

**Editor's Note:** This section recalls the memorable contributions to neuro-ophthalmology. It includes narratives of important past events, interviews with titans in the field, and commentaries on important publications.

## An Interview with William F. Hoyt, MD

*Lanning B. Kline, MD*

William Fletcher Hoyt, MD, professor emeritus of Ophthalmology, Neurology, and Neurosurgery, University of California, San Francisco, celebrated his 75th birthday in 2001. Born and raised in Berkeley, California, and the son of a physician, he had his undergraduate education at Berkeley and his medical education across the Bay at UCSF. After a 1956–1957 Fullbright fellowship in the Augenklinik of the University of Vienna (Austria), he spent a formative year in Baltimore at the Wilmer Institute, Johns Hopkins University, as Frank B. Walsh MD's second neuro-ophthalmology fellow. He returned to UCSF in 1958 to found the neuro-ophthalmology service, launching it on a counter at the nurse's station of the neurosurgery ward. During his 36-year academic tenure—all of it at UCSF—he authored 266 journal articles, co-authored (with Frank B. Walsh, MD) the biblical 3rd Edition of *Clinical Neuro-Ophthalmology*, and trained 71 neuro-ophthalmology fellows (half of them coming from outside the United States), 48 of whom have become professors of neuro-ophthalmology, eight who have become chairs of neurology departments, and six who have become chairs of ophthalmology departments. Widely acknowledged as one of the giants of 20th-century neuro-ophthalmology, he received the title of Honorary Doctor of Medicine from the Karolinska Institute in 1983. NANOS inaugurated an annual lectureship in his name in 2001. This interview was conducted in New Orleans on November 12, 2001.

**LBK:** How did you become interested in ophthalmology?

**WFH:** We had some family friends who were ophthalmologists. My father was encouraging in that ophthalmology is one of the specialties in medicine that had really defined limits. I looked at ophthalmology as an opportunity to do something I was good at—manual work. I thought it would be an ideal combination of working with my hands and having an intellectual challenge.

**LBK:** You were a medical student at the University of California?

**WFH:** Yes, I was part of the first medical class after World War II.

**LBK:** How did you do in medical school?

**WFH:** I wasn't at the very top. There were people in my class who were so good that I didn't even feel competitive with them.

**LBK:** You've told me that Fredrick C. Cordes MD was the chairman of ophthalmology at that time. Did you have any contact with Dr. Cordes before you became an ophthalmology resident?

**WFH:** I certainly impressed him by showing up and having him hear good words about me from his resident staff. I did not give presentations. He was one of the last department chiefs who was based in private practice—a “dollar-a-year man.” He received a token payment for running the department out of his private office. But he was strict disciplinarian, and he certainly looked after the resident training program.

**LBK:** I have heard that as a resident (1953–1956) you were known for performing many cataract surgeries.

**WFH:** I liked the manual part of ophthalmology. I set the University of California record for the number of cataract extractions done by any one resident during my tour.

**LBK:** So if you hadn't seen the light in neuro-ophthalmology, you might have turned out to be one of the “phaco kings” in the United States?

**WFH:** I doubt it. I don't think I would have ever been fulfilled doing just operative work.

**LBK:** So how did you become interested in neuro-ophthalmology?

**WFH:** My first exposure was through Dr. David Harrington, who was the perimetry teacher at the University of California. I thought it rather interesting that you could work with a tangent screen and other simple tools and actually achieve some kind of localization of brain problems.

**LBK:** Was the tangent screen the gold standard?

**WFH:** It was. We didn't even have a Goldmann perimeter. There were some old arc perimeters around, but the tangent screen was the method. I remember that other residents didn't like the visual field room.

**LBK:** Did you set the record in doing visual fields?

**WFH:** I'm sure that I did. And I gave my resident papers—we had to do two a year—on topics related to perimetry. I would do pen drawings of the brain and localization (of the

## Ultraviolet Radiation Perimetry with Monochromatic Blue Stimuli

A Method for Early Detection of Conduction Disturbance in the Retina and Optic Nerve

DAVID O. HARRINGTON, M.D.  
and  
WILLIAM F. HOYT, M.D., San Francisco

The use of ultraviolet radiation as the source of illumination in perimetry is comparatively new. As yet only a preliminary report has been published concerning its general and specific applications.<sup>1</sup> Perimetry with ultraviolet (Blacklight) radiation has introduced luminescent test objects in color whose spectral band is so narrow that for practical purposes they are monochromatic stimuli with a saturation and purity of color

investigation, and a theory will be presented to explain the clinicopathological findings.

When luminescent monochromatic blue test objects of relatively large size are used in the examination of the visual field, disturbances of a pathological nature in nerve fiber conduction can be demonstrated in patients with otherwise normal visual fields and with normal visual acuity as tested by Snellen letters. Central scotoma detected with difficulty in the 1/2000 white isopter can be easily demonstrated with these blue stimuli.

Blacklight perimetry is best performed in a dark or semidark room.<sup>1</sup> The retina being

First article in a peer-reviewed journal, co-authored with Dr. Harrington (*Arch Ophthalmol* 1955;53:870-881)

lesion) based on the visual fields. That so charmed Dr. Harrington that he had his artist at the Veteran's Hospital draw up these pictures with visual fields and a little brain down below and an arrow pointing down at the lesions. Those pictures ended up in Harrington's books.

**LBK:** I remember that arrow in the temporal lobe. I always felt sorry for the patient!

**WFH:** I only learned later that what happened to the brain was not like an arrow piercing it. By the way, I didn't have any concept of how much neurologic material you could encompass within the field of ophthalmology. But I was aware of Walsh's book (*Clinical Neuro-Ophthalmology*, first and second editions), and I had a chance to meet the man when he came to the University of California in about 1956. I was a senior resident when he gave the Proctor Lecture. I was assigned by Dr. Michael Hogan, the chief, to look after Dr. Walsh and prepare the clinical conference. I was supposed to find the patients and drive Walsh back and forth to his hotel. That exposure in 1956 with Walsh changed my life. Here was this professor who very clearly liked residents, and related to residents, had great medical stories, and loved an audience. More than that, he had information, the amount of which I had never been exposed to in my life from one man. He knew where you could find it in the library, who wrote it, and how long ago. How he could handle an audience—particularly the neuro-surgical part—and command such respect! Dr. Ed Maumenee, the chair at Wilmer, wrote a letter to Dr. Hogan saying, "It's a shame that Walsh is here (at Wilmer) and doesn't have fellows or people to whom he can pass on this information." Hogan gave me the letter and I decided then and there that I would make an arrangement to spend a year with Walsh.

**LBK:** Was that the major career direction change for you—meeting Dr. Walsh?

**WFH:** Absolutely. I had already made a plan for my post-residency period to go to the University of Vienna and spend a year as a Fullbright scholar in the eye clinics. So I had to work out this fellowship with Walsh for the period after I finished in Vienna.

**LBK:** What about your year in Vienna?

**WFH:** I like mountains, skiing, and music, and I wanted the experience of speaking a foreign language. Ophthalmology was about fifth on that list. I wouldn't say that the intellectual, medical experience of Vienna was important to me. That came later when I got to Johns Hopkins. But the Vienna experience laid a background for me. It followed me through my entire professional career: the language, the associations that I had made, the viewpoint that ophthalmology was much bigger than what occurred in the United States, that there were good specialists all over Europe, speaking all kinds of languages. Communication with these people would be a deep personal and professional satisfaction for the rest of my career.

**LBK:** Let's talk about your fellowship with Dr. Walsh.

**WFH:** He would work directly with me, frequently having me see the patient first in his office, then discuss the case with him. Then he would go in and see the patient and do some additional things to elicit the information that he needed. It was just he and I. I don't recall a resident being present. He treated me like a son. Sometimes we would be working on a weekend and he would look across the desk and say, "Doctor, you look a little tired. Why don't we go down and have steak."

**LBK:** Would you frequently work on the weekends?

**WFH:** Sure. The weekends to Walsh would consist first of all of the Saturday morning conference. It was absolutely the best show at Hopkins on Saturday morning.

**LBK:** Who were the major players at that show?

## Cortical Blindness with Partial Recovery Following Acute Cerebral Anoxia from Cardiac Arrest

WILLIAM FLETCHER HOYT, M.D., San Francisco, and FRANK B. WALSH, M.D., Baltimore

Recently we have observed a patient who suffered cortical blindness as a result of cardiac arrest. Our studies on this patient have brought out some interesting features of this type of blindness and may serve to increase in some degree knowledge of the basic mechanisms underlying true cortical blindness as differentiated from blindness associated with more anterior involvement of the visual pathways. Cardiac arrest causes immediate catastrophic anoxia in the central nervous system. Anoxia of the cerebral cortex, regardless of the mechanism, forms the basis for all conditions leading to cortical blindness, with the exceptions of direct trauma and invasion by tumor. Through the opportunity to work with Dr. Richard Lindenberg\* we have

ersistent blindness, and this specific feature is the subject of this paper.

Until recently, cardiac arrest invariably resulted in death. The introduction of thoracotomy and cardiac massage has provided recovery in some instances when performed without delay. In favorable cases recovery is complete, but in many cases evidences of widespread cerebral damage persist. Cortical blindness is only one of the residual defects, but we are not aware of it having been observed or reported as an isolated defect after cardiac arrest. With hypothermia as an adjunct to therapy, the residua of cerebral anoxia are being lessened.

Report of a Case

Initial first-authored article, published with Dr. Walsh (*Arch Ophthalmol* 1958;60:1061-1069)

**WFH:** Frank Ford (Franklin Ford, MD) was his favorite pediatric neurologist. He was always there. Richard Lindenberg was Walsh's friend and neuropathology expert. There were a couple of neurosurgeons. One was named John Chambers. The front row was always occupied by Ford, Chambers, and Lindenberg. They would be the consultants on the material that Walsh brought to the audience.

**LBK:** Were the patients themselves there?

**WFH:** Yes. Part of my job was to usher them in and out of the room. The Wilmer Institute was a good place to be on Saturday mornings. There was not much competition with sailing or golf or horseback riding.

**LBK:** How was the case discussion run?

**WFH:** The fellow was responsible for presenting the clinical details. But others did too. Walsh was very good at getting people to participate. For instance, if a practitioner brought a case in, he would have the practitioner present the case. He would coach ahead of time on how to be brief, and he was wonderful at cutting people off in a nice way. He was also wonderful at recognizing the expertise in the audience and extracting useful comments from various people, not just from his regulars sitting up front. He played the conference like an orchestra. The audience loved it, and he loved it. He loved it so much that he would be angry when holidays interfered with the conference. And of course, the kinds of clinical cases that came through were just extraordinary. People would drive patients up from some pretty remote areas.

**LBK:** It is well known that during your career you became part of the neurosurgery department at UCSF. Was it your experience with Dr. Walsh that led to this?

**WFH:** Yes. I saw how Walsh was treated by and how he treated his neurosurgical colleagues. It was such a fruitful medical and intellectual exchange that I wanted to reproduce it in San Francisco.

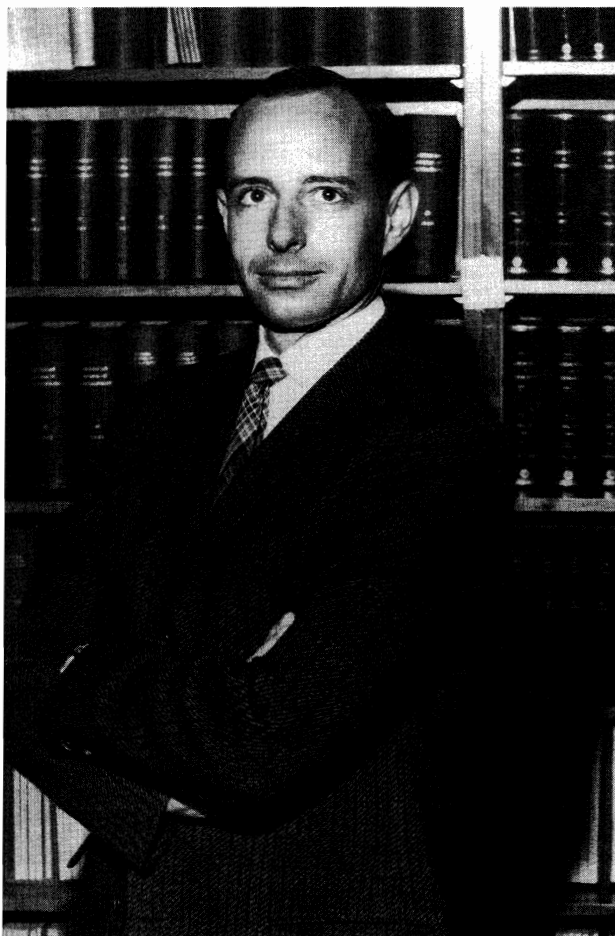
**LBK:** Any other particular educational activities during your fellowship that you want to share with us?

**WFH:** Two things: one was neuropathology. Richard Lindenberg was being supported as a neuropathologist in an academic setting by his friendship with Walsh. Hopkins wasn't doing it. Richard Lindenberg was the city examiner of Baltimore. But Walsh realized his value as a teacher. One of the major events in the fellowship was going on a Tuesday night to the city morgue and watching Lindenberg hold forth to a whole group of white-suited residents standing around the morgue table, looking at these brain slices that had been prepared before the evening event, and listening to Lindenberg's stories about neuropathology.

**LBK:** What was the other highlight of the fellowship?

**WFH:** The interaction with the Wilmer residents, particularly the senior residents.

**LBK:** Anyone in particular?



William F. Hoyt, MD, Assistant Professor of Ophthalmology, University of California, San Francisco, 1959.

**WFH:** Dr. Lawton Smith, a senior resident. He was a phenomenon and a fascinating, entertaining, redheaded southerner. Unbelievable. Lawton would go into the doctor's dining room with four cups of coffee gripped in one hand, sit down and start talking to the whole table. Lawton was also the fastest typist I had every observed. No secretary could keep up with him. Lawton used to carry a typewriter around with him on ward consultations, and he would dash off two pages of consultation, stick them in the chart and walk on to the next case.

**LBK:** Tell us about your return to UCSF in 1958.

**WFH:** I started out in part-time private practice in Dr. Cordes' office. I would drive from the private practice office back and forth to the University. At the University, the first people I made contact with were the neurosurgeons. I had a counter and a stool and a place by the nursing station on the neurosurgery ward, and that's where I started my teaching. For material, I used the inpatients on the neurosurgery service and the adjacent neurology service. I did not have a neuro-ophthalmology clinic.

**LBK:** Tell us a little about neurosurgery at UCSF then.

**WFH:** The chief of neurosurgery was Dr. John Adams. Dr. Adams had met Dr. Walsh during his visit in the 1950s, and he was aware of the kind of fellowship training that I'd had. Within months after I started, Adams came to me and said, "Hoyt, we want to make you an official member of the neurosurgery department, and I'm going to put in an application to the University for a joint appointment with ophthalmology." I remember thinking at the time, "Wait until Lawton Smith hears this!"

**LBK:** This was a very visionary decision by Dr. Adams.

**WFH:** I think he knew what Walsh meant to Dr. Walter Dandy (professor of neurosurgery) at Hopkins. Here he had the opportunity sitting right in front of him—somebody trained from Hopkins at no cost to his department. All he had to do was make an official position for me. I saved that old appointment letter because I thought it was historic. It was certainly the first time in the United States that a board-certified ophthalmologist had become a joint member of a neurosurgery department.

**LBK:** Did your office space expand?

**WFH:** The place that I occupied by this nursing station slowly changed to a little office, a few doors down on the same level, where I actually had a desk. It was a cubby hole. Sometimes I would have three residents and one fellow crowded into that little space. I guess it just exemplified that crowding isn't always evil; as a matter of fact, it helps people work together. Never in my career did I have an office where I sat back away from fellows. Instead I had a large table, and all my fellows and residents sat around the table and did their work there. I enjoyed this kind of community relationship with the young doctors where conversations and questions were always open. I lived in a fish bowl, but I enjoyed it. It also meant that the neurosurgeons that walked through the corridors outside my office could stop in at any time, interrupt what was going on, and tell us about a patient. Walsh always had a chair in front of his desk, and if somebody walked in, he would say, "Sit down, doctor. Tell me a story."

**LBK:** Did your relationship with neurosurgery become a little more formalized when Dr. Charles Wilson became chairman of that department?

**WFH:** Yes. Dr. Wilson came in 1969, and one of the demands that he made for accepting the professorship was that Hoyt would get a proper office in which to sit down and train his fellows, and that it would be on the hall opposite his office. His second demand was that my salary at the University be picked up by neurosurgery.

**LBK:** Dr. Frank Walsh was the first big influence on your career. Where would you put Charles Wilson?

**WFH:** What I owed academically to Charles Wilson was his absolute insistence on excellence. I also owed him an

unending debt of generosity towards neuro-ophthalmology. The neurosurgery team gave me and my fellows free access to every patient they admitted to the hospital. Wilson's administrative secretaries would give us anything we needed. There was never a question, if it was copy machine money or typewriters. Wilson ran a first-rate department. A dynamo of energy, he operated multiple cases per week and thereby provided a source of clinical material that was unsurpassed for my fellows and me.

**LBK:** What did you learn from the neurosurgeons?

**WFH:** I appreciated how hard neurosurgeons worked. We would always have jokes about it, that the poor neurosurgeons stand at the operating table for so many hours a day that they get inadequate perfusion to their brains, and that they need all the help they can get. It was my job to provide some of that help. But really, I learned to respect those young people who were going into neurosurgery, and I enjoyed presenting the residency group in neurosurgery to the residency group in ophthalmology. You see, the eye residents had to come to neurosurgery to learn neuro-ophthalmology, and at the same time, neurosurgery residents had this continuous exposure to ophthalmology residents and began to realize that they were smart. It went both ways.

**LBK:** Let's talk next about your fellowship-training program.

**WFH:** Dick Sogg was my first one-year neuro-ophthalmology fellow, and he was coming from Cleveland and Boston. Dick was a very lucky happenstance for me. He was an absolutely delightful person—wonderful with people. Everything ran smoothly when Dick was around. Nurses liked him, and we liked him. After Dick, I took a few fellows whose background and intentions I hadn't investigated very thoroughly. I found that they were often coming to get a foothold in West Coast ophthalmology so they could start a general practice in the Bay area or somewhere in California. I didn't think that is what I wanted to do with my fellowship. I wanted to teach them to be teachers in other universities.

**LBK:** So how did you change the screening process?



Hans T. Newton, MD, UCSF neuroradiologist (left), and Charles B. Wilson, MD, UCSF chair of neurosurgery (center), with Hoyt at Dr. Wilson's retirement gala, 1994.

**WFH:** I told applicants that I wanted letters of support from the university professor at the department and school where they intended to do their neuro-ophthalmologic teaching. I wanted academic support for them at a professorial level before I would accept them. I never had local funds to pay fellows. Fortunately, the National Institutes of Health had special clinical fellowship training grants that helped me get started. Fellows had to earn the financial support that was going to carry them through the fellowship.

**LBK:** How many fellows have you trained?

**WFH:** 71. 48 of those 71 have become professors of neuro-ophthalmology. So obviously I wasn't completely successful in the education of teachers. But eight became chairs of neurology departments, and six became chairs of ophthalmology departments. A couple even went further in the administrative level, into management of an entire academic health enterprise. Bob Daroff (Robert B. Daroff, MD, executive director, University Hospitals, Case Western Reserve University, Cleveland) is an example of someone who moved that high.

**LBK:** Tell us a little bit about your method for training fellows. How did you make certain that they really learned neuro-ophthalmology?

**WFH:** That is hard to answer. I always felt that if we could find common ground, and if we could expand that common ground through examination of the patient and reading of the literature, it would be a very satisfying mutual interaction. The fellows who were psychiatrists would teach me things that I did not even know about my own interactions with the patients. If I had a fellow who had a background in neurophysiology, we would get into the neurophysiology of nerve conduction, nerve block, myoneural junction, and higher visual function. Then we would develop publications. I didn't feel that I was trying to mold fellows. I was just trying to have a period of interaction with them in which, if anything, I showed them how much fun it was



Robert B. Daroff, MD, (left) and Michael Sanders, MD, (right) with Hoyt (center) during their fellowship year, 1967.



Frank B. Walsh, MD, visits Hoyt in 1966 during their collaboration on *Clinical Neuro-Ophthalmology*, third edition. Left to right: H. Stanley Thompson, MD (as a fellow), Hoyt, Walsh, and Robert S. Hepler, MD (as a fellow).

to run and to do your work as hard as you can. Daroff used to say, "When I worked with you, we were walking at full pace."

Stan Thompson (Iowa City) came to me with all this information on the pupil, which frankly I didn't care much about before he got there. He showed me how this subject could be expanded. He became my lifelong "pupil consultant." Daroff came with an interest in the brain stem. This intimidated me some. I wondered, "How am I going to teach this man anything? He already knows more than I do."

**LBK:** You were intimidated?

**WFH:** Yes. A neurologist like Daroff, an ophthalmologist like Michael Sanders (United Kingdom), a neurologist like James Keane (Los Angeles), an ophthalmologist like Myles Behrens (New York) working side by side. They generated a lot of very interesting information, and I stood by learning it.

**LBK:** Didn't you work at times to put fear into those young fellows?

**WFH:** I will never admit that I worked to make them fear me. I didn't. I certainly made them aware that I was demanding, and that they should read relevant literature and bring it to their discussions. I required that they see the new patients that came into the hospital in the evenings and that they call me at home every evening to tell me what they had for the next morning's rounds. I insisted on that so I could tell them what to read before they presented that case, and so I could bring in material from my literature collection. You might say we did a little "pre-thinking" before daily rounds. If that was intimidating ... I guess it was at times. And it kept them reading rather late in the evening!

**LBK:** How did you manage, year after year, to draw outstanding people from all over the world?

**WFH:** I started very early in my career with another language and with respect for ophthalmologists in the European community. Dr. Walsh directed my first foreign fel-

low to me. It was Michael Sanders, and he came from National Hospital, Queens Square, in London. I couldn't have been more proud that the British would send their choice for a neuro-ophthalmologist to San Francisco. Michael opened many doors for me to London, and so I had a little string of people coming from the UK to San Francisco. I even set up a sharing program as a reward for my fellows. When they finished my program, they could go to London for two months and work with Michael. I slowly acquired applicants from South America, Australia, Scandinavia, and Japan, each time with recommendations from a professor. In the 1970s the immigration laws changed and my foreign applicants had to take these medical examinations that inhibited my ability to get them. Even so, I've trained 29 foreign fellows for a full year and 28 for at least four months. The placement of one really well educated neuro-ophthalmologist in a country like Venezuela was a bigger accomplishment for me than placing ten people in the United States. The impact they would have was huge on teaching of young residents. That is what Rafael Muci-Mendoza, MD, has done in Caracas, Venezuela. The same is true in Barcelona, Spain with Jordi Arruga, MD. And I could mention many other important people abroad.

**LBK:** You've said that you regard your fellows as family.

**WFH:** Here's an example: Rafael Muci-Mendoza, MD, from Caracas. Muci was an absolutely extraordinary cardiologist, already past president of the Venezuelan Cardiology Society when he came to me. He took on neuro-ophthalmology as a hobby. But I wondered how I could help somebody who knows so much. He stayed two years, brought his whole family. The children went to American schools. Muci taught me medicine and a lot more. For example, once when I expressed impatience over a fellow who was not performing well, Muci took me aside and said, "Bill, you have to remember that these fellows are your family, and as in every family, different members have different requirements and so you can't expect the same of all of them. You have to help the ones that are a little weaker do the best they can." I was always grateful to Muci for being so politely critical of my behavior.

**LBK:** Have any of your fellows surprised you with their accomplishments?

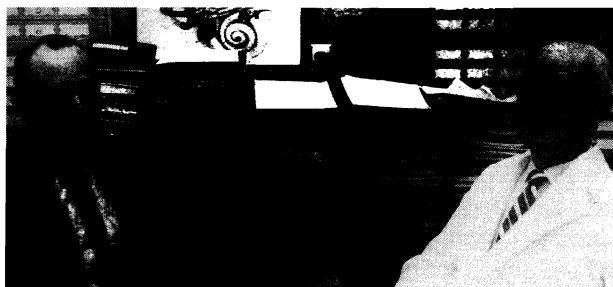
**WFH:** Yes, many. For instance, Jim Keane was a quiet person, and I just couldn't assure myself that Jim was going to do anything with neuro-ophthalmology. I was absolutely dead 100% wrong! From the time he got an academic position at the University of Southern California, Jim started publishing good observations, and I just became more and more proud of him. I apologize to Jim for not recognizing all his qualities when he was with me. He was a beautiful example of my incapacity to properly judge everybody that came to me. I think every teacher has that experience.

**LBK:** Let's talk about the third edition of *Clinical Neuro-Ophthalmology* that you authored with Walsh.

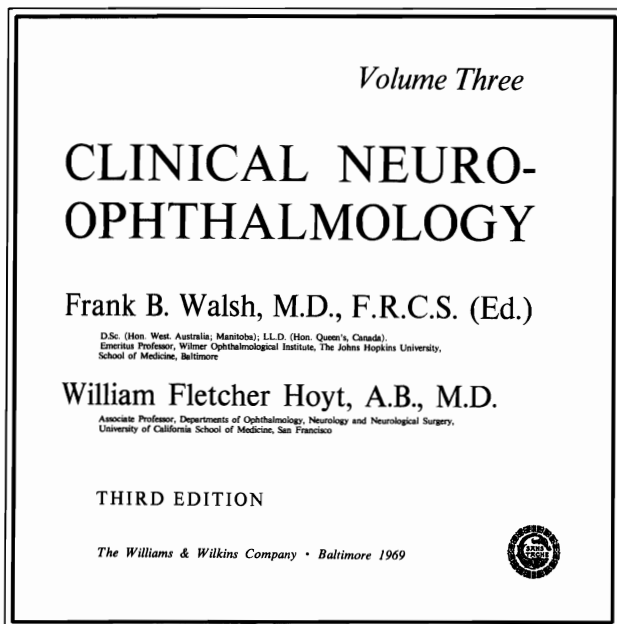
**WFH:** In the early 1960s, Dr. Walsh was becoming committed to a third edition. He was looking for somebody to help him, and he didn't ask me. He asked Lawton Smith. It was logical because Lawton was at Hopkins, and they were good friends. But Lawton did not want to become involved, so I was next in line. I was shocked by the invitation. I never considered the magnitude of the decision to write something on that scale. You walk through a library and you see all these big books, and you say, "Those were each done by other doctors over the years." Some are done by one doctor, not by a team, so it is possible. But when you ask yourself, "Could I do that?" you simply have to decide you are going to try, and you start. No one can tell you what you need to do to get organized to do such a thing. No amount of conversation with Walsh would answer that. You literally have to reorganize your life so that the only satisfaction you are going to have during that period is to see the manuscript grow. And the only way it can grow is if you work at it every night and every weekend.

**LBK:** How did you and Dr. Walsh divide up the work?

**WFH:** That was easy. We decided which chapters I would take and which chapters he would take. So I acquired the visual system and the ocular motor system right at the beginning of the book. He liked some of the genetic diseases and myopathies, and I said, "Fine, you take those." I took the tumor chapter. I also took the trauma chapter and asked him to help me with illustrations. I didn't know anything about trauma at the time, but that is what happens to you in a book. With a good outline and some good library information and a lot of subdivisions in your outline, you can put together a pretty good summary of the knowledge about a certain subject in book form without every having been an expert in that subject. You become better at it when you finish. Finally, the last chapter in the book was drug reactions and toxic substances. Walsh had a lot that he was doing, so I said, "Okay, I'll try that." It was another subject in which I had no expertise, but I slowly worked through it, ending that chapter, amusingly, with a subsection on snake-



Walsh and Hoyt meet at the Wilmer Eye Institute in 1967 upon completion of their textbook *Clinical Neuro-Ophthalmology*, third edition.



VOLUME ONE	
<i>Chapter 1</i>	Page
1 The Visual Sensory System .....	1
2 The Ocular Motor System .....	130
3 Sensory Innervation of the Eye and Orbit .....	350
4 The Autonomic Nervous System .....	434
5 Papilledema, Optic Neuritis, and Optic Atrophy .....	567
6 Congenital Abnormalities of the Eyes and Central Nervous System .....	642
7 Heredofamilial and Degenerative Diseases .....	758
<i>General Index</i>	
VOLUME TWO	
<i>Chapter 8</i>	1026
8 Metabolic and Toxic Diseases .....	1026
9 Disorders of Muscle .....	1242
10 Infections and Parasitic Invasions of the Nervous System .....	1312
11 Vascular Lesions and Circulatory Disorders of the Nervous System .....	1629
<i>General Index</i>	
VOLUME THREE	
<i>Chapter 12</i>	1927
12 Orbital, Ocular and Intracranial Tumors and Related Conditions .....	1927
13 Craniocerebral Trauma, Hypoxia, and Other Injuries .....	2331
14 Ocular Signs of Neurasthenia, Hysteria and Malingering .....	2519
15 Neurotoxic Substances Affecting Visual and Ocular Motor Systems .....	2538
<i>Index of Drugs and Toxic Substances</i> .....	2755
<i>General Index</i>	

Frontispiece (left) and Table of Contents (right) of *Clinical Neuro-Ophthalmology*, third edition, 1969.

bite. I did that with a huge smile, thinking here's this huge text that we've written, and it ends discussing the neuro-ophthalmology of snakebites.

**LBK:** How many years did it take to finish the book?

**WFH:** We started in 1963 and by 1967 the manuscript was ready to turn over to the publisher. There is a learning curve to creation of a manuscript; you get more and more efficient at getting more and more data. So the beginning was a kind of agony, and towards the end, things were moving more efficiently.

**LBK:** How did you handle communicating your progress with Dr. Walsh?

**WFH:** At first he was a little doubtful that his junior author was going to be producing, and he made a trip to San Francisco and sat with me for a week, working on the visual system and part of the ocular motor system. After that we would meet once every six months. I would fly to Baltimore and sit with him for a week, reading and writing, and going over the manuscript that I had already written. Those were killer days because Walsh could sit in one place for more hours than any man that I ever knew. I would squirm around and get fidgety, but he could just bend over that desk and keep on working. In addition, I could call him day or night, and he was always there to pick up that phone. He knew I was working, and I knew he was working.

**LBK:** Did you have any contentious times with Dr. Walsh over the book?

**WFH:** When it came to the contract and royalties and so forth, he was generous. It was right down the middle. When it came to opinions on a subject, he would always listen to me. For example, he was not of the same opinion that I was about optic nerve gliomas. I wondered how we were ever going to write the chapter on optic gliomas when we didn't agree about how aggressive you should be in treating them. Walsh solved it very simply. He said, "Look, this is what we will do. We'll write one little section that says one of us believes the following, and then we will write another little section and say the other believes somewhat different. Time will tell which one of us will prevail in this yet-to-be-settled tumor problem."

**LBK:** What was the feeling like after you turned the manuscript over to the publishers?

**WFH:** First of all, there was agony. We gave the book to the publishers in 1967. The publishers didn't even start working on the manuscript for six months—they were so intimidated by the size of it. Then when they did get going, they only devoted a few people to it, and it took them two solid years to publish it. That was not what they had promised in the beginning, and I never really forgave them for putting us through that two-year wait. I was of course glad in 1969,

thrilled actually, to see the book appear. I was thrilled with the reviews.

**LBK:** How about the work that Neil Miller has done, and now Neil Miller and Nancy Newman, in continuing the book through two more editions?

**WFH:** The question came up in the 1970s of redoing the book. By this time, Neil Miller had taken over the Walsh chair at Hopkins, and frankly I was not inclined to go through this monastic experience again! Neil, bless his heart, took on the project. Walsh was right there to encourage him, and it could never have been turned over to a more capable and successful person than Neil Miller. He is efficient, and he writes better than I do. He collected his material for the expansion of the book very much in the same way I did. He made use of the oncoming computer capacity to generate the manuscript, and he did an absolutely superhuman job to produce—was it five volumes?—by himself, working in his attic every night. His reputation now for having done it is absolutely deserved. The next edition—I couldn't believe that another one would come—was edited with Nancy Newman, who is also extraordinarily capable. This time they recruited other authors, but Nancy and Neil did the major work. It is hard to believe that neuro-ophthalmology could be set in so many volumes.

**LBK:** What about your relationship with Lawton Smith?

**WFH:** I have the warmest memories of my association with Lawton. Lawton Smith quickly became the voice of clinical neuro-ophthalmology on the eastern seaboard, and I was becoming the voice on the west coast. If I wasn't going to get famous doing what I was doing, Lawton was going to make me famous because he constantly kept referring to "Toughy Hoyt." Lawton believed that we had so many peculiar cases in California because California attracted peculiar people. Lawton acted almost like a pied piper for neuro-ophthalmology wherever he went, including the American Academy of Ophthalmology Annual Meeting.



John B. Selhorst, MD, (left) and Neil R. Miller, MD, (center) with Hoyt (right) during their fellowship year, 1975.



Visiting with Joel S. Glaser, MD (right), a former fellow, in 1976.

So I never attended the Academy meeting because it was covered completely by Lawton and his fellows in a very entertaining way.

We had good-humored competition about our fellows. Lawton used to say, "My fellows are going to be better than yours." He came to me once and said, "You know, I have got this application from a neurologist who wants to be a fellow. Dr. Walsh doesn't think you can train a neurologist to be a neuro-ophthalmologist." I said, "Lawton, I have accepted a neurologist." He said, "Oh, that is interesting. I am going to accept that neurologist, and he is going to be better than yours!" Lawton's neurologist was Norman Schatz, MD.

From that point forth, we each continued to accept neurologists as fellows. It had always been my belief that the essentials of ophthalmology could be taught very quickly to a neurologist and that neurologists have the mental equipment to handle many things that ophthalmologists can't handle.

**LBK:** The Bascom Palmer Eye Institute really got a boost when Joel Glaser, MD, came back to be a faculty member there (in 1974). Wasn't Joel a fellow of yours?

**WFH:** That's right. Joel's father was an ophthalmologist, and Joel decided in medical school that he was going to become a neuro-ophthalmologist. Lawton Smith, who was on the faculty at Duke when Joel was there as a student, had inspired him with his ideas. Lawton sent him to me for four months. Joel was delightful. He was a rascal. He was the perfect foil for me to keep a certain amount of introspective amusement about what we were doing. Then I became Joel's sponsor for his ophthalmology residency, which he did in Miami, and I was lucky enough to get him back as a fellow. Joel once told me that Lawton Smith was here to represent God, and since we needed a little balance, he would represent the devil! I'd rarely met anyone who could stand in front of an audience and do a scientific and clinical lecture mixed with such wry humor. Joel also knew every-

thing. There was point when the academy asked me to help design resident evaluation tests for a program that they were instituting.

**LBK:** Probably the early phases of the OKAP (Ophthalmic Knowledge Assessment Program) exams.

**WFH:** Yes, and I told them that they should get Joel Glaser. They protested that “he is too young,” and I said, “Don’t worry about it, he knows what it going on. He will work, and he has the information.” The feedback from that committee was, “You sent us the right man.”

**LBK:** How did you and your fellows collaborate on writing manuscripts?

**WFH:** Journal manuscripts were always difficult for my fellows and me. There were many considerations. I spent a great deal of time trying to teach them that they had to make a clear statement about their manuscript through the title. The title had to accurately aim at the contents that the reader was going to find. If readers never read anything but the title, they were supposed to have a good idea of what was contained there. So we had a lot of fun designing journal articles. This included naming new syndromes. Sometimes the name that we chose did not persist; sometimes it became an embarrassment, but it was fun to try and pick names. I will give you an example: “papillophlebitis” became a very contentious term. What I was really describing, I admit now, was a central vein occlusion in a young person with a lot of disc edema. I had no evidence whatsoever that it was due to an inflammatory condition of the vein wall. Dr. David Cogan supported me in the contention that perivenous inflammation could initiate a central vein occlusion in a young person, but he too had no proof. At that time he was editor of the *Archives of Ophthalmology*. That journal turned down my manuscript, and I finally had it published elsewhere. It was a good example of an effort that proved later to be less than I would have liked it to be.

Another example was “homonymous hemioptic hypoplasia.” I remember working with Ernesto Rios-Montenegro and Myles Behrens on a description of congenital hemianopia and the optic disc changes that went with it. I always liked that article, but I am not sure that the title was embraced by everyone.

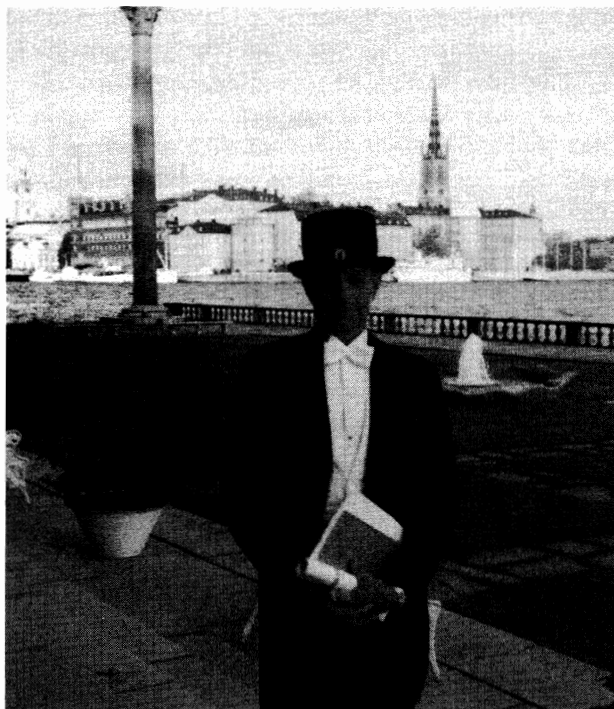
As I look back, one of my proud achievements is the discovery of (ophthalmoscopically visible) slits and arcuate defects in the nerve fiber layer. We correlated them with visual field defects. It is a point of pride to watch this whole business of laser imaging of the fundus and nerve fiber layer with optical coherence tomography, which confirms 20 years later our observations of those changes in the early 1970s.

**LBK:** What are your thoughts about the creation of the *Journal of Clinical Neuro-Ophthalmology* in 1978 by Lawton Smith?

**WFH:** I was against it. I did not think that there should be a separate journal of clinical neuro-ophthalmology. I was afraid that the contributions to such a journal would become a compilation of things that legitimate journals would reject. I thought that the neuroscience done by neuro-ophthalmologists should be good enough to stand review by editorial boards of first line ophthalmology or neurology journals. Lawton thought otherwise, and I think now as I look back on it and see how the *Journal of Neuro-Ophthalmology* (so renamed in 1994) has evolved, particularly under the editorship of Ron Burde MD, that I was wrong. I did not have the foresight to understand that the journal would slowly improve itself under proper guidance. It has earned its way.

**LBK:** Tell us about your role in the Frank Walsh Meeting.

**WFH:** The driving force for the Walsh Society was David Knox, MD. With Dr. Walsh, Knox organized these neuro-ophthalmology/neuropathology meetings, which provided case material for Walsh and Lindenberg and Joel Sacks to write their book, *Neuropathology of Vision*. People could not present at those meetings unless they had the neuropathologic correlate for a clinical case. Beginning at John Hopkins, and then slowly spreading around the country, those meetings were, for me, the best meetings of the year. I had a role in moving the Walsh Society under the umbrella of the North American Neuro-Ophthalmology Society (NANOS). Tom Carlow, MD, had been organizing what



Hoyt receiving an Honorary Doctorate of Medicine from the Karolinska Institute, Stockholm, Sweden, 1983.

was then called the Rocky Mountain Neuro-ophthalmology Society Meeting and later the NANOS Meeting. Each year we would have two meetings: the Walsh Society meeting and the NANOS meeting. I agreed with Tom Carlow that they should be merged, and many people disagreed with me. But I was made president of the Walsh Society, and almost by edict I moved the Walsh Society under the umbrella of NANOS. The merger has been reasonably well accepted.

**LBK:** What are your feelings about the International Neuro-Ophthalmology Society (INOS)?

**WFH:** I remember when it was first being organized by Freddy Huber, MD, and Adolf Neetens, MD, about 20 years ago. I questioned whether the world needed an international society of neuro-ophthalmology. The biannual meetings persisted and moved to various places around the world and I think its major contribution has been the way it has allowed the interested people in neuro-ophthalmology from various countries in the world to meet one another.

**LBK:** Haven't some neuro-ophthalmology meetings been held in your honor?

**WFH:** Two in particular, one for my 65th birthday, one for my 70th birthday were organized by my colleague Dr. Creig

Hoyt, in San Francisco. Those were memorable because they were a gathering of so many of my former fellows. No teacher can be prouder than to watch the nice interaction of his former students. There was a meeting in Tuebingen, Germany in July 2001 under the auspices of the European Neuro-ophthalmologic Society (EUNOS) in which I was the principal guest, and they were celebrating my 75th birthday. That was a wonderful professional experience for me because they were celebrating my fellows in Europe, and they presented a special half-day symposium in my honor.

**LBK:** Speaking of the many honors bestowed upon you, which ones stand out?

**WFH:** I think anyone would feel very special if they had been elected for an honor (Honorary Doctor of Medicine, 1983) by the Nobel committee, the faculty heads of the Karolinska Institute in Stockholm. I had another one of those honors when the German Ophthalmologic Society gave me the Franceschetti-Liebrecht Prize for neuro-ophthalmology (in 1976).

**LBK:** Can you give us a glimpse of what you're doing now?

**WFH:** Well, my days of training fellows are over. I think that is now the job of my students. I still help with the train-



A gathering of former fellows at "An update in Neuro-ophthalmology" held in San Francisco in 1995 to celebrate Hoyt's 70th birthday. (Hoyt is in front row, third from left.)

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**Dr. Hoyt's one-year neuro-ophthalmology fellows**

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- 1961–1962: Richard L. Sogg  
 1963–1964: Ronald Cameron  
 1964–1965: Bernard Slatt  
 1964–1966: John D. Loeffler  
 1966–1967: Robert Hepler, Stanley Thompson  
 1967–1968: Robert B. Daroff, Martin Lubow, Michael D. Sanders  
 1968–1969: James Keane, Sahag Baghdassarian  
 1969–1970: Joel S. Glaser, B. Todd Troost, Enrique Piovanetti  
 1970–1971: Myles M. Behrens, H. Lee Stewart, Ernesto N. Rios-Montenegro, Harvey Birsner, Leroy Meshel  
 1971–1972: Nancy M. Newman, J. Raymond Buncic  
 1972–1973: Guntram Kommerell, Dan Boghen, Lars Frisen, Peter Bringewald, Dominique Belohradsky-Ireny, Suyong Kwak  
 1973–1974: Ian Desmond Elliott, Moshe Feinsod, Michael Rosenberg, James Sharpe, W. Bruce Wilson  
 1974–1975: John B. Selhorst, Neil R. Miller, William T. Shults, Kay-Uwe Hamann  
 1976–1977: Takeo Fukushima, David Taylor  
 1977–1978: Michael Balis  
 1978–1979: Renate Unsold, H. van Dalen, Steven Feldon, Rafael Muci-Mendoza, Jordi Arruga  
 1979–1980: Otmar Meienberg, Walter Jay, Gregory Hemphill, Marc Cruciger  
 1980–1981: Christopher Kennard, Charles G. Maitland, Trevor Buchanan, Thomas Hedges, Jade Schiffman  
 1981–1982: Barry Skarf  
 1983–1984: Richard Imes, Mario L. R. Monteiro  
 1984–1985: Lawrence Tychsen, John Harrison, William A. Fletcher  
 1986–1987: Michael C. Brodsky  
 1989–1990: Klara Landau, Jonathan Horton, Yew Kim Yeow, Rong-Kung Tsai, Gordon T. Plant  
 1990–1991: Bertil Lindblom, Nicola Ragge  
 1994–1995: Masato Hashimoto  
 1995–1996: Jane W. Chan  
 1996–1997: Cameron P. Parsa
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ing of residents in our department. I still see patients in my office in limited numbers in the morning. I do it because I enjoy it.

**LBK:** Any thoughts about the future of neuro-ophthalmology?

**WFH:** Many years ago, when I was a guest in Winchester, England at a meeting of the INOS, Dr. Michael Sanders asked me to give a lecture on the future of neuro-ophthalmology. I had always found this a very difficult subject to approach, and I thought, as I was trying to organize that lecture, that most of the real surprises in my career had overtaken me from behind. It was as if I had been going through my career watching the rear view mirror. Neuroimaging, for example, just simply washed over all of us and changed everything we were doing, and I would not have anticipated that beforehand. So I wouldn't venture to say where neuro-ophthalmology will go in the next 20 or 30 years. Clearly, it won't disappear. Physicians and neuroscientists interested in visual and ocular motor physiology will continue to develop, and there will be contributions from many directions, most of which I could never predict.

### EPILOGUE

When initially faced with the task of interviewing WFH, I was filled with excitement, anxiety, and a little intimidation. Not having been a "Hoyt Fellow," I was not sure how open and accessible our interviewee would be. But the experience was truly a pleasure; WFH was thoughtful, introspective and honest. His insights into neuro-ophthalmology and the people involved in this subspecialty were captivating and revealing. During a symposium at the Annual Meeting of the American Academy of Ophthalmology in 1994 to honor WFH, Barrett Katz, MD quoted Shakespeare to capture the essence of WFH:

*A scholar, and a ripe and good one;  
 Exceeding wise, fair-spoken, and persuading:  
 Lofty and sour to them that lov'd him not;  
 But to those men that sought him sweet as summer.*  
 –Shakespeare, King Henry VIII