Fall 2009 • Vol. 13, Issue 4

655 Beach Street
San Francisco
CA 94109-1336

Tel. 415.561.8500
Fax 415.561.8533
www.aao.org

American Academy of Ophthalmology
The Eye M.D. Association

Academy Seniors
To Honor, Serve and Represent Senior Ophthalmologists of the American Academy of Ophthalmology

SCOPE

The newsletter of the Academy Seniors

2009 Joint Meeting Highlights for Academy Seniors

We hope to see you soon in San Francisco for the 2009 Joint Meeting with the Pan American Association of Ophthalmology Oct. 24-27. The following is our list of highlights recommended by the Academy Seniors Executive Committee. We hope you will join us.

Club Lounge

Take advantage and make time to enjoy the Academy Seniors Club Lounge. The lounge is complete with refreshments, internet access and a host to help you with all your Joint Meeting questions. The Club Lounge will also feature the Academy's collection of archived photos.

Open Saturday–Monday, 9 a.m. to 5 p.m.; Tuesday, 9 a.m. to 3 p.m.

Moscone South, Mezzanine, Room 250

Opening Session

New to this year's Opening Session, all Lifetime members will be acknowledged for their dedication of 35 consecutive years of Academy membership. This is a great honor and the Academy thanks you!

Sunday, Oct 25: 8:30 to 10:00 a.m.

Moscone South, Esplanade Room

Technology Courses

Three outstanding courses led by Andrew Doan, MD, Chair, Young Ophthalmologist Committee (see article on page 4).

Moscone North, Room 122

Saturday, Oct 24: 8:30 to 11:30 a.m.
Web Design Primer for the Ophthalmologist
(SPE4)

12:30 p.m. to 2:30 p.m.
Selling and Purchasing on eBay, Craigslist and other Mediums: How to Clean Your Office or Attic with Profit
(SPE07)

3 p.m. to 5 p.m.
Internet Blogging and Publishing Services
(SPE11)

Free!
Academy Seniors Special Program and Reception

Moscone Center West, Room 3001
Monday, Oct. 26: 2:30 to 5 p.m.

This special program features two informative presentations and a reception to follow.

Listening Carefully: What do Earthquakes Teach Us?
Peggy Hellweg, PhD, Berkeley Seismological Laboratory

It's Not the Years; It's the Mileage
Andrew Lee, MD

For more information on the Academy Seniors Joint Meeting events, please go to: www.aao.org/careers/seniors

GERHARD RUDOLPH MEYER-SCHWICKERATH 1920-1992

by William Tasman, M.D.

Gerhard (Gerd) Rudolph Meyer-Schwickerath was born on July 10, 1920 in Wuppertal-Elberfeld in the Rhineland, an old town not far from Cologne. He died in 1992.

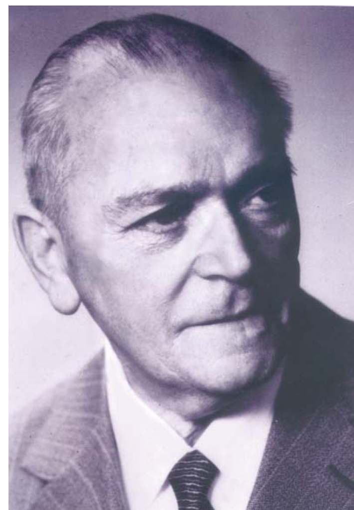
Meyer-Schwickerath was affectionately known by his friends, colleagues and students as M-S. In 1937, when he graduated from school, students in Germany who were going into the military were not required to take intensive graduation exams. His family had traditionally been lawyers and judges, and his two brothers studied law, but his father asked, "How can you practice law in a country where there is no law?" In fact, Meyer-Schwickerath himself could not imagine being a lawyer under the Nazi regime. Reinforced by his father's question, he decided to go into medicine, a recollection he shared with me personally.

Meyer-Schwickerath studied medicine in Bonn, then Wurzburg, and finally Muenster. During World War II he served as a paramedic, coincidentally suffering a knee injury that exempted him from going to the front. Because of the war, he did not complete his doctorate until 1945.

Upon receiving his medical degree, Meyer-Schwickerath worked in the ophthalmology clinic in Hamburg under Professor O. Marchesani. When Marchesani died prematurely in 1952, M-S moved to Bonn, where he studied under Professor H.K. Muller. One could say that Muller was "old school Prussian," since he sported a very pronounced dueling scar on his right cheek. Interestingly enough, dueling still continues today. Meyer-Schwickerath stayed in Bonn until 1959, when he was appointed Professor and Director of the University Eye Clinic in Essen where he remained until retirement.

Retinal Innovations

It was while he was in Bonn that I got to know Meyer-Schwickerath and had a chance to observe the development of his photocoagulator. His idea to use light (or photocoagulation) had come to him during a sleepless night. He had been working on a diathermy machine and thought that there would be many advantages to delivering retinal burns through the pupil. His interest was heightened when, on July 10, 1945 (which happened to be his 25th birthday), a medical student whom Marchesani had asked him to supervise, developed a macular burn while viewing a solar eclipse. The student wrote about his subsequent visual problems and then composed a thesis on the subject. From 1945 on, Meyer-Schwickerath's goal was to harness the sun's rays to produce a controlled burn in the retina.



Hans Karl Muller

Gerhard Rudolph Meyer-Schwickerath circa 1944.

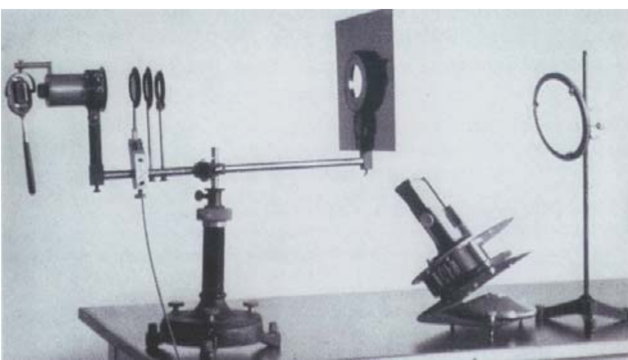
The use of heat as a therapeutic agent can be traced back to Greek mythology when Prometheus gave humans the gift of fire for which he was severely punished by the gods. Fire allowed our ancestors to survive in cold climates but unfortunately also brought forth conflagration and war.

Knowledge of the therapeutic value of heat is evident in the early history of medicine. The wide range of cures made possible by heat was well known dating back to the second century BC. Heat was later used to treat infected wounds and stop bleeding and pain. The earliest records of the use of heat come from Arabic medicine translated into Latin by Paul of Aegina.

By the winter of 1946-47, Meyer-Schwickerath pursued the idea of applying photocoagulation for therapeutic purposes. At that

time he was constructing a diathermy machine to treat retinal detachment. The machine design was presented at the meeting of the German Ophthalmological Society in Heidelberg in 1948.

Meyer-Schwickerath developed the first model of the carbon arc photocoagulator at home using a few lenses and mirrors. By the end of 1946, he was able to perform nicely localized photocoagulation in the eye of a rabbit within one to two seconds. He showed this to Professor Marchesani who said, "These are typical diathermy burns and you have mixed up the animals." M-S knew better but said nothing because Marchesani did not take kindly to contradiction. The first trials in humans were disappointing, and frequently ten-second exposure times were necessary.



Early photocoagulation instrument.

At this point, M-S decided to use the sun as the light source and utilized a heliostat to compensate for the rotation of the earth, which otherwise would move the sun out of the optical axis of the instrument. Under supervision, patients were placed on the roof of the Hamburg Eye Hospital to receive sunlight. Meyer-Schwickerath asked that he be contacted in the clinic when the sun was coming out for a prolonged period of time, something that doesn't happen very often in Hamburg. He rigorously tried to make this a workable situation, but the results were not what he had hoped.

Meyer-Schwickerath then began working on an artificial light system called the "Beck-Arc" system, which was a high-intensity carbon arc. In 1957, when I was at the 7100th U.S. Air Force Hospital in Wiesbaden, Germany, I saw him attempt to use the carbon arc light coagulator. It worked, but occasionally the instrument would blow up and there would be soot all over the room, requiring considerable clean up.

Dr. Hans Littmann of Zeiss Laboratories then developed the xenon arc photocoagulator. With it, Meyer-Schwickerath treated a peripheral horseshoe tear, which resulted in a good reaction in the retina. He then developed treatment protocols for macular holes, intraocular tumors, diabetic retinopathy, Eales disease, Coats disease and von Hippel-Lindau angiomatosis. Interestingly, he was particularly obsessed with treating macular holes and sealing them to prevent retinal detachment, which, of course, is rare. Today, with surgery, many holes can be closed and vision restored.

The xenon photocoagulator required adjustment of mirrors inside the housing in order to properly focus the direct ophthalmoscope head. On one occasion, Meyer-Schwickerath opened the side door of his photocoagulator to readjust the mirrors, looked in, saw the bulbs, and photocoagulated his own right macula which caused reduction in his central vision. After this incident, a safety device was installed.

In addition to developing a xenon photocoagulator, Meyer-Schwickerath popularized the monocular indirect ophthalmoscope, sometimes referred to as the Bonoscope (named for Professor Bon). The light source was held up to the examiner's eye and the fundus was viewed monocularly through a hand-held lens. This of course, did not permit scleral depression, as did the Schepens indirect ophthalmoscope.

Meyer-Schwickerath received many awards. These included the Graefe, McKenzie, Galen, Donders, and Gonin medals. In 1974 he received the Ordre Pour le Merite for Science and the Arts. Conceived by Frederick William IV of Prussia in1842, 40 of these medals are given, and the recipient keeps the medal until death. Upon the death of the medal holder, it is returned to the German Government which then awards it to a new recipient. By the end of World War II only three medal holders were alive since the Nazis did not award it.

Friendship

I'm proud that I was able to share a friendship with Meyer-Schwickerath from the 1950s until his death in 1992. On the 25th anniversary of the Retina Service at Wills, he was given an honorary degree by Wills Eye Hospital and Jefferson University.

Meyer-Schwickerath's wife, Berte, was a great asset to him. One thing that his family and mine had in common was that we each had a set of boy-girl twins. On several occasions he visited our family in Philadelphia. Many Germans enjoy hiking, and on a visit in January 1968, Meyer-Schwickerath expressed an interest in walking to the Philadelphia Museum of Art (one of his favorite artists was Paul Klee). Our home is approximately 12 miles from the museum, it was winter, and there were several inches of snow on the ground. Nevertheless, we made the trek and everyone survived.

Meyer-Schwickerath cofounded the Jules Gonin Society in 1959 at which time he was kind enough to enroll me as a charter member. I was still a resident in ophthalmology and was unable to attend a meeting until 1964, in Villars,

(Continued on page 12)

FROM THE EDITOR'S DESK

Not Enough Time

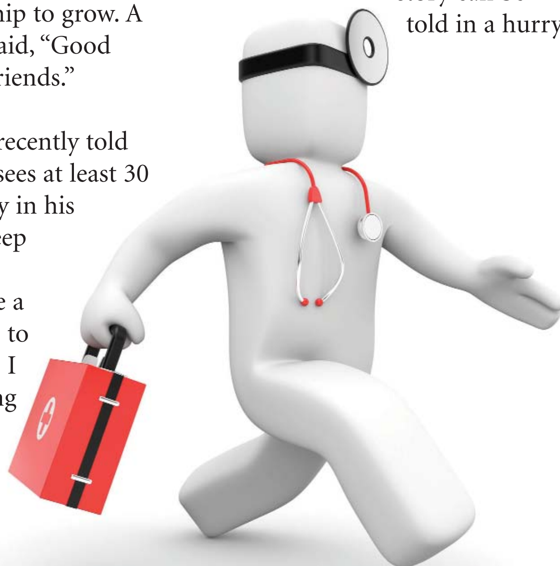
One of the most frequent complaints of patients I see in my Low Vision Clinic is that in most doctors' offices they feel rushed. They are usually elderly and have numerous physical problems in addition to visual defects. Often they are unable to explain their medical and eye problems let alone know what medications they are taking and why. I understand the time constraints that tend to stifle the patient-doctor relationship, but am convinced that better care results, in part, when people sense that they are treated as individuals, not just 'another patient.'

Among the 19th century practitioners, homeopathic physicians were some of the most successful. Despite the avoidance of purging and bleeding, part of the attraction of homeopathy, even among the better educated urban upper classes, was the care with which the practitioners elicited clinical histories. The choice of diluted drugs recommended for treatment depended entirely upon the patient's symptoms obtained in a time consuming systems review. And the time spent one-on-one with the doctor was what the patients wanted and needed. It also takes time for trust, confidence and friendship to grow. A wise lawyer once said, "Good friends don't sue friends."

A young internist recently told me that unless he sees at least 30 to 35 patients a day in his office he cannot keep pace with practice expenses and make a reasonable income to support his family. I know he's not living "high off the hog." Yet, I calculated that he could spend no more than 10 to 15 minutes with each patient including the time to record information and write prescriptions.

More and more patients view the health insurance industry as a big, impersonal business, whether private or government-sponsored. Also they tend to see hospitals and physicians as entrepreneurs and are convinced that "big brother" insurance and/or government will eventually, if not already, have dictated a course of examination and treatment. If we ever expect to overcome that notion we must first be certain that we work for responsible health care reform that also ensures that the doctor is still at the helm. If we can take just a few moments with each patient to listen, to reassure and to build trust, he/she will be our ally. The relationship will be professional, not commercial.

When I was a medical student I had a teacher who assured me that I should not worry if I felt that I had not gotten a totally satisfactory story of a patient's illness during a first interview. "Come back tomorrow; the patient will know you better. Most clinical histories take time and trust to develop." We may feel that there is not enough time in today's era of medical practice, but we must remember that no worthwhile story can be told in a hurry.



AS I REMEMBER IT

House-call

Ron Fishman, MD

"I wonder if you could come by my home and tell me if my wife is blind."

This is not a request you get every day at the office. So that evening after hours on my way home, I did make the house-call, and the husband told me more about what was on his mind.

They had been married almost 50 years, and were used to driving down to their small house in Florida each winter. Driving had become more difficult since his wife had developed Alzheimer's, especially since she became bedridden a couple of years ago.

So he had bought a Winnebago and cleared a large space in the center for a hospital bed. When it was time to go to Florida, he and his friend Bob rolled her bed into the Winnebago and secured it with straps from the ceiling and the floor. He took me on a tour to show me the set-up, which he had done himself. I had to admit it was ingenious. He and Bob then drove straight down to Florida. He did the nursing care himself and she always seemed comfortable during the trip. Then, when they got to Florida, he could wheel her out onto their patio each morning to be in the sun, which she had always enjoyed. In the spring, they came *(Continued on page 7)*

TO YOUR HEALTH!

Drinking red wine in moderation reportedly can reap significant health benefits. Dr. Joseph Maroon, a professor of neuroscience and neurosurgery at the University of Pittsburgh School of Medicine, says that studies indicate that resveratrol, a substance found in red wine and some other food products can protect against heart disease, some neurological diseases and some cancers.

While doing neurological research at a hospital in Lyon, France, Dr. Will Clower was surprised to find red wine and free refills always available in the doctors' dining room. He soon realized that the French looked upon red wine primarily as a food product, not as an intoxicant. He found that despite the fact that the typical French diet contains much more fat than the average American diet, the French have a considerably lower incidence of heart attacks, neurological problems and obesity. The French consume 60 percent more cheese, four times more butter and three times more pork than most Americans.

In *A Cardiologist's Guide to Anti-Aging, Antioxidants and Resveratrol* William Gruss, M.D., a Florida internist and cardiologist, reports benefits to the cardiovascular and nervous systems associated with the consumption of red wine and resveratrol. Levels are higher in red wine than white because it collects in grape skins, which are left in the fermenting juice longer and allows for the color and much higher concentration of the byproduct.

Dr. Maroon states that resveratrol apparently activates what are known as the sirtuin genes—often called longevity genes. As far back as the early 1980s researchers found that if glucose were restricted from the nutrients available to yeast colonies in the laboratory it caused sirtuin genes to become active in causing greater longevity of the colonies. Resveratrol is now known to be among a number of sirtuin-activating compounds which are found as antioxidants in foods like green vegetables, onions, apples, red plums, green tea, and dark chocolate. The greatest concentration, however, is in red wine.

My interest in resveratrol was aroused by the "medical tip of the day/infomercial" on a daily show on TV. The news anchor made it sound as though the fountain of youth had been discovered. As a physician, I wondered if such news might cause some to drink red wine to excess and create other undesirable problems.

After going to the web and reading on the subject of resveratrol, I found that two glasses of red wine per day (the highest concentration of the substance being in pinot noir) provided just two to three milligrams. Commercial interests have been flooding the market with much higher amounts of resveratrol in pill form or as an additive to other "nutrition supplements." Nonetheless, if resveratrol from regular, moderate consumption of red wine is truly one of the reasons the French seem to fare better on a number of health issues, despite a seemingly unhealthy appetite for fat-laden, high calorie foods, we have reason to take notice.

Much research on laboratory animals using variable doses of resveratrol is under way. Probably we senior ophthalmologists will eventually be offered a multivitamin laced with the "right amount" of resveratrol. In the meantime, I think I'll take my cue from the French and have a glass or two of pinot noir with dinner. At my age, it couldn't hurt. As an antioxidant it might even help slow the progression of age-related macular degeneration. Who knows?

DWP

ARE YOU THE NEXT SUSAN BOYLE?

by Andrew Doan, M.D., PhD

Susan Boyle was a contestant on *Britain's Got Talent,* and she became a mega-star instantly when over 100 million people viewed her performance of "I Dreamed a Dream" on Youtube.com.

Youtube.com and internet social networking sites have allowed unknown talent to emerge. The band *Journey* lost their lead singer. In search for a new lead singer, Neil Schon, one of the band's founders, turned to the internet. How do you search over 17 billion websites available on the World Wide Web for a lead singer? Schon turned to Youtube.com, which is owned by Google, and searched for singers publishing their work using video. After a couple of days of searching, Schon found a young singer half way around the world in the Philippines. His name is Arnel Pineda, and his incredible voice landed him the job as lead singer after his audition in Marin County, just north of San Francisco. *Journey*'s national tour is sold out everywhere, and the craze about Pineda is spreading like wildfire.

These Cinderella stories illustrate the power of the internet and how it can be used to connect individuals around the world. Before you can be found on the internet, you must know how to publish on the web. Do you know how to create and publish your photos, video, and written work on the internet? Are you familiar with how to buy and even sell things to people around the world using free and inexpensive tools available on the web? My courses at the 2009 AAO Annual Meeting in San Francisco will help people learn how to publish internet content, create websites, and buy & sell on the internet.

Without sounding too much like an infomercial, I will provide a brief background about my expertise so that you can be assured that you will have the opportunity to learn much in my courses and that I am the right person for this task. During medical school, I started an electronic commerce business that generated over $500,000 in yearly sales on eBay and internet shopping websites working a few hours each day before classes and clinic rotations. As an ophthalmology resident, I co-founded a case report and clinical information website (www.eyerounds.org) for the Department of Ophthalmology at the University of Iowa. This website has received over 2 million visitors and offers hundreds of clinical cases and articles about ophthalmology. I also co-founded a book publishing company (www.fepint.org and www.medrounds.org) that utilizes internet publishing methods as well as traditional bound paper books. With more than ten years of expertise in e-commerce, publishing, and web marketing strategies, I created courses to share my knowledge and experiences with Academy friends and colleagues.

Course Descriptions

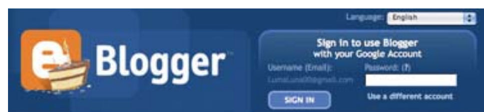
Web Design Primer for the Ophthalmologist

If you can organize your computer hard drive into folders, then you can start a website! Basic web design and organization is easy to understand and extremely fun. With a few clicks of the mouse, your pictures, audio clips, videos, and articles can be shared around the world.

This course offers an overview of the organization of websites, basic server organization, and introductory web design to help you setup, design, and publish web pages on the internet. This instruction provides a hands-on, step-by-step construction of a basic web site on the internet. I will help you understand how web servers work, teach you how to upload and organize content on a web server, discuss how to create and publish web pages using Microsoft Front Page, and teach you how to use free software like Blogger to maintain and create your website. To achieve maximum benefit from this course, I recommend people create an account on www.blogger.com and www.youtube.com.

How to Utilize the Power of Internet Publishing to Market Your Practice, Ideas or Business

The written word can be a powerful tool. With the invention of mass publishing methods, such as the Gutenberg Press, cultures, countries, and people have been greatly influenced through education and awareness. The internet is a faster and more powerful form of publishing medium that can transmit not only words, but sounds, pictures, and videos.



This course will offer an overview of how to blog, publish, and share your ideas on the internet. The course also covers how to package your content into traditional books for distribution.

This instruction provides a hands-on, step-by-step construction of an Internet blog. To achieve maximum benefit from this course, I recommend that people create an account on www.blogger.com, www.facebook.com, and www.youtube.com.

facebook

Selling and Purchasing on eBay, Craigslist and other Mediums: How to clean your office or attic with profit!

During medical school, I had a colleague who used an old, broken microscope as a book end for his textbooks. There was no use for the microscope as it did not have a functioning light and objectives were missing. I asked if I could sell the microscope on eBay. He did not object as it was simply a heavy paper weight on his desk. I took photos of the microscope and posted a complete description on eBay, including that this microscope was non-functioning. I started the seven-day auction at a starting bid of one dollar, without a reserve price, and added a $25 fee for shipping and handling. The microscope received a few bids during the first few days. By the sixth day, the bidding was at a respectfully profitable $150. The exhilarating part was the final 30 minutes of bidding on the seventh day. Each time I hit the "reload" button on my internet browser, the bidding war was like watching the numbers increase on the jackpot meter in Vegas! The bidding increased from $150 to a final price of over $600 within 30 minutes. While I cannot promise you that every transaction will allow you to walk away with $600 from free "junk", I can promise that by the end of this course you will learn how to shop, sell, and make money on the internet.

My course on e-commerce will also help you recognize phishing schemes and teach you how to protect yourself from fraud. Additionally, this course will help you understand how to purchase goods and services online safely, increase your knowledge of how to sell personal or professional goods and services on the internet, and demonstrate how to receive money safely from buyers.

Conclusion

If any or all of these course offerings interest you, then I encourage you to attend my courses on Saturday at the AAO 2009 Annual Meeting in San Francisco. The lessons in these courses will help you publish and share your ideas, views, and knowledge on the internet. With some luck, my e-commerce course will help you make money from the "junk" in your office, home, and attic. Or you may hit it big, and be the lead singer for your favorite band!

COGAN OPHTHALMOLOGIC HISTORY SOCIETY

The 23rd annual meeting of the Cogan Society will be held on April 16-18, 2010 at the Embassy Suites Hotel, Chicago-Lakefront, Chicago, IL. The Society provides a forum for scholarly presentation and discussion of research on the history of ophthalmology and its associated fields. More information regarding reservations and the program is available on the Cogan Society website: www.cogansociety.org.

As I Remember It

(Continued from page 4)

back the same way.

The problem was that he had begun to think that maybe she could not see him too well. It was almost time to make the drive to Florida again. Maybe it wasn't a good idea to make the trip if she couldn't enjoy the sun on the patio like always. Would I please examine her eyes and tell him whether they were OK?

He led me to the bedroom, where it was obvious that his wife, totally mute, immobile and unresponsive, was in the last stage of her dementia. I spent several minutes elaborately examining her eyes, glad that I had brought an ophthalmoscope. This gave me time to think about what I would say. It was not really the woman who was my patient; it was her husband. And you can't trust doctors; their grip on the truth is too slippery.

"Her eyes are fine. I'm sure she would enjoy the sun on the patio."

He broke into a big grin. " Sure, I knew that. I just wanted to make it official. We'll leave tomorrow."

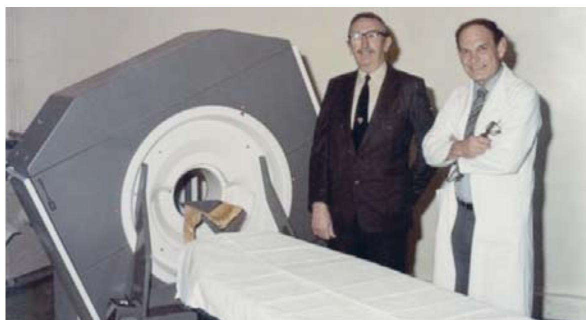
MAYO CLINIC AND THE FIRST NORTH AMERICAN COMPUTERIZED AXIAL TOMOGRAPHY SCANNER

by Jacqueline A. Leavitt, M.D,

Development of CT – Three Prominent Figures

Allan Cormack (2/23/24–5/7/98) received degrees is physics and crystallography from the University of Cape Town, then lectured in the Physics Department. After a sabbatical year at Harvard in 1956, he joined Tufts University working on nuclear and particle physics. Cormack derived and published the mathematical basis of CT scanning in 1963 and 1964. Even after his articles were published in the *Journal of Applied Physics*, there was little scientific or medical interest in his work.

Godfrey Hounsfield (8/28/19–8/12/04) studied radar, radio communications and electronics in the Royal Air Force during World War II. After the war he attended Faraday House Electrical Engineering College in electrical and mechanical engineering. Upon graduation he joined the electronics company EMI, Ltd. to work on guided weapon systems and radar. In 1958 he developed the first all-transistor computer made in Great Britain. This computer was faster than valve computers because he used a magnetic core to drive the transistors. Hounsfield built the prototype for the first CT scan as an attempt to improve information retrieval.



Godfrey Hounsfield and James Ambrose.

James Ambrose (4/5/23–3/12/06) was born in Pretoria, South Africa. He studied engineering in Johannesburg before joining the South African Air Force. After the war he returned to medicine at the University of Cape Town. His radiological training was in England after which he was appointed in radiology at Atkinson Morley's Hospital, Wimbledon. At Atkinson Morley's he trained as a neuroradiologist under Dr James Bull.

Ambrose mastered invasive radiological procedures so that by the 1960s he was doing hundreds of carotid angiographies a year. His ambition was to find noninvasive diagnostic methods. In 1969 the Department of Health asked him to meet Hounsfield, whose work had been falling on stony ground. Ambrose saw the marvelous potential in Hounsfield's idea and lobbied the Department of Health on his behalf. By 1970 they had produced the design and specifications of the prototype scanner and on October 1, 1971 Ambrose carried out the first CT scan on a live patient, revealing a detailed image of a brain tumor. Clinical trials followed, and in April 1972 Ambrose and Hounsfield presented the first talk on CT scanning to the annual congress of the British Institute of Radiology. In November 1972 the scanner was displayed at the Radiological Society of North America's annual meeting in Chicago and Ambrose's talk on clinical trials received a standing ovation.

Neither Ambrose nor Hounsfield relished the role of spokesman, it fell to Ambrose to spread the word internationally and he became an ambassador for the new technique. He performed this role as a scientist rather than as a salesman, and gained respect for doing so, though fewer honors came his way for his self-effacing conduct. Ambrose received the Barclay Prize of the British Institute of Radiology, the annual prize of the European Society of Radiologists, was elected a Fellow of the Royal College of Physicians, was made an Honorary Fellow of the Royal Australian College of Radiologists, was awarded the Gold Medal of the Royal College of Radiologists and honorary membership of the British Institute of Radiology. Yet there was a consensus among his colleagues that he did not receive the recognition he so richly deserved for his pioneering work.

Mayo's Acquisition of the First North American CT Scanner

Colin Holman,MD, a neuro-radiologist from Mayo Clinic, was speaking at the Neuro-radiology Postgraduate Course at Albert Einstein in May 1972. Hounsfield and Bull were last minute fill-in

speakers and showed some of their results with the EMI CT, speaking for the first time in the Western Hemisphere. Holman was so excited by their presentation that he borrowed the slides and brought them back to share with his Mayo colleagues. Hillier (Bud) BakerJr., MD went to England in 1973 to learn more about the machine, with permission from the Mayo Board of Governors to buy a machine "on the spot" if he saw fit (a little unusual because CTs cost about $350,000 at the time). He met with Hounsfield and Ambrose. Professor Ambrose had tested the prototype and kept meticulous records. Patient motion caused some blurring of the images, but Baker realized the CT was "capable of displaying with remarkable clarity many pathologic processes involving the brain, including tumors, strokes, hemorrhages, infectious processes, etc." He made an offer on a scanner. The National Hospital at Queen's Square had ordered the first non-prototype machine but the hospital was 150 years old and the floors and elevators couldn't support the machine's weight. It would take two years for them to refurbish the hospital to accommodate the scanner so that scanner became Mayo's CT (first scanner outside the UK).

How the CT Worked and Was Improved

The first CT required the head be positioned in a water bag (eliminating orbital scanning). Technicians had to clear air bubbles from the water box daily. From the back of the box, a membrane was "evacuated" and the patient's head was placed inside. Then, the water was replaced, pushing the membrane in around the patient's forehead. A harness kept the patient steady.

Conventional X-rays use a stationary machine to send radiation to a spot in the body to produce a 2-D image. The first CTs had an x-ray tube on a rotating gantry that would spin 360° in one direction making a slice, and then 360° back in the other direction to make a second slice. Between each rotation the frame made a complete stop and the table moved forward by an increment equal to the slice thickness. The first CT scan slices were standardized at 13 mm so that 10 slices encompassed the entire head. Mayo's machine had technical problems – it wouldn't stop at the end of its track. Mayo staff improvised. "We got brake lining from a Model T and that worked," recalled retired neuroradiologic technologist George Klann.

Controlled amounts of radiation pass through the head at different angles and sensors measure the radiation absorbed by different tissues. A special computer program then uses the differences in x-ray absorption to form cross-sectional images, or "slices." The first scanner developed by Hounsfield took hours to acquire the raw data for a single "slice" and took days to reconstruct a single image from this raw data. The first Mayo machine took four to eight minutes for a single head slice. Eight or nine pictures took up to an hour.

Scan results were numerical printouts (Hounsfield values) on a cathode ray display onto magnetic tape or a Polaroid picture of the cathode ray display. Thousands of printed numbers represented shades of gray for the computer to translate. In Ambrose' original paper, the first 80 x 80 matrix scans could depict calcified tumors, intracerebral hemorrhage, as well as necrotic or cystic low-density tumors. Suddenly, 95 percent of brain tumors became visible, compared with the previous 5 percent. The original 80 x 80 matrix was rapidly increased to 160 x 160.

The first room holding the EMI CT at Mayo had a viewing gallery because arrangements were made for 10 to 15 visiting physicians per day to watch the operation. Mayo's first CT machine remains on display at the clinic's Rochester campus. Few truly understood how revolutionary the drably colored contraption would turn out to be.

Original Papers on CT and How CT changed the Practice of Medicine

Baker et al published a paper in 1974 that concluded that CT was "a major advance in neuroradiologic diagnosis and in the care of the patient with neurologic dis-

(Continued on page 10)

CT Scanner *(Continued from page 9)*

orders." They found a diagnostic error rate of 3.5% on the first 500 patients. The disadvantages were slowness of scanning and limited viewing capability, restricting Mayo to 15 scans per day. Another paper in 1974 was on CT in patients with neuro-ophthalmic abnormalities. About one fifth of the first 500 patients scanned at Mayo had neuro-ophthalmic abnormalities. Houser et al in 1975 reported similar favorable results in use of CT scans in the pediatric population.

After the instillation of the CT, there was a decrease in the number of pneumoencephalograms, ultrasound echoencephalography and radionuclide scans performed whereas the number of EEGs and angiograms remained stable (Baker, 1975).

In 1981 a Consensus Development Conference was held at NIH to review scientific evidence related to CT scanning. The panel concluded that CT is safe and accurate and a powerful tool for the primary diagnosis of brain tumor, brain hemorrhage, effects of head injury and certain brain infections. CT was a major factor in decreasing morbidity and mortality in severe head injury and brain abscess, for example. Also brain tumors were detected with more accurate localization and of smaller size. The advantages of CT were reduced risk and discomfort. The high cost of CT was offset by a reduction in other testing as well as reduced and shorter hospital stays.

CT imaging was considered safe. Typical radiation dose from the first scanners was about 4 rads. Because the machine rotated 180 degrees, the exposed side directly received more radiation whereas the front and back of the head received about 2.5 rads. This was equivalent radiation exposure to an unfiltered mammogram from the same time period.

Cormack and Hounsfield were jointly awarded the Nobel Prize for Medicine or Physiology in 1979. They had never worked together and first met at the Nobel ceremony in Stockholm. In brief remarks at their Nobel banquet, Cormack noted, "It is not much of an exaggeration to say that what Hounsfield and I know about medicine and physiology could be written on a small prescription form."

The government was afraid that acquisition of CT machines would "break the bank." A health panel of experts suggested "strong measures to prevent overbuying and overuse of a sophisticated expensive X-ray device known as the CT scanner" in May 1977. When the 1979 Nobel Prize was awarded to Hounsfield and Cormack, the problems with insurance went away. The Nobel committee stated "no other method within x-ray diagnostics led to such remarkable success in such a short time."

By 2000 there were about 6,000 CT scanners installed in the U.S. and about 30,000 installed worldwide.

Dr. Leavitt is an Associate Professor in the Department of Ophthalmology, Mayo Clinic, Rochester, MN.

TRENDS AND TIDBITS

I have kleptomania, but when it gets bad I take something for it.

True Story—How to Call the Police

George Phillips, an elderly resident of Meridian, MS, was going up to bed when his wife told him he'd left the lights on in the garden shed. When George opened the back door he saw that there were people in the shed stealing things. He phoned the police and told them that somebody was breaking into his garden shed. The police dispatcher said, "All patrols are busy. You should lock your door and an officer will be along when one is available."

George said, "Okay." He hung up the phone and counted to 30. Then he called the police again. "Hello, I just called you a minute ago because people were stealing things from my shed. Well, you don't have to worry about them now because I just shot them." He hung up.

Within less than five minutes six police cars, a SWAT team, a helicopter, two fire trucks, and an ambulance with paramedics showed up at the Phillips' residence. They caught the burglars red-handed. A policeman said to George, "I thought you said you'd shot them!"

George replied, "I thought you said there was nobody available!"

Real Excuses Sent to Teachers

My son is under a doctor's care and should not take gym today. Please execute him.

Excuse Lisa for being absent. She was sick and I had her shot.

Dear School. Please excuse John being absent on Jan. 28, 29, 30, 31, 32, and also 33.

NEWS
from the
Academy Foundation

EYES EXAMINED

At this year's Annual Meeting in San Francisco, October 24th–28th, The Museum of Vision presents *Eyes Examined*, a new exhibit focused on the knowledge and practice of ophthalmology at the turn of the last century.

At one time, American medicine suffered greatly from the work of unlicensed practitioners and patent medicines. These alternatives to regular physicians were sought out by patients who feared so-called "heroic medicine"—that is, cures that were perceived as worse than the disease. After the American Civil War, instruments, drugs and medical practice improved, helping to forge a new age in medicine. Historians call this period the Progressive Era.

The Progressive Era started with the election of Republican William McKinley. President McKinley was swept into office in 1896 on a campaign of restoring the American economy which had fallen into a deep depression. What he began in economic reforms was capitalized on by successive administrations and reformists, leading to new ideas in politics, labor relations and American society. Over the next 24 years the Progressive Era produced the Pure Food and Drug Act, the Food and Drug Administration, the Flexner Report, the Federal Trade Commission, women's suffrage, the federal income tax and prohibition.

The American Academy of Ophthalmology has its roots in this time period. In 1896, at the dawn of the Progressive Era, Dr. Foster invited ophthalmologists and otolaryngologists of the central and southern regions of the United States to participate in a meeting to be held at the Midland Hotel in Kansas City, Missouri. In his address at that first meeting, Dr. Foster noted: "I have called you here to organize an Ophthalmological, Otological and Laryngological Association. The little acorn I plant here today will never satisfy me until like an oak, it grows and spreads all over the United States."

In the years that followed, the Academy was at the forefront of medicine. In response to the growing need for educated specialists, the Academy set standards for graduate education, created its own programs for continuing education and helped to establish the American Board of Ophthalmology in 1916—the first specialty board in the United States.

In the exhibit *Eyes Examined,* the Museum of Vision invites you to voyage back to this time period to visit a typical ophthalmologist's office. Case studies, culled from period journals, have been selected to help illustrate the instruments that will be on display. In addition, cases have been set aside for early innovations in ophthalmoscopes and a look at pharmaceuticals.

You can visit *Eyes Examined* at the Museum of Vision, North Hall D, Booth #3972. You may also wish to attend the museum sponsored history symposium entitled "Our Ophthalmic Heritage: Ophthalmology in 1900" on Monday, October 26th, 12:15 PM, in West 2006.

Meyer-Schwickerath

(Continued from page 1)

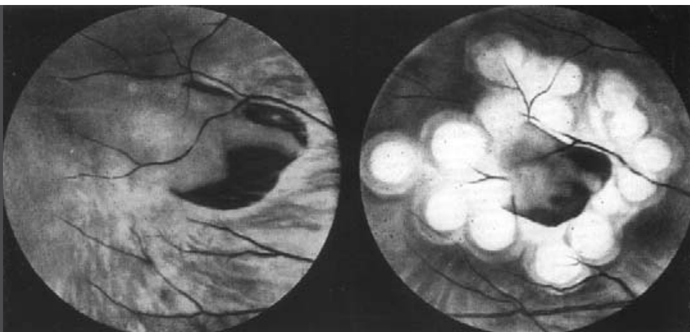
Switzerland, so my certificate for the Society lists me as joining that year. At the early meetings there was simultaneous translation in English, German and French. Eventually, during Bob Machemer's presidency, English became the official language of the Society.

Meyer-Schwickerath was a kind and wonderful gentleman who spoke English and French fluently as well as his native German. He had a great sense of humor. I remember how he said, "If we could just send the politicians to the moon, people would work things out."

I truly believe that Meyer-Schwickerath was one of the giants of medicine in the 20th century and that his contribution of light coagulation presaged the development of lasers. The Proliferative Diabetic Retinopathy Trial in the late 1970s validated the use of photocoagulation in proliferative diabetic retinopathy. M-S had shown this in the 1950s by photographs, but it was not a controlled study. Anyone involved in the PDRT study will remember that when a sealed treatment envelope was opened, the patient was assigned to receive either laser or xenon photocoagulation. Most of us wished for xenon photocoagulation because the neovascularization of the disc did not have to be treated directly. With argon laser photocoagulation we were obligated to treat the vessels on the disc directly, which was fraught with hazard. I still have patients who received xenon photocoagulation as far back as 1962 whose vision has held up over the years. I firmly believe that those patients who received xenon photocoagulation ultimately had a better long-term outcome than those who received argon laser therapy, which required more frequent retreatment.

Meyer-Schwickerath occasionally spoke to me about the Nobel Prize for which he was nominated and which he clearly deserved. He felt he probably would not get the award because he was German and the nomination was made not long after World War II. Regrettably, I had to agree with him.

Horseshoe tear.



The above article was presented by Dr. Tasman as the Snyder Lecture, 2009.

SCOPE
Newsletter of the Academy Seniors

Editor
David W. Parke, M.D.
North Branford, CT

Associate Editors
Ronald Fishman, M.D.
St. Inigoes, MD

Edward Isbey Jr., M.D.
Asheville, NC

Assistant Editor
Neeshah Azam
AAO, *San Francisco, CA*

Academy Seniors Executive Committee

Bruce Spivey, M.D. Chair
San Francisco, CA

W. Banks Anderson, M.D.
Durham, NC

Ronald Fishman, M.D.
St. Inigoes, MD

Edward Isbey Jr., M.D.
Asheville, NC

Allan Jensen, M.D.
Baltimore, MD

David W. Parke, M.D.
North Branford, CT

William Tasman, M.D.
Philadelphia, PA

Martin Wand, M.D.
Farmington, CT

Harry Zink, M.D.
Wooster, OH

Staff
Neeshah Azam

Design
Lourdes Nadon

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

Academy Seniors | Resources For The Senior Ophthalmologist