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Correction to the recently published article: Isidore Finkelstein, A Tribute:

Professor Finkelstein's daughter kindly called my attention to an error made in my tribute to this remarkable man. It is Isidore, not Isadore Finkelstein. I apologize to the family and readers for this oversight. Re-reading the article, I realize that I also failed to indicate properly the remarkable intellect of this man who was widely read, incisive in his comments and perceptions, and always kind and gracious. Finally, it is my sad duty to report that William Ludlam, one of Finkelstein's students, and a fine academic in his own right, died on June 10, 2002. Ludlam was an active participant in the Optometric Center of New York, SUNY College of Optometry, and at the Pacific University College of Optometry.

J.M.E.

Jay Enoch's Column:

Hans Goldmann: Scholar, Clinician, Friend

A number of obituaries were written about Hans Goldmann. I sought to minimally reproduce these, and yet to bring together points of interest to our readers from these English documents.

I was very fortunate to have had some very special teachers. One of these was my good friend, the very distinguished ophthalmologist, Hans Goldmann (November 21, 1899-November 19, 1991). At the time I knew him, I was a young academic associated with Washington University in St. Louis. Strictly speaking, Hans was never formally my teacher, but he might as well have been. Our relationship had origin as a proposal made by Dr. Murray Goldstein, of the then National Institute of Neurological Disease and Blindness or NINDB (this was before the National Eye Institute was created). Our government sought to link departments in academic institutions in the USA with Developing World medical centers having comparable interests. Goldstein thought it would be extremely valuable scientifically to link the Department of Ophthalmology at Washington University in St. Louis (Bernard Becker, Chariman) with the University of Berne Department of Ophthalmology (Hans Goldmann, Chairman) in Switzerland. These were the two of the main glaucoma research and clinical centers in the world! [A

comparable relationship was established between the Department of Ophthalmology at the University of Iowa and the Departments of Physiology/Ophthalmology at the University of Uppsala, Sweden.] When Hans heard this proposal, he was not at all happy! He has been quoted to me as emphatically stating something like, "Switzerland is not a Developing World country!" I can just imagine him making such a response. Of course he was correct. Yet the advantages to the two groups were of great importance, and, in time, Goldmann yielded.

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Hans Goldmann in the middle years (kindly provided by Prof. Franz Fankhauser, Berne)

For eight wonderful years, I was assigned by Professor Becker (a very kind action indeed!) to spend about a month each year as liaison between our two research groups. For a good portion of each of these visits to Switzerland, I had opportunity to spend eight to ten hours or more a day with Hans either at his lovely home in Berne or at his country place(s) in Brissago on Lake Maggiore (heaven!) in the Swiss/Italian Lake District. We reviewed research at both institutions in detail. What an extraordinary opportunity this was for me!

And when Hans stepped down as Chair in Berne, he chose to spend a year in St. Louis and we (as well as others) spoke/conducted research daily. And there were many other occasions when we met or had opportunities to interact.

Goldmann was a Renaissance man in every sense of the term. His knowledge and intellectual curiosity were seemingly limitless in a vast number of areas both within and outside of ophthalmic clinical science and physiological optics. For example, when relaxing, he loved to discuss history in general, history of science in particular, archaeology, auto and airplane racing, religion, political science, geography in detail, and so much more. In his home in Berne, virtually all rooms were lined from floor to ceiling with bookcases holding rare first editions as well as texts and travel books. He could speak numerous languages well, e.g., he delivered his acceptance speech in Latin when he became Rector (Chancellor) of the University of Berne. Sometimes, particularly in Brissago, when we reviewed detailed data from the two institutions or critical papers, after about eight hours, he would say to me, "Jay, I am tired after speaking so much English." In turn, his enquiring mind and penetrating questions would exhaust me, but I learned and learned well. This was an incredible academic experience. After such a session, his lovely wife, Erna Renfer (known affectionately to him in the Swiss-German dialect as "little mouse"), would cook us a wonderful, but light meal often with a fresh fruit tart for dessert. Often the fruit was obtained from trees in their terraced garden located in the hills above Brissago. As night fell, Hans would start a small fire in one of the niches in his old Roman hillside cottage, bring out an enormous straw-sheathed bottle of Chianti wine which we would sample, and we would gaze out across Laco Maggiore at the twinkling lights on the opposite shore, as well as at the myriad of stars, and he would sing songs from his native Prague.

To me he was a kindly father figure. But at his clinic he was a typical German professor of his era. There he ruled! I remember vividly one day when three of his already distinguished associates were two or three minutes late for surgery, they could hardly speak in fear of a tongue-lashing from Hans! Shortly after the arrival of the late Robert (Bob) Moses (probably best known to the reader for editing *Adler's Physiology of the Eye* for many years) in Berne for an extended visit as part of the same program, he went on Rounds with Professor Goldmann. After Hans had held forth on some aspect of a patient's condition, Bob piped up, "But Professor, had you considered X...." The residents and fellows emitted a collective shocked gasp! No-one dared challenge or question The Professor! (Actually, he loved such interchanges.) When he retired in 1968, Hans would make coffee for the lab assistants and could be infinitely charming (obviously the preferred mode).

I am getting a bit ahead of myself. Goldmann was born in Komotau, Bohemia, near Prague, in then Austro-Hungary, now the Czech Republic. His intellectual capabilities emerged early. Goldmann excelled in mathematics, the natural sciences, as well as philosophy, and languages. He was fascinated by astronomy and astrophysics. However, in the case of many individuals, he was urged to pursue a "practical" career. He chose to become an ophthalmologist, and became a medical

student at the German Charles University in Prague (Anton Philip Elschnig was then Chair of Ophthalmology).

In the 1880s, the Charles University had divided into two, one German, one Slavic. Among the distinguished early professors (and Rectors) at the German Charles University were Johannes Purkinje (Physiology), Ernst Mach (Physics), and Ewald Hering (Physiology). This was a remarkable tradition.

During Goldmann's stay at this University, his most notable teacher was Prof. A. Tschermak von Seysenegg, Director of the Institute of Physiology. Tschermak was an effective teacher who had numerous outstanding students including Hans Goldmann, Hermann Burian (binocular vision), H. Harms (micro-ophthalmic surgery and perimetry), Arthur Linksz (physiological optics), Gerhard Brescher (iris/pupil studies), and G. Schubert. Fankhauser points out that at the time, professors would sit together regularly with their students and assistants in the late afternoon at Vienna-style coffee houses and discuss the "latest advances and revelations of science." In this environment, Goldmann met and interacted with leading scholars such as Phillip Frank (theoretical physics), Moritz Schlick (philosophy of science), Karl Popper (theory of cognition), Konrad Lorenz (father of behavioral science), and others! Early on, Tschermak recognized the talents of his student Goldmann, and made him a teaching assistant (this was an important recognition for him). One of his first tasks was to assemble a colorimeter (was it Hering's?), a task which fascinated him. Associated with this activity, he realized he was protanopic – in fact, he became known locally and even in print as "the protanopic Goldmann." During a visit by Hans to St. Louis, he learned that I was about to give a number of lectures on color deficiencies. He insisted that I bring a color-mixing apparatus to lecture, and he demonstrated to the residents his anomalous matches of basic hues.

Professor (Dean) Gloor provided me with a chronology demonstrating Goldmann's depth and breadth of interests and contributions. I have added a bit to this assembly as well – obviously, no such brief list can be complete. In 1923 Goldmann completed his doctoral thesis in Prague, and in 1924 he moved to the University of Berne as assistant to Prof. A. Siegrist. After climbing the academic ladder, he succeeded Siegrist in 1935 as Chair of Ophthalmology and Head of the Eye Hospital at Inselspital in Berne.

1933 New design of slit-lamp (first version)

1934 Eye lens: Glassblower's cataract; radiation cataract "Goldmann versus Vogt"

1941 Volume of aqueous humor production;

1945 Development of principles of exact/quantitative perimetry

1946 Outflow of aqueous humor

1949 Biomicroscopy; 3-mirror gonioscopy lens, macular gonioscopy, other gonio-lens developments; studies of the vitreous body and fundus of the eye; research on acute posterior vitreous detachment as well as the anterior chamber angle

1950 New dark adaptometer

1952 Retinopathy of prematurity, oxygen as the etiological cause; new/updated slit-lamp (second version); fluoro-photometer
1956 Applanation tonometer
1950-1978 Research on the production and outflow of the aqueous humor; tonography
1966 Research on the cell count in the anterior chamber
1968 Research on the ability to detect which eye was stimulated by light
1969 Investigation of interferometric measurements of visual resolution
1980 Studies of stereo-chronoscopy

Goldmann's career also included studies of uveitis, vision in animals, philosophical writings relating to the spirit, power, and limits of reasoning in medicine, immunology, and much more (Fankhauser). That which brought him to special prominence early-on was a serious clash between this young scholar and the then famous Professor Alfred Vogt, Chairman of Ophthalmology at Zurich. This confrontation related to the etiology of radiation/glassblower's cataracts. Goldmann, at least at the time (1930), won this critical debate! Later, it was shown, each man was partially correct.

Many of us are most familiar with the wonderful instruments Goldmann developed and are still broadly used in ophthalmic practice. Not all were original concepts, rather a number were major improvements in existing technology. These items were produced in conjunction with Haag-Streit in Switzerland. The Goldmann kinetic and static perimeter remained the gold-standard in perimetry for many years, his slit lamps are magnificent, as are the gonio-mirrors and the applanation tonometer. One should not overlook the Goldmann-Weekers dark adaptometer his interference acuity device, and more. I reproduced his ingenious interference acuity device and used for years – it was one of the best of its kind.

When I knew Goldmann, his key interest was in glaucoma, its causes, its dynamics, how to treat and manage this disease and ways of detecting its presence early. He was concerned about differences between open angle glaucoma associated with intraocular tension, the then-termed low-tension glaucoma, and ocular hypertension without field loss. He wanted to know how the latter two differed from the chronic high-tension glaucoma, and whether ocular hypertension was an earlier of "silent period" form of high tension glaucoma. We often discussed this set of issues.

He enjoyed clinical research, and was a clinician of distinction. No approach or detail escaped his notice. He felt a sincere obligation to serve his patients – he had a great empathy for them. In a discussion at rounds in St. Louis (see my obituary of Goldmann), he revealed a great deal about his clinical philosophy in this example/exchange. No aspect of ocular haemodynamics, or any matter relating to aqueous humor production, flow, or elimination escaped his notice. He fully realized glaucoma was closely related to damage to the optic nerve and ganglion cells and other retinal cells, and forever he was looking for not only early changes, but also for functional manifestations, visual and otherwise, of the glaucomas.

He shared his many ideas freely, and he provided an unending stream of creative thought. Arguments were floated, considered, dropped, or modified. In fact, as I noted in my obituary of Hans, he engaged in a form of regular research rounds (I have never seen the equal of this) – Fankhauser describes a similar set of experiences in his obituary (p.139). Amazing! *Each day* Goldmann would go from laboratory to laboratory, and with a twinkle in his eyes, ask what was new, what had been found, what new discovery the individual had made, or what progress there was to report. If you did not have something new to discuss, he would raise a question of his own for discussion! There were no holds barred in these discussions, and it was great fun. This resulted in a form of research frenzy in our several laboratories (all manner of topics). We had to have something new each day – it was a challenge which we sought to meet. As he approached our labs, we worked like mad persons trying to put the final touches on the day's developments.

From this series of discussions, he and I entered into a research project asking whether an individual could detect which of the two eyes had been stimulated by light. There was a modest literature on this issue. The effect was classified as the utero-ocular effect from the Greek, "utero-" = one from two (as in uterus), or one of two (this application). Today such studies are termed the uterocular effect. Clearly, in the course of evolution, for survival, animals without binocular vision had to know which of their eyes had been stimulated by light, and the question was whether we retained this capability in modern times. A fascinating problem! We had to eliminate a large number of variables (not an easy task) and run up great volumes of data, and yes, we retain this capability. Our research was published by us and my able post-doc Roberto Sunga. There are applications of this finding, e.g., eye movement phosphenes associated with the blind spot area (Helmholtz, 2nd edition, volume 2), etc.

As noted, Goldmann loved speed, whether flying or driving. He came in second in the first round-Europe air race! In mid-race he had to land his airplane in a field and wrap some wire around the propeller in order to hold it together before taking off again.

One could go on for hours in this vein. During his visit to St. Louis, I and Bob Moses invited him to participate in a Passover Seder at my home. Bob, I, and our families used to take turns each year conducting the seder. I will not forget his arrival at our home, the tears streaming down his cheeks, as he had not attended a seder for 50 years (since his childhood). We were totally embarrassed, the prayer books we used were meant for young children! But Hans, bless his heart, entered into the event with enthusiasm! In short, he was brilliant, enthusiastic, demanding sometimes, and a very human scholar, clinician, friend and teacher.

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- Enoch JM. Hans Goldmann, M.D. Necrology. *Optom Vis Sci* 1992; 69(2):168-169.
Fankhauser F. Remembrance of Hans Goldmann, 1899-1991. *Surv Ophthalmol* 1992; 37(2):137-142.
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J.M.E.

Book Review – picture book of 1950s and 1960s spectacles:

Specs Appeal – Extravagant 1950s and 1960s Eyewear, by Leslie Pina and Donald-Brian Johnson. Schiffer Publishing, 4880 Lower Valley Road, Atglen, PA 19310 USA; 2001; 173 pages plus one page bibliography and one page index, hardcover, \$39.95, ISBN 0-7643-1403-3.

This book contains color photographs of spectacle frames with emphasis on the 1950s and 1960s. Background text material is included. A current price for collectors is included in the descriptions of many of the pictures. Schiffer publishes books on the collection of many objects. Their previous book on spectacles, "Eyeglass Retrospective – Where Fashion Meets Science," was reviewed in the January, 2001 issue of Hindsight (volume 32, number 1, pages 3-4).

The book is organized into six chapters. Chapter 1 discusses the evolution of spectacle frames from function to fashion and illustrates this with examples of spectacle advertisements and pictures of frames from various eras extending into the 1970s. Promotional campaigns by Bausch & Lomb, "Miss Specs Appeal" (1953) and "Miss Beauty in Glasses" (1954, 1955), attempted to highlight the fashionable aspects of spectacles. In the 1950s, optical companies started emphasizing fashion and "one pair is not enough."

Chapter 2 includes photos of "frames that suggest the range of fashion available in the 1950s and 60s everyday and evening wear." Frames from American Optical, Art-Craft, Bausch & Lomb, Gandy, Hasday, Kono, Swank, Tura, Trans-World, and Victory are pictured. There are also some reproductions of pages from frame catalogs.

Chapter 3 deals with sunglasses. Calobar, Ray Ban, Foster Grant, and many other sunglasses are shown. Common types of sunglasses are pictured, as well as folding, flip-up, and various unusual styles. Also presented are examples of magazine advertisements for sunglasses from 1950s and 60s. Ads and flyers from American Optical, Foster Grant, Grantly, Lugene, Monaco, Polaroid, and Bausch & Lomb are included.

The topic of chapter 4, entitled "Sight for Sore Eyes – A variety of Vision Helpers," is reading glasses. Lorgnettes, "half eyes," "flip down lenses," and foldable frames from the 1920s to the 1970s are shown.

In the 63 pages of chapters 5 and 6 there are novelty, unusual, and extravagant frames. Many frames with rhinestones, "cat-eye" frames, and unusual "butterfly-wing" frames are pictured, along with numerous outlandish frames. Headband glasses and earring glasses from the 1960s are among those shown in this chapter.

The dust jacket states that the book contains “450 color photos and vintage ads.” The quality of the photographs is excellent, although there is a little too much use of Styrofoam “heads” to show the frames. The publisher’s web site catalog is available at www.schifferbooks.com.

D.A.G.

Eye votives from Croatian shrines:

The journal Documenta Ophthalmologica recently had an article on eye votives (Dugac Z. Eye votives from Croatian shrines. Doc Ophthalmologica 2001; 102:11-17). A votive is an object presented to a divinity as part of a request for relief from a health problem or as an expression of gratitude. Votives have been used in Europe from the time of the ancient Greeks and Romans up to the present. Votives can depict various organs of the body. The author, Zeljko Dugac, is with the Croatian Academy of Sciences and Arts, Institute of the History and Philosophy of Science, Division of the History of Medicine, Zagreb.

Dugac studied the use of eye votives by examining votives in Croatian shrines, where the votives were given to the churches of a particular patron saint. The votives found dated from the seventeenth to the twentieth centuries. All of them showed healthy eyes without malformations. In contrast, some ancient Greek and Roman votives showed the presence of malformations and diseases. Most of the votives studied by Dugac showed a pair of eyes; some showed one eye. Some were made from silver and some from wax, reflecting the wealth of the user.

D.A.G.

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