HINDSIGHT

Newsletter of the
Optometric Historical Society
243 North Lindbergh Boulevard, St. Louis, Missouri 63141, USA

Volume 35 **October 2004** **Number 4**

OHS meeting at the American Academy of Optometry meetings:

The Optometric Historical Society will meet from 8:00 to 9:00 pm on Saturday, December 11, 2004, in Meeting Room 2 at the Tampa Marriott Waterside in conjunction with the American Academy of Optometry meetings. Jay M. Enoch will speak on "The World's Oldest Mirrors and Why They are Important to Us." The presentation will identify and detail very early mirrors (from 6000 B.C.) and their uses. The archeological and literature evidence which demonstrates that mirrors were used for not only reflection, but also refractive applications, will be discussed.

Jay Enoch's column:

Announcement of the 4th Edition of the HRR Pseudoisochromatic Plates And an Interesting Observation

A few months ago I received an advertisement from Richmond Products, Inc., Boca Raton, FL 33487, declaring their issuance of the 4th Edition of the HRR Pseudoisochromatic plates. This took me back to 1948-1949, at which time I served as a subject for the 1st Edition of these color vision test plates at Columbia University. HRR stands for Le Grand Hardy, M.D., Gertrude Rand, Ph.D., and Catherine Rittler, B.A. Hardy had died by the time of my involvement, but the team of Rand and Rittler, both fine ladies, soldiered on with their research in the basement of the Eye Institute at The College of Physicians and Surgeons on the 168th St. Campus of Columbia University.

My primary activity at the Medical Campus was to participate in research of Professors George Smelser and Isodore Finkelstein which was conducted in the Department of Ophthalmology Research (different building). However, at this Medical Center, subjects and assistants were commonly shared by investigators. As an added example, I was also asked to work with Dr. Karl W. Ascher, known for his work on aqueous veins (e.g., Am. J. Ophthalmol. 25: 31, 1942). I apparently had readily visible aqueous veins, and Ascher examined the effects of scleral fluid contact lens wear on aqueous fluid and blood flow in my eyes.

The studies conducted by Rand and Rittler were very carefully performed - but there was a lighter side as well. One day, as I was being tested on their anomaloscope, I noticed a prism sitting just adjacent to the instrument on the table. I asked Rittler for what purpose they used this prism? Apparently, she thought I had removed it from their calibrated instrument! At any rate, she became quite excited/agitated, chased me down the corridor with a hammer swinging wildly in her hand. (Fortunately, I could outrun her [I was young then], she calmed down, and then discovered the prism was a spare part.)

Quoting the Richmond announcement, "the HRR plates served a threefold purpose: (1) as a screening test to separate those with defective color vision from those with normal color vision, (2) as a quantitative diagnostic test to classify the type of the color defect (whether protan, deutan, tritan, or tetartan), and (3) as a quantitative test to indicate the extent [(author) really *degree*] of the color defect (mild, medium, or strong)." The first goal was readily achieved, but there were problems with the second and third goals of this activity at least in the earlier iterations. However, HRR did make an honest effort to achieve these goals. Dean Judd, Dean Farnsworth and Dorothy Nickerson all consulted on the project. Anomaloscopes of differing designs and the Farnsworth 100 hue test proved superior for the latter functions. The Richmond folks state that in the new 4th Edition of HRR plates they have made major improvements over the past in the definition of the color confusion lines (a defining principle of the test), lighting control, inks, and paper.

The HRR plates were also meant to take the analysis of color defects forward from earlier plates designed by Shinobu Ishihara in Japan. But like in many clinical tests, lack of a widely distributed controlled illuminant and defined level of illumination outside of the laboratory limited measurement reliability and exchange with other practitioners. Control problems with printing inks, aging of test booklet paper, fading of inks, and physical handling of the test books served to limit use of such tests to a largely screening function. Few practitioners used the proper illuminant or lighting levels for these tests. It makes quite a difference if one uses the source defined for the test versus a yellowish tungsten bulb in the office.

The Richmond people write quite well, and they describe their product and the underlying scientific basis of this technology and comparison items in some detail. I will not repeat their documentation here.

I want to call attention to a personal experience in assessment of visual functions (including color vision) encountered during research on a blue cone monochromat some years ago. This young man was studied extensively at Washington University in St. Louis in cooperation with Prof. Nigel Daw (who is now at Yale University).

Daw N, Enoch JM. Contrast sensitivity, Westheimer function and Stiles-Crawford effect in the blue cone monochromat. Vision Res 1973; 13:1669-1681.

Nigel and I had tested a number of different aspects of this subject's *central* visual functions. There had been more than one visit to Saint Louis from the subject's home in Western Kentucky. There was no question that he was a blue cone monochromat. We had just finished our tests, when, while I was preparing to present a lecture on color vision, this young chap wandered back into my office. I was projecting a large diffraction spectrum on a screen as part of a class demonstration of subtractive color mixture effects using standard food color dyes (Bausch and Lomb sold a teaching kit for instructors for this purpose). The spectrum projected was perhaps 4 feet wide, and it subtended about 20-30 degrees at his eyes. He blurted right out something like the following, "That looks pretty good with the yellow band at one end and the blue band at the other end!" A blue-cone monochromat? So I sent him outside and put a Dove prism in the projector beam path reversing the spectrum. Then I called him back into the room and politely asked him to comment on what he observed? He replied, "Why you reversed it, now the yellow and blue are on different sides."

An important clinical and physiological lesson resides here. Most all of our color vision testing is foveal or near foveal. But, the quality or nature of color vision perception is not uniform across the retina!

This fact is known to those engaged in professional color matching (e.g., the 2° and 10° CIE V_{λ} functions). And it is familiar to those performing color perimetric tests.

The same sort of phenomenon can be appreciated in a now aging U.S. Navy training film addressing the nature of color vision anomalies, the testing of color vision, and why this is important. It was prepared in New London, CT, on 16 mm film. There is a section in this film depicting use of the Farnsworth Lantern Test showing the port and starboard running lights on the different sides of a ship. The image is slowly reduced in size as the silhouette of the ship and its red and green running lights recede into the distance. The now considerably smaller running lights *both look green* at this apparent distance.

J.M.E.

<u>Two more important 20th century optometry books</u>:

In July, 2004, issue of Hindsight, we had a feature on the most important 20th century optometry books, based on surveys sent to members of the Optometric Historical Society, the Association of Visual Science Librarians, and the Binocular Vision and Perception Educators Special Interest Group. We requested comments on whether there were any books that had been overlooked. Since then we received nominations for inclusion of two more books:

Rosenbloom AA, Morgan MW, eds. Principles and Practice of Pediatric Optometry
Rosenbloom AA, Morgan MW, eds. Vision and Aging

D.A.G.

Books on the History of Optometry:

Listed below are books related to the history of optometry. I have attempted to include all books on the history of the practice of optometry and its development as a profession in this bibliography. The goal was also to include all books on the history of optometric education and the history of national professional optometric organizations in the United States, with representative works on these topics in other countries. The list also contains representative books on the history of spectacles and on the history of the background vision sciences supporting the art and science of optometry. There are also representative books on the history of various aspects of the ophthalmic optical industry. In addition, the bibliography includes some autobiographies of notable optometrists.

This bibliography has been compiled primarily using personal books and files; searching the online public access catalogs of libraries at Indiana University, The Ohio State University, University of California Berkeley, University of Houston, and Pacific University; and searching the WorldCat online catalog. I have also perused various serials such as Hindsight, Isis, Journal of the History of Medicine, and the Bulletin of the History of Medicine; websites such as www.antiquespectacles.com and www.oaicclub.org; and online booksellers, such as amazon.com.

If there are any books that I have overlooked, please write David Goss, School of Optometry, Indiana University, Bloomington, IN 47405 or dgoss@indiana.edu. I will report in a future newsletter any such additions to this bibliography.

Arrington EE. History of Optometry. Chicago: White Printing House, 1929.

Baldwin WR. Pleoptics: Historical Developments and Review of the Literature. Minneapolis: American Academy of Optometry, 1962.

Bisno DC. Eyes in the Storm, President Hopkins's Dilemma: The Dartmouth Eye Institute. Norwich, VT: Norwich Press, 1994.

Bronson LD. Early American Specs. Glendale, CA: Occidental Publishing, 1974.

Bourcier C. History of Optometry. Montréal: Université de Montréal École d'optométrie, 1934.

Brachner A. Hundert Jahre Kontaklinse: vom Lesestein zur Kontaklinse. München: Vereinigung Deutscher Contactlinsenspezialisten, 1988.

Bruneni JL. Looking Back: An Illustrated History of the Ophthalmic Industry. Torrance, CA: Optical Laboratories Association, 1994.

Bull GJ. Lunettes et pince-nez; études médicale et pratique. Paris: Masson, 1889.

Cahan D, ed. Hermann von Helmholtz and the Foundations of Nineteenth-Century Science. Berkeley: University of California Press, 1994.

Cox ME. Optometry, the Profession: Its Antecedents, Birth, and Development. Philadelphia: Chilton, 1957.

Crombie AC. Robert Grosseteste and the Origins of Experimental Science, 1100-1700. Oxford: Oxford University Press, 1953.

Crone RA. A History of Color: The Evolution of theories of Lights and Color. Dordrecht: Kluwer, 1999.

Davidson DC, MacGregor RJS. Spectacles, Lorgnettes and Monocles. Buckinghamshire, UK: Shire Publications, 2002.

Dawson WW, Enoch JM, eds. Foundations of Sensory Science. Berlin: Springer-Verlag, 1984.

Dvorine I. Israel: A Foreign-Born Optometrist Looks Back on his American Dream. Baltimore: Scientific Publishing, 1986.

Faulk O. A Man of Vision: The Life and Career of O.W. Coburn. Oklahoma City: Western Heritage Books, 1980.

Fisher EJ. Twenty-five years: School of Optometry, University of Waterloo, 1967-1992. Waterloo, Ontario: University of Waterloo School of Optometry, 1992.

Fitch A. My Fifty Years in Optometry (2 volumes). Philadelphia: Pennsylvania State College f Optometry, 1955-59.

Geyer HU. Ein leben für die Optometrie: Peter Abel und seine Zeit: mehr al seine Biografie. Fellbach: Geyer, 1988.

Goerler RE, Fry GA, Hebbard FW. The Ohio State University and its College of Optometry: Photographic History. Columbus, OH: Ohio State University College of Optometry, 1993.

Gregg JR. The Story of Optometry. New York: Ronald Press, 1965.

Gregg JR. American Optometric Association: A History. St. Louis: American Optometric Association, 1972.

Gregg JR. Origin and Development of the Southern California College of Optometry. Fullerton, CA: Southern California College of Optometry, 1984.

Gregg JR. History of the American Academy of Optometry, 1922-1986. Washington, DC: American Academy of Optometry, 1987.

Gregg JR. The Life and Times of James R. Gregg. Self published, 1997.

Hardy WE. Random Reflections on Ophthalmo-optical History, Techniques, Philosophy, Literature and Personalities. London: Hatton Press, 1934.

Hirsch MJ, Wick RE. The Optometric Profession. Philadelphia: Chilton, 1968.

Hofstetter HW. Optometry: Professional, Economic, and Legal Aspects. St. Louis: C.V. Mosby, 1948.

Jackson MW. Spectrum of Belief: Joseph von Fraunhofer and the Craft of Precision Optics. Cambridge, MA: MIT Press, 2000.

Kallman H. Cal Optometry: The First 75 Years. Berkeley, CA: University of California, Berkeley, 1998.

Koetting RA. History of the Contact Lens. Irvine, CA: Allergan, 1978.

Koetting RA. The American Optometric Association's First Century. St. Louis: American Optometric Association, 1997.

Kozol F. The History and Development of Ophthalmic Materials. Boston: Massachusetts College of Optometry, 1976.

Lederer J, Knights S, Bowman LJ. Optometry in the University of New South Wales, 1951-1981. Kensington, NSW: University Interviews Project, University of New South Wales Archives, 1987.

Levene JR. Clinical Refraction and Visual Science. Boston: Butterworths, 1977.

Lindbergh DC, ed. and trans. John Pecham and the Science of Optics. Madison: University of Wisconsin Press, 1970.

Lindbergh DC. Theories of Vision from Al-Kindi to Kepler. Chicago: University of Chicago Press, 1976.

Lindbergh DC. Studies in the History of Medieval Optics. London: Variorum Reprints, 1983.

Luckiesh M. Seeing and Human Welfare. Baltimore: Williams & Wilkins, 1934.

Lynch M, Cole P. The College of Optometrists: A History, 1980-1998. London: College of Optometrists, 1999.

McCaughey RA. Stand, Columbia: A History of Columbia University in the City of New York, 1754-2004. New York: Columbia University Press, 2003.

Miller AR. Optometry in America: A History of the Illinois College of Optometry, 1872-1997. Chicago: Illinois College of Optometry, 1996.

Mitchell M. History of the British Optical Association, 1895-1978: With Additional Material Covering the Founding of the British College of Ophthalmic Opticians (Optometrists) and the Liquidation of the B.O.A. London: The British Optical Association and the British Optical Association Foundation, 1982.

Moline SW. Century of Vision: New England College of Optometry: An Anecdotal History of the First Hundred Years. Boston: New England College of Optometry, 1994.

Mullen CF. The Road to Excellence: A Continued History of the Illinois College of Optometry, 1997-2000. Chicago: Illinois College of Optometry, 2001.

Muth EP. Vision Aids in History: A Documentation. Milford, CT: E.P. Muth, 1995.

Obrig TE. Modern Ophthalmic Lenses and Optical Glass. Philadelphia: Chilton, 1944.

Park D. The Fire Within the Eye: A Historical Essay on the Nature and Meaning of Light. Princeton, NJ: Princeton University Press, 1997.

Peters HB. School of Optometry, University of Alabama at Birmingham: 25th Anniversary Photographic History, 1969-1994. Birmingham, AL: University of Alabama School of Optometry, 1994.

Pollack P. Opportunities in Optometry and Optics. New York: Vocational Guidance Manuals, 1955.

Prentice CF. The Memoirs of Charles F. Prentice. Seattle, WA: Casperin Fletcher, 1926.

Prentice CF. Legalized Optometry. Seattle, WA: Casperin Fletcher, 1926.

Ronchi V. The Nature of Light: An Historical Survey. Barocas V, trans. London: Heinemann, 1970.

Rosenthal JW. A History of the Ocular Heritage Society of the United States. New Orleans: J. William Rosenthal, 1995.

Rosenthal JW. Spectacles and Other Vision Aids; A History and Guide to Collecting. San Francisco: Norman, 1996.

Rueda Sánchez, AM. Historia de la optometria en Espana. Madrid: Universidad Complutense de Madrid, Facultad de Farmacia, 1995.

Schiffer N. Eyeglass Retrospective: Where Fashion Meets Science. Atglen, PA: Schiffer Publishing, 2000.

Smith PA. A History of the AOP: The First Fifty Years. London: Association of Optometrists, 1996.

Stanton JR. The Ophthalmic Optical Profession. London: Keith Vaughn, 1963.

Stewart CR. The Founding Years: University of Houston College of Optometry 1952-1961. Georgetown, TX: Armadillo Publishing, 2003.

Thomson HA, Hirsch MJ. Dr. Thomson's 1895 Correspondence Course in Optics. Chicago: Professional Press, 1975.

Turnbull DK. Optometry in Perspective. Durban: University of Durban-Westville, 1983.

Wade NJ. A Natural History of Vision. Cambridge, MA: MIT Press, 1998.

Wesley NK. Contacts – One Hundred Years Plus. New York: Vantage Press, 1988.

Wolff J. Optometry in the State of Washington, 1880-1966; A History. Bellingham, WA: Washington Optometric Association, 1967.

Wright C. History of Australian Optometry, 1922-1986. Carlton, Victoria: Australian Optometrical Association, 1988.

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 Berkley, Berkeley, CA 94720-2020 U.S.A.; email: jmenoch@socrates.berkeley.edu)

Optometric Historical Society website: http://www.opt.indiana.edu/ohs/optohiso.html