

# HINDSIGHT

Newsletter of the  
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## OHS meeting at the meeting of the American Academy of Optometry:

The Optometric Historical Society will meet on Saturday, December 10, 2005, from 8:00 to 9:00 p.m. in Torrey 3 room at the Marriott Hotel and Marina. The speaker for the meeting is Dr. Robert Boynton. The topic of his presentation will be "Optometry, The Last 50 Years, A View from the Outside." Bob Boynton is Distinguished Professor Emeritus at University of California, San Diego, and authored an article in the last issue of *Hindsight*.

## Jay Enoch's Column:

### ***A Jewel in the Crown:* The Program in Optometry at the University of Rochester in New York; Part II. The Termination of the Program, 1936**

In my previous contribution to *Hindsight*, I spoke of the founding of the Program in (or School of ) Optometry at the University of Rochester in New York (first students admitted, 1926; formal initiation of the Institute of Optics and Program in Optometry, 1929; first graduating class, 1930; closure of the Program in/School of Optometry, 1936).

In modern parlance, we speak of schools and colleges of optometry. And the U. of Rochester four-year-program in optometry would have been termed a school. When it was first conceived, it was rather unique and had a number of distinguished faculty! In early records concerning the Institute of Optics, this educational unit was termed the "Institute of Applied Optics" (p. 8, *A Jewel in the Crown*). There is also a mention of a "School of Optics" – which referred to both design optics and optometry (e.g., p. 7). These two programs were interwoven vis-à-vis teaching and laboratory assignments of a number of the same faculty, but the two curricula were thought of as separate entities. It seems appropriate to refer here to a U. of Rochester "program" in, or division of optometry.

In this communication, I discuss the termination of this nascent, but most promising optometry program. Once again, the details are recorded in the book, "The

Jewel in the Crown”, which was written as part of the celebration of the 75<sup>th</sup> Anniversary of the Institute of Optics of the University of Rochester, Rochester, NY. The Editor is Prof. Carlos R. Stroud, Jr. And the book is published by the Meliora Press (U. of Rochester Press), Rochester, NY, 2004, ISBN 1-58046-162-X. He kindly granted the writer permission to reproduce pertinent material for this document. Note: figures, lists of faculty, and lists of student graduates associated with this discussion were presented with Part. 1. They appeared in Hindsight 36(3, July) pp. 36/20-28), 2005.

The optometry program was both a part of the early optics program on the “old campus” on Prince Street in downtown Rochester (Eastman Building), and, later, it was included in development of the relatively suburban “new campus”. For those who know Rochester, the new campus is located not far from the airport, pretty close to the Erie Canal, and to the University Medical Center. Ernest Petry’s office and classrooms were located on the top floor (4<sup>th</sup> floor), east end, and the glass workshop was placed at the west end of the same floor of the Bausch and Lomb Building (physics and optics). This building is located on the main campus quadrangle adjacent to Rush Rhees Library. The combined optics programs rather quickly crowded available space.

In 1933, important reports were written. One, presented to Dr. Rees by Wilbur B. Rayton of Bausch and Lomb (a key player in the formation of the Institute of Optics (pp.6-9, 19)), emphasized there was apparently only limited interest in geometric optics (design) in the nation, and he further emphasized the critical importance of this field both for the nation and the optics industry.

A second report (also referring to the Rayton report), by Charles E. Dalton, University Field Secretary, presented results of a survey relating to performance and manpower in the Institute of Optics program (p. 19). 10 of 19 students in the applied optics program were from outside of the city (Rochester). Dalton noted that students in the new optics programs were “markedly” superior to students (then) admitted to the general student population at U. of Rochester. Specifically referring to the optometry students, of the 31 students in the program, only 2 were from the City of Rochester, and 7 were from outside of New York State. Thus, “optometry was evidently a drawing power for students outside of “the City” for the University, and their level of achievement was “comparable to [that of] the Eastman School of Music” (p.20). This was high praise.

But! Here the writer quotes from a key paragraph taken from “A Jewel in the Crown” (p. 22, see also p. 24). “Following considerable discussion with the sponsoring companies, Columbia University, and with the (NY) State Department of Education in Albany, it was decided, judging by recent registrations at both Columbia and Rochester, one school of optometry in the State was apparently adequate to supply the need and this should be Columbia. The closing of the optometry division in The Institute of Optics received considerable attention in the press.” The program in applied optics was retained.

A third report was prepared by Prof. T. Russell Wilkins. It was contained in a document submitted to the President of the University dated 1932-1933, *and referred to changes proposed for Academic Year 1933-1934, in light of the recent decision by the Trustees of the U. of Rochester, i.e., the decision to discontinue the program in optometry.* [Wilkins had been appointed at U. of Rochester as Junior Professor of Physics in 1925-1926 (he had earned his Ph.D. in Physics as a student of R.A. Millikan at U. of Chicago). Along with Rayton, Wilkins had served as one of those planning the Institute of Optics, and he was named the first Acting Director of the Institute of Optics (pp. 6,9,20,21).] Thus, the program in optometry was terminated in 1936, although Mr. Wilder's (optical shop head) contract was maintained through to his retirement in 1938/9 (p. 35). The emphasis of the Institute of Optics would then be pure and applied optics, and lens design in all of its manifestations.

Always kind, Hilda Kingslake concludes her chapter which addresses the Program in Optometry in the book, "A Jewel in the Crown", with the statement, "Several of our optometry alumni [total 40 graduates, listed in the prior article] have a fine record of service and contribution to the University of Rochester." It is sad that so promising an optometric enterprise was not sustained in a satisfactory form. These changes were occurring in the years of the great depression. They also marked the prelude to the Second World War.

One gets the feeling there was more to be said. The closing of the optometry division or program was only briefly discussed. The writer senses the Rochester program was dominated by a group within optics who had as their primary interest optical design and realization of skills which had been present earlier in Europe, and which had been found to be deficient in the U.S.A. and U.K. Apparently, at the same time, Prof. J.P.C. Southall, in particular, was interested in the development of the optometry program at Columbia.

In the 1930s, one could detect impending war clouds gathering over Europe and in the Far East. But surely a rather modest-size quality school or program in optometry would not have interfered with efforts to build an optics program in support of the co-emerging optics industry. A not too narrowly drawn optometry program could have complimented the more classical optics program which developed at Rochester. In fact, at a later time, Prof. Robert Boynton, and his co-workers in the Center for Vision Science at Rochester, effectively provided such support. We should not forget that the long term Director of the Institute was Prof. Brian O'Brien who had been recruited originally to teach physiological optics. While teaching loads in the optometry program were large, and relief was needed, that should not have been an insurmountable problem. It is a curious history.

J.M.E.

## Reminiscences of Glenn Fry by Gerald Westheimer:

*Editor's Note: Robert Boynton's reminiscences in our last issue (Hindsight July 2005; 36:17-20) of beginning his graduate studies with Lorrin Riggs at Brown University brought back memories in Optometric Historical Society member Gerald Westheimer, Boynton's contemporary, of his own experiences as Glenn Fry's graduate student at Ohio State University School of Optometry. Westheimer is noted for his many significant contributions to vision science, evidence of which is that he received the Tillyer Medal from the Optical Society of America in 1978, the Proctor Medal from the Association for Research in Vision and Ophthalmology in 1979, and the Prentice Medal from the American Academy of Optometry in 1986.*

### **Graduate Studies with Glenn Fry at Ohio State**

Bob Boynton's account of how in 1948 he came to start his graduate studies in vision with Lorrin Riggs at Brown University made my mind go back to the same period and to what it was like to become Glenn Fry's graduate student. After finishing the optometry program at the Sydney Technical College in Australia in 1943 and entering private optometric practice in 1945, I continued part-time studies in mathematics, physics and physiology, seeking a better understanding of vision and the eye. But it soon became apparent that Sydney's resources in higher education in optometry and vision science were limited, and about 1949 I began to look abroad, specifically the United States. It had to be a bootstrap operation because no direct contacts with American optometry existed at the time. Letters to the optometry schools at Columbia and Berkeley brought back discouraging answers. But the reply from Dr. Fry, Director of the School of Optometry at Ohio State University, was more positive, saying in essence that it would be possible to be admitted to the graduate program if there were documentary evidence of my academic achievements and that a Teaching Assistantship, remunerated at \$1,200 per annum, would be available.

I was not an entirely unknown quantity, having just had a correspondence with OSU graduate student Mathew Alpern in which I had pointed out a possibly inadmissibly approximation in his paper on the ACA ratio with contact lenses, recently published in the *American Journal of Optometry*. This resulted in "Further Comment" by Alpern in the same journal (27:238-241, 1950) containing the sentence: "Professor Glenn A. Fry and, independently, Mr. Gerald Westheimer, have raised the question ....."

Nor, of course, was Fry, the scientist, an unknown quantity to me. I had read some of the papers he had published and was impressed with the range of his researches and scientific aims, though frankly I did not fully understand many of his arguments and the origin and scope of the equations. Hence I accepted Fry's offer and asked him, in turn, to send me the needed documentation to obtain a student visa from the American Consulate in Sydney. The plan was to leave Sydney by boat in July 1951

to enter in the Fall. In spite of reminder letter after reminder letter, there was complete silence from Columbus. Only later did I find out that Fry rarely read his mail. Finally he responded to a reply-paid telegram and the paperwork arrived at the last minute to obtain the visa and fly across the Pacific in September 1951.

Thus I arrived in Columbus without the benefit of having previously met Fry or of knowing what graduate studies with him would entail. When I reached Columbus at 10 pm and, as he had instructed me by letter, phoned his home apologizing for the late hour, Mrs. Fry answered and in, what I later recognized to be a resigned tone, told me that Dr. Fry had gone back to the lab for the evening and I should phone him there. I did and he had me picked up by a fellow graduate student and driven to the school where I finally met the mentor to whom I had traveled half-way round the world. Glenn was then 43, tall, balding, and always unfailingly courteous. First thing, I was shown around the building and made to admire the workshop and complicated mechanical devices that were being built there. Returning to Fry, who was sitting on a high stool at a big drawing board, I was asked by him what I thought of the place. I had no idea of what vision research facilities might look like, so I mumbled something about a surprising emphasis on experimental apparatus – after all I knew Fry only from theoretical papers -- to which I received the firm reply “Here we believe in rolling up our sleeves and building things!”

While this was certainly true, Fry actually had an exceedingly wide-ranging interest in the whole subject of the eye and vision. The most important contact with him during the first year of graduate study was the advanced course in Physiological Optics course he taught for the whole year, covering the gamut from optics to color vision, perception and eye movements.

The emphasis in the graduate program was indeed on construction of research apparatus, almost entirely in the form of metal devices fabricated in the department's shop, which featured a large collection of drill-presses, band-saws, lathes, milling machines and wood-working tools. Fry had cabinets full of lenses and prisms, the keys to which he kept locked in his desk drawer. His was an extraordinary ability to visualize geometrical relationships in three dimensions and he enjoyed nothing more than latching onto some aspect of a student's research project and, in the spur of the moment, invent an elaborate solution involving highly complicated devices that would take years to complete. This should be contrasted with the style of Fry's scientific publications. In almost all of his papers, the basis is a theoretical argument, usually presented in terms of formulas for which readers are inadequately prepared. Mathematically, Fry was an autodidact, not accustomed to the professional manner of presenting steps in sequence when proving a proposition. In spite of the “hands-on” attitude he fostered in his laboratory, his contributions feature theoretical considerations much more than new experimental findings.

It was customary for Fry to micromanage his graduate student's project, spending innumerable hours planning instrumentation and going over draft after draft of

dissertations, usually well into the night. It was simpler to get hold of him evenings, because during the day he carried a heavy teaching and administrative load. However, he and I developed a different relationship. When it had been established that my thesis research would be on eye movements, he allowed me to graft the project on the instrumentation used in his Ph.D. by Charles Stewart, who had just left to become Dean of the College of Optometry at the University of Houston. Knowing that Fry would use any technical problem as incentive to design and have me construct gadgetry, I gave him a wide berth and took mechanical and electrical queries to Merrill Allen, then an Associate Professor, who with a few strokes and simple tweaking would solve any technical problems in a quick and elegant manner.

After the data and analysis part of the thesis work was finished to my satisfaction, I went to Fry with them one evening, aware of the painful experience of other graduate students in his demands for unending re-writing.

The first thing that came up for criticism was the title. I had the "Oculomotor Responses to Visual Stimuli" in a tribute to my favorite book at the time, Trimmer's "Response of Physical Systems." After considerable discussion we agreed on a change to "The Response of the Oculomotor System to Visual Stimuli in the Horizontal Plane." To give the thesis a little extra literary touch, I had prefaced each chapter with what I thought was a cute quotation. For some reason that bothered Glenn, and he and I argued extensively about the appropriateness of having mottos in general, and, in particular, about the propriety of the one from scriptures for pursuit eye movement "Seek and ye shall find." (The Frys regularly attended the Indianola Presbyterian Church in Columbus.) The argument went on till about midnight and then suddenly Fry announced that he was tired and going home. This from someone who usually stayed on till 4 am.

In the end I thought it better to remove the quotations, but because Fry had terminated the discussion without rescheduling a follow-up, regarded this as an affirmation that he had accepted the thesis. When it was finally prepared in the proper form, I took it to him for signature – not without some concern that he might revert to form and demand re-writes. But Glenn leafed through it, commented that he hadn't really read all of it, and signed it.

Though Glenn's scientific training, attitude and style were different from mine, his full-time, life-long dedication to vision research remains an inspiration. He gave me a start, and throughout my days as his graduate student invariably acted in a gentlemanly manner and with personal kindness.

Gerald Westheimer  
Division of Neurobiology  
University of California  
Berkeley, CA 94720-3200

More on Fry and Westheimer:

## LIBRARY

Glenn Fry had many students who would become well known in optometry and vision science. A list of his Ph.D. students obtained from J.P. Schoessler of The Ohio State University in 1999 is as follows: Henry Hofstetter (1942), Vincent Ellerbrock (1947), Merrill Allen (1949), Mathew Alpern (1950), Henry Knoll (1950), Charles R. Stewart (1951), Gerald Westheimer (1953), Neal J. Bailey (1954), Jay Enoch (1956), Theodore Grosvenor (1956), Bradford Wild (1959), Earl F. Miller (1961), Jess Boyd Eskridge (1964), Vincent King (1971), John P. Schoessler (1971), Ronald Jones (1972), William Brown (1977), David Loshin (1977), James E. Sheedy (1977), William W. Somers (1977), and Kent M. Daum (1979). Those wishing to read more about Dr. Fry can consult:

MacNeille SM. Glenn A. Fry: Edgar D. Tillyer Medalist for 1961. J Opt Soc Am 1961; 51:1045.

Enoch JM. Glenn Ansel Fry: An 80<sup>th</sup> birthday celebration: Introduction. Optom Vis Sci 1990;67:577.

Anonymous. Dr. Fry's art, science transformed optometry. Am Optom Assoc News Jan 22, 1996;5-6.

Augsburger A. A celebration of the life of Glenn Ansel Fry, September 10, 1908-January 5, 1996. Optom Vis Sci 1996;73:223-224.

After Gerald Westheimer completed his Ph.D., he served on the optometry faculty at the University of Houston in 1953-54 and then at The Ohio State University for six years. In 1960, he moved to the University of California at Berkeley where he is Professor of the Graduate School and Division of Neurobiology and Clinical Professor in the School of Optometry. Details of his life and career can be found in:

Wright CW. History of Australian Optometry. Carlton, Victoria: Australian Optometrical Association, 1988:206-208.

Alpern M. On presentation of the Proctor Medal of the Association for Research in Vision and Ophthalmology to Gerald Westheimer. Invest Ophthalmol Vis Sci 1979;18:883-892.

McKee SP. Optics, physiology and vision: Introduction. Vision Res 1990;30:1529-1530.

Mitchell DE. Professor Gerald Westheimer FRS, Australian optometry's pre-eminent vision scientist. Clin Exp Optom 2001;84:296-300.

D.A.G.

## Article on Dartmouth Eye Institute:

An article entitled “Adelbert Ames and the Dartmouth Eye institute” appeared in the *Journal of Neuro-Ophthalmology* in 2003 (volume 23, number 4, pages 290-297). Adelbert Ames attended undergraduate school and law school at Harvard. Soon becoming disillusioned with law practice, he became an artist, which in turn interested him in visual perception. In 1914, Ames began formal study of visual perception at Clark University. After a period of time in the United States Army, Ames in 1919 started work with physics professor Charles Proctor at Dartmouth. In 1921, Ames and Proctor published a paper entitled “Dioptrics of the Eye” in the *Journal of the Optical Society of America*. The notoriety of that paper led to the formation of the Department of Physiological Optics at Dartmouth, which drew students such as Gordon Gliddon and Kenneth Ogle. As a result of the work pursued by these and other investigators, the Dartmouth Eye Institute (DEI) was established.

Noted optometrists such as Robert Bannon and well known ophthalmologists such as Alfred Bielschowsky, Hermann Burian, and Walter Lancaster were at the DEI for various periods of time. As a note related to Jay Enoch’s two-part discussion of optometric education in Rochester in this and the previous issue of *Hindsight*, the article mentioned that DEI optometrist Leo Madigan had been a student of Gordon Gliddon at the Rochester School of Optometry. Collaborations of ophthalmologists, optometrists, and basic scientists resulted in a clinic which treated difficult patients and in numerous scientific papers, largely in the areas of binocular vision and aniseikonia. The DEI closed in 1947. The 15 photographs accompanying the paper include pictures of Ames, Madigan (behind an early version of an eikonometer), Bielschowsky, Burian, and Lancaster, as well as a group picture of DEI members in 1941. Other photographs include pictures of the DEI eye clinic, a pair of spectacles with iseikonic lenses, and the DEI leaf room. This article is recommended to persons wanting to read more about the Dartmouth Eye Institute. Also recommended is the much more detailed book *Eyes in the Storm, President Hopkins Dilemma: The Dartmouth Eye Institute*, by David Bisno, published by Norwich Press in 1994.

D.A.G.

**Managing Editor and Contributing Editor: David A. Goss (School of Optometry, Indiana University, Bloomington, IN 47405, U.S.A.; email: dgoss@indiana.edu)**

**Contributing Editors: Douglas K. Penisten (College of Optometry, Northeastern State University, Tahlequah, OK 74464, U.S.A.); Jay M. Enoch (School of Optometry, Mail code 2020, University of California at Berkeley, Berkeley, CA 94720-2020 U.S.A.; email: jmenoch@socrates.berkeley.edu)**

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