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Contact lens litigation history:

What may turn out to be the history of a brief lifetime of rigid gas permeable (RGP) contact lenses are an editorial and an article by Neal J. Bailey in the March 1988 issue of Contact Lens Spectrum, Vol. 3, No. 3, ppp. 8 and 24-27 respectively. The article is entitled "Judge Copple's Judgement" and subtitled "The Sola ruling and what it means to the contact lens industry."

In the editorial Dr. Bailey wonders if, as a result of a U.S. District Court decision, much of the innovative spirit in contact lens design will now be stifled, whether the RGP lenses can now compete economically with soft lenses, and how the completely independent silicone/acrylate RGP button can survive. Quoting directly from Judge William Copple's decision of November 2, 1987, Bailey traces the litigation from Dr. Norman Gaylord's original research for a rigid gas permeable lens in 1971 through a complex sequence of patent ownerships, company takeovers, allegations and denials of infringements, and even a filing for bankruptcy.

Artistic depiction of light:

Featured in the 1988 art calendar of the Munich, Germany, Rodenstock firm is a series of reproductions of oil paintings in which lighting in art form is strangely depicted. Seven of these are reproduced in the November 1987 issue of Deutsche Optiker Zeitung, Vol. 42, No. 11, pp. 60-61 in an article entitled "Ausdruckstarke Licht-Bilder aus Munchen." The pictures, selected from the gallery of the New Pinakothek in Munich, illustrate vividly the artists' effective rendition of festive candlelight, dramatic lighting effects, twilight impressions, outdoor and indoor lighting contrasts, high noon, and table and room localized lamplighting, all in oil color.

The unidentified author of the article emphasized the fact that lighting is an integral part of optics and that the artistic rendition of lighting effects had its advent in the 19th century in parallel with so many other rich optical developments of the era.

Re Will Rogers et al.:

Will Rogers (virtually unknown by his full name of William Penn Adair Rogers, 1879-1935) is the title of a 1973 book about his life and times by Richard M. Ketchum, a Senior Editor of American Heritage Publishing Co., Inc., the publishers.

In the book's many dozens of photographs of Will Rogers in action only a few show him wearing a pair of glasses, a pair of round-eye black-rim frames presumably with single vision lenses for near use only. These few include a snapshot of him sitting sideways in the front seat of his car with his feet out on the running board and his typewriter in his lap, several while reading a newspaper, and one in a bacon-frying kitchen scene from the movie "Too Busy to Work." Biographer Ketcham writes, page 304:

... in his early fifties, Will had begun to experience some difficulty in reading; the old "Injun eyes" weren't quite as good as they once were. One day in the Lambs' Club in New York an actor friend saw him holding the newspaper at arm's length, offered his glasses, and Will put them on and left the club with them in his pocket. He never bothered to have his eyes tested; Betty [Mrs. Rogers] simply had the friend's prescription duplicated and ordered them by the dozen, since Will was so hard on them. When reading, he wore them down on the end of his nose, but when he was talking to someone he would take them off and twirl them around in his hand or chew on the ear pieces until they were twisted and gnawed out of shape.

The contents of his pockets in his clothing at the time of his death, only three or four years later, included a pair of eyeglasses and a magnifying glass. It seems likely that they, and perhaps other duplicate pairs, are presently at his memorial in Claremore, Oklahoma, with the collection of his other memorabilia.

Prior to describing the tragic deaths of Will Rogers and the contemporarily famous Wiley Post (1899-1935) in an airplane crash on the north coast of Alaska Ketcham also mentions the circumstances of Post's familiar eye patch, as follows:

He worked^K as a roughneck in the oil fields, took a job with a flying circus as a parachute jumper, acquired some flight training, and was back working on an oil rig when an accident occurred that made it possible for him to purchase his first plane. An iron chip from a sledgehammer lodged in his left eye, which became infected and had to be removed, and Wiley was awarded \$1,700 in compensation, with which he immediately bought a damaged Canuck aircraft. Having exchanged an eye for wings, he had to prove he was capable of

flying, and for months he worked on training his vision, learning to calculate distances by guessing how far it was to a tree or building, then pacing it off to see how near right he was.

Author Ketcham's insight into the nature of vision is also made evident in his historical discussion of early motion pictures, which happened to precede Will Rogers' early career. He informs the reader, page 156, that,

...the notion of making pictures move on a screen date back to the 1850's and earlier, when a shutter was added to the venerable magic lantern to make a series of drawings look like a figure in motion. The principle - then and now - of creating an illusion of motion was based on a phenomenon known as "the persistence of vision" by which the optic nerve "remembers" a still image for a fraction of a second. Various experimenters - among them the American Eadweard Muybridge, who had something he called a Zoopraxiscope to display animals in motion in the 1880's - had produced workable motion picture projectors.

He adds that Muybridge exhibited these moving pictures in the Zoopraxographical Hall at the 1893 Chicago World's Fair, which young Will may have seen.

History of refraction:

"350 Jahre Brechungsgesetz" (350th anniversary of the law of refraction) is the title of an interesting article by Jurgen Lowitzki and Michael Schwalm of Aalen, West Germany, in the December 20, 1987 issue of the Deutsche Optiker Zeitung, Vol. 42, No. 12, pp. 14-16 and 18-21. Though the law was originally expressed in a manuscript by Snell (1580-1626) in 1621 as the constant ratio of the cosecants of the angles of incidence and refraction for a given pair of media, it was not until 1637 that Descartes (1596-1650) published the law independently as the ratio of the sines.

The empirical phenomenon of refraction itself had long been recognized and described in antiquity by the Egyptians, Babylonians, and the Greeks. Commenting on the analyses by Pythagoras (ca 580-500 B.C.) and Euclid (fl. ca. 350 B.C.) as purely descriptive and theoretical, the authors credit Hero of Alexandria (fl. ca. 100 A.D.) with the first geometric expression of the equality of the angles of incidence and refraction but without any attempt to quantify the refractive angle. About a hundred years later Claudius Ptolemaeus did some experimental work with mirrors and with the image of a submerged coin in a fishbowl. From the latter experiments he derived a table of refractive angles in water ranging from 0° to 50° for incidence angles from 0° to 80° . He also first noted the angle of total reflection.

The subsequent contributions of the Arabian Alhazen (ca. 965-1039), the Polish Witelo (ca. 1230-1275), and the German Kepler (1571-1630) were rather minimal in terms of refraction though each was the optical authority of his era. Each one tried unsuccessfully to formulate a mathematical expression for the Ptolemy data.

Following the Descartes publication of the law of refraction, now called Snell's law, Fermat (1601-1665) formulated his "least time" rule, and from this derived the theorem that the ratio of the sines, the index of refraction, was in fact the ratio of speeds of light in the two media. For the first time, the fact that light traveled at a speed other than infinite was taken seriously. It also provided a basis for the spectral dispersion theory of Newton (1642-1727).

The authors cite eleven references for their review, the most extensive of which is Lohne, "Zur Geschichte des Brechungsgestezes" in Sudhoffs Archiv fur Geschichte der Medizin und der Naturwissenschaften 47, pp 152-172, 1963.

Spectacle selling and sin:

In several instances the often uninterpretable Dutch painter Hieronymus Bosch (1450-1516) included spectacles on subjects with apparent symbolic intent. One interpreter, D. Bax, wrote a book entitled "Hieronymus Bosch, his picture-writing deciphered" with translation by M.A. Bax-Botha, published by A.A. Bulkema, Rotterdam, The Netherlands, 1979.

Referring to a monk in the painting of "Fish-ship and duck-ship, bird and boat" in the chapter on "Temptation of St. Anthony", author Bax writes, p. 93: "He has spectacles on his nose. Has he bought himself eye-glasses; i.e. has he been deceived or misled, namely by the Evil One? To sell someone spectacles meant, already in the beginning of the 16th century: to deceive, mislead someone, to gull some-one, or to misrepresent something to him". In support of this potential interpretation Bax cites examples from the Woordenboek der Nederlandsche Taal, 1882.

On page 398 Bax comments further on Bosch's symbolic use of spectacles by reference to a thesis by J.F.A. Beins at the University of Groningen and published in Amsterdam in 1948, as follows: "That Bosch's bespectacled devils have anything to do with misbirths in which the eyes are of abnormal size, Beins himself does not seem to believe. Bosch's painting of spectacles is entirely realistic and they are perhaps meant to signify that sinful man, satirized in the devils, has been misled by the Evil One."

Both paragraphs suggest that, at least in Bosch's Netherlands

and in Bosch's era, there was a prevailing notion that anyone who bought a pair of spectacles had been duped or hoodwinked. This is a fascinating suspicion well worth investigation.

Spectacles in early paintings:

The history column of the January-February 1988 issue of the East German Augenoptik, Vol. 105, No. 1, pp. 24-27, features an article on early spectacle representations by the late Wolfgang Munchow (1923-1986). Preceding the article is brief obituary of Munchow by U. Maxam. Dr. Munchow was the medical chief of an eye clinic in Zwickau, DDR, and famous for his historical collection of spectacles representations in the painting art. His collections are now in the German Museum of Hygiene in Dresden.

The brief article, a commentary in the representations in art work, is accompanied by 14 illustrations of pictures and ophthalmic apparatus exhibited at the museum and photographed by Maxam.

Another Memorial:

O.H.S. member Gregory L. Stephens informs us that The Ohio State University College of Optometry recently began awarding a Glenn A. Fry Medal in Physiological Optics and that the award is at present being funded by Optometric Educators, Inc., an organization of College of Optometry faculty members. The first award was made to Dr. Fry and a more recent one to Dr. Elwin Marg of the University of California at Berkeley where he gave the first Glenn A. Fry Award Lecture on September 12, 1987.

More on Brewster:

The front cover illustration of a view through a kaleidoscope and an article by E. Scott Barr on pages 8-12 of the April 1988 issue of Optics News, Vol. 14, No. 4, are featured in a biographical sketch of Sir David Brewster (1781-1868). At age 12 Brewster was sent by his father to be a student at the University of Edinburgh, 45 miles away, from where he walked home on foot during holidays. Though he completed the course prescribed for a bachelor's degree, he did not take that degree, preferring to continue as a divinity student.

He received an honorary M.A. in 1800 and in 1804 was licensed to preach in the Church of Scotland. He gave a very few sermons with great difficulty. Because he could not memorize his sermons, he found that his fear of public failure and disgrace was a greater strain than he could bear, so was never ordained.

These and numerous other anecdotal accounts of his life,

personality, and optical contributions are interestingly covered.

Astigmatism and cylindrical glasses:

A couple of years ago the then Librarian of the Optometry Branch of the Indiana University Library, Roger Beckman, called my attention to an interesting entry in the Annual Report of the Lilly Library of Rare Books, another branch, and one financially well endowed by the late Eli Lilly of pharmaceutical industrial fame. The entry was a listing of newly acquired works in the history of science. It included the original Dutch edition of F.C. Donders's Astigmatisme en Cilindrische Glazen (Utrecht, 1862), thus supplementing the copy of the German translation previously owned by Mr. Lilly himself and entitled Astigmatismus und Cylindrische Glaeser (Berlin, 1862). I finally found an afternoon free to examine them and to exercise my passable German-reading skill and perhaps even to detect the sense of some of the Dutch text.

Entry to the Lilly Library is a public privilege, but an impressively formal one. First one asks the receptionist for the privilege and is given a pass card on which one enters his or her name, address, and patron category as faculty, staff, student, out-of-towner, public, etc. The receptionist then releases the locked reading room door by pressing a button at her desk. Upon entering, one gives the pass card to the librarian in charge who offers any help desired.

I of course then went right to the bank of catalogued cards and quickly found the call numbers for the two aforementioned Donders books, entered these numbers and my name on two separate book request cards and handed them to the attending librarian. He promptly disappeared into the stacks in another room and in a very few minutes returned with the two books, the more fragile one in a specially constructed box to protect it. I was asked which one I wanted first. A bit surprised by this, and not knowing which one I wanted first, I pointed to the boxed one, which turned out to be the Dutch edition. He then directed me to a table, placed a couple of "bean-bag" type cloth containers of pebbles on the table so that the book could lie partly open but not so flat as to strain its spine. He then handed me a foot-long but narrow cloth container of pebbles to lay gently on the open pages while reading then to minimize holding the pages with normally moist finger. He asked me to use lead pencil rather than an ink pen to take notes, offering me a pencil if I did not have one.

In the quiet of the reading room, surrounded by shelves of various language dictionaries, encyclopedias, directories, atlases, and other modern references above which were hung numerous handsomely framed portraits of famous authors of your ~~sex~~ (all males, I believe!), I leafed gently through the brittle pages of the Dutch edition, one by one.

The first four pages are Donders's personal dedication of the book to Albrecht von Graefe (1828-1870) dated 8 April 1862. Next is the author's foreword of two pages which includes reference to Airy's astigmatic observations in 1827 and to comments by Knapp while in Heidelberg in September 1861. Donders also included his estimate that at least 2% of his ophthalmological patients had magnitudes of astigmatism that significantly affected their visual acuity.

The next 134 pages are in nine chapters beginning with a brief description of refractive anomalies and a final chapter of eight pages on the history of our knowledge of astigmatism. A number of simple illustrations show lens cross-sections, optical diagrams, and test patterns.

These are followed by an appendix of two pages commenting on the availability of cylindrical lenses. Optician Loeb in Amsterdam and optician Steinheil in Munich are mentioned as good sources.

Exchanging the Dutch edition for the slightly less fragile German edition I similarly leafed through it, finding it essentially identical in content but with a few very minor variations, indicating that the translator, a Dr. Schweiger, was being monitored by Donders. In the foreword, for example, the Airy date was changed to 1836. Also, a footnote to the translated foreword was added at Donders's request to acknowledge the fine work of "Herren Optiker Paetz & Flohr (Berlin, U.d. Linden 13)" who provided various astigmatic lenses for Donders's use. The German book did not include the appendix on the availability of cylindrical lenses. In the dedication of the book to von Graefe Donders really waxed a bit sentimental, obviously not only out of admiration but also because of von Graefe's hospitality during the time that Donders had spent in Berlin.

Though I did not peruse the book thoroughly, I read enough to be impressed by its technological excellence. However, I did pick up the interesting and questionable Donders opinion that astigmatism was largely inherited. He cited examples of clinical similarities in parents and their children. My special interest in his opinion was spurred by my own published data in 1953 (with Rife) showing no correlation of astigmatism in a statistical sample of identical twins. Donders's view, incidentally, was in accord with the general impression of many optometrists and ophthalmologists in subsequent years anecdotally reported or based on isolated genealogies. Not until 1965 was this easily gained and long prevailing impression challenged in the Ph.D. research of William Lyle on a very large genealogical sample in which he found the hereditary evidence in corneal astigmatism almost negligible.

Donders's book on astigmatism was also published in French translation as a separate volume. The English translation however,

appeared essentially as chapter VIII of the 1864 Donders classic "On the Anomalies of Accommodation and Refraction of the Eye" which was translated by W.D. Moore from Donder's original Dutch manuscript.

The historical significance of all of this is in the fact that the thorough clinical evaluation of astigmatism and cylindrical lenses appeared only after more than a half millennium of spectacle-wearing!

Inasmuch as Donders mentioned optical suppliers of cylindrical lenses in three different major cities, and of course Airy had his made by an optician in another, one can wonder how much earlier spectacle makers were already fitting them without publishing any details, in line with the guild tradition of secrecy.

H.W H.

A decapitating blindshot:

OHS member T. David Williams writes as follows:

The recent arrival of the OHS newsletter suggested to me that you might be interested in this little snippet regarding Mariotte. Here it is.

Edme Mariotte (1620-1684) is rather close to my heart, as it was he who first demonstrated the presence of the blindspot. It was referred to for over a hundred years as the BLINDSPOT OF MARIOTTE. He had been doing a lot of anatomical work, and had a pretty good idea where the optic nerve entrance was, relative to the line of sight. His first demonstration was that (at a distance of 2 meters) the blindspot was large enough to obscure a human head. (Taking a head as 17 cm from ear to ear, it subtends 4.85 degrees at 2 meters).

People were so astounded by this discovery that Mariotte was invited to repeat his experiment in 1668 for the Royal Society of London, in the presence of the King of England, his royal highness Charles II.

Making a head disappear was rather grimly appropriate for Charles II, as his father, Charles I, had been beheaded. This led to a number of apocryphal stories, one of which involved the King of France. Mariotte still managed to put his foot in it, however, when he announced that he thought the choroid was the seat of vision. This wasn't sorted out until Helmholtz's time. Mariotte had a good reason for his error regarding the choroid: there is no choroid at the nerve head, and he thought this is why one doesn't see with this part of the eye.

Ocular Heritage Society news:

OHS member James Leeds writes:

I thought it would be of interest to our membership that I attended a meeting of another OHS --- The Ocular Heritage Society in St. Louis, April 29-30, 1988. A group of 25 or 50, comprehensive ophthalmologists, optometrists, opticians and others who were interested, including a few spouses. We had a very busy, engrossing and delightful two days.

We started with a visit to the AOA Museum and Archives, hosted by Maria Dablemont in her last day before retirement! The only complaining made by some was that not enough time was allowed. After lunch we went to another museum and then heard three papers at Washington University School of Medicine. There was a group dinner afterwards. The second day consisted of a meeting with eight more papers and a visit to the Bernard Becker Book Collection, where many rare books were available for inspection. The meeting closed with a banquet.

Some of the topics of the papers were: "The McAllister Optical Company", "Some Refractive Techniques and Instruments of the 'Gay Nineties'", "An Eyecup Collection", "Eyes, Books and Birds - Casey A. Wood", and "Introduction to the Bernard Becker Collection". I gave a short talk on my experiences in collecting books.

There was one other optometrist in attendance -- Ted Fisher of Waterloo, Ontario. He was elected Vice-President and will host the next meeting in Waterloo in May 1989. I certainly hope to attend, and I am sure any of our members would be most welcome.

Annual dues are \$25.00, which makes our dues even more of a bargain. Further information can be gotten from:

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Eure memorial honor:

The American Optometric Foundation gives an annual Spurgeon Eure, O.D. Award established in 1972 to honor persons chosen by the editor of the Southern Journal of Optometry. Spurgeon Eure is a past-president of the American Optometric Foundation.

Pauci-lingual frustration:

On page 88 of issue Number 4 of a 1988 serial publication from Korea which I presume can be called the Journal of the Opticians Association of Korea is a full page illustration featuring a bronze-colored metallic-tone full-face mask with spiral horns. Mounted on the mask face is a pair of copper-colored early spectacles with center riveted pivot and no temple support. Buried in the Korean legend of several lines are several numerals including two four-digit numbers 1511 and 1600 which may be century dates. Parenthetically in the legend are the phrases "Tower Collection" and "Will Somer" in western alphabet.

On pages 118-124 is an obviously historical article with six reproductions of spectacle-related illustrations of early western origin. Parenthetical inclusions in western alphabet are such names as Cicero, Hieronymos, Snellius, et al.

It seems probable that the article is merely a reprint or rehash of an already familiar historical article, but surely the Korean editor may have added some Korean comments that could be interesting. Unfortunately I do not read Korean!

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