we should form a glaucoma society." And I don't know what I said in response but probably something to the effect, "Well, you know, I guess maybe I had thought about that, too." And then Max said, "Well, maybe we should do something about it." But at that point in time, neither Max nor I were of any great status in our profession. He was more

than me. But we both realized that the two of us weren't going to accomplish the creation of a glaucoma society alone. Well, it just so happened that George Spaeth had one of the premier glaucoma symposia at Wills and that particular year he had been kind enough to invite Max and myself as well as Dick Simmons to be his guest speakers. I think this was coming up just a month or so after the AOS meeting. So Max and I thought, well, when we get to George's meeting, let's pull them aside and see if we can interest them in this concept. So I think it was at the reception that they had in conjunction with the scientific meeting that Max and I were able to get George and Dick over in a corner and we began to suggest this possibility. I think George took to it very quickly. Dick was a little more reticent but he came around.

BENJAMIN: He's a visionary.

SHIELDS: He is and I think all of us realized that much like the formation of our country, if it was going to succeed, you needed somebody like George Washington who had the credibility to really bring it all together and we knew that in George Spaeth, we had that person. And so fortunately for us, he agreed not only to move forward with it, but to be the leader, which he was. And so he really is the father of it.

BENJAMIN: Initially, did it come out of your department, then? Did you have to coordinate it?

SPAETH: No, it was not a university or department centered institution. I think that was one of the reasons why it worked.

BENJAMIN: How many initial members would you say there were?

SPAETH: How many members now?

BENJAMIN: No, initially in the AGS.

SPAETH: You know this better because you were involved in the history of it.

SHIELDS: Basically, the first thing George did was to invite about 15 leaders nationwide in glaucoma, and he brought us together at the next

Academy meeting. In fact, I think it may have even been the very same year. It was just a few months after we had him in Philadelphia—Puerto Rico first and then Philadelphia. And then… I don't recall even which city…

SPAETH: Wasn't it at ARVO?

SHIELDS: ARVO? Well, I do remember that we met at the Academy.

SPAETH: We did that, too.

SHIELDS: We met at the Academy meeting and we agreed that the time was right to create a glaucoma society, but that there were certain things that needed to be done in order to do it right. One of which was to incorporate it into a state and I think Dick agreed to go to the Commonwealth of Massachusetts to incorporate it. And then it was agreed that we would return one year later to hear what he had to say and make a decision. So we came back to the Academy meeting one year later. One sad note was that one of those original 15 people was a wonderful, wonderful person by the name of Chuck Phelps who was the chairman of the department at the University of Iowa. Between those two years, the first meeting at the Academy and the second, he died of cancer of the throat, just about a month before our second meeting.

So we did agree to start the society. George was the first president. Dick Simmons was the first vice-president. I was the first chair of the program committee and our first scientific program, which was a year or so later, was held in Iowa City in memory of Chuck Phelps. We started a tradition there of having a lecture each year, in memory of somebody, so the first one was in memory of Chuck. Fortunately, we ran out of people to have it in memory of, so then it was in honor of, but that's how it evolved. Once we decided to create the society, then we agreed upon a list of charter members, which was 100. Literally, they were all invited, kind of the top 100 glaucoma people in the country. But gee, I don't even know… now it has grown to… it's well over 500… 800… somewhere in that range. It's huge now. But it would never have happened without George, I can tell you that for sure.

BENJAMIN: Sounds like it had strong leadership from the beginning. Well, that's all the questions I have. Do you have anything else you want to say or add?

SPAETH: We talked a lot.

SHIELDS: We could go on all day with this. I've got this long list of accomplishments that George has had professionally, but I think we hit on most of that.

SPAETH: Thank you both.

SHIELDS: George, you did a great job.

SPAETH: Thank you.