

FEB 01 1980

INDIANA UNIVERSITY

Start of the second decade:

This is the first issue number of volume 11. It is being edited jointly by Henry Hofstetter and Douglas Penisten, both of us at the same address, the Indiana University School of Optometry, Bloomington, Indiana 47405. The April issue will be edited by Dr. Penisten alone as Hofstetter will be on a commission assignment in South Africa from January 15 to April 15. Subsequent issues will be edited by one or both of us by successive arrangement.

Henry Knoll re-elected to Board

Though each pulled a significant number of votes, the other two nominees faced an overwhelmingly popular winner in Dr. Henry A. Knoll, who now will serve a five-year term on the OHS Executive Board.

The other four members of the Executive Board for 1980 are:

1976-1980: Maria Dablemont
1977-1981: Grace Weiner
1978-1982: James P. Leeds
1979-1983: J.C. Tumblin

Dr. Jacob Staiman, one of the other two nominees, was relieved, for he had forgotten that he had allowed his name to be included about a year ago. With his ballot he reminded us that he is now almost three-quarters of a century old and not really very able to engage in any strenuous activity. However he is packing up another shipment of books and antique glasses for ILAMO, the International Library, Archives, and Museum of Optometry.

The ballot, incidentally, provided space for write-ins, who will be considered nominations for next year. They are: Lester Hussey, O.D., Loren Pace, O.D., James Gregg, O.D., James Leeds, O.D. (already on the Board!) and J.J. Abrams, O.D., a fine crop.

Another successful reminisce-in:

In spite of numerous competitive attractions and obligations, and minimum, almost no, publicity, the December 8 O.H.S. Reminisce-In was attended by 24 persons. Dr. James Gregg surprised your editor of 10 years (decadent?) with a presentation of a beautifully bound tome of volumes 1-10 of this Newsletter complete with the index, a gift from the Society. Then followed an hour and a half of reminiscing of several of those present describing the circumstances of their entry into optometry or optometry-related careers. It turned out that two-thirds of those present were not optometrists, but nevertheless interested in optometry's history.

We were guests of Librarian Pat Carlson of the M.B. Ketchum Library of the

Southern California College of Optometry. We devoted at least another half hour to looking at her display of early optometric instruments and books. Each of us was given a copy of a list of the 79 earliest books in the library. Additional copies of the list are available on request to Ms. Carlson at the College, 2001 Associated Road, Fullerton, California 92631.

H. W.H.

Annual Reminisce-In (other side of the fence)

For several hours prior to the Southern California College of Optometry's open house on Dec. 8, approximately twenty people gathered in the M. B. Ketchum Memorial Library for the Optometric Historical Society's annual Reminisce-In. Buses provided transportation to SCCO from the Disneyland Hotel where the American Academy of Optometry was holding it's annual meetings. Dr. Henry Hofstetter presided over the O.H.S. gathering which included a financial report by Secretary-Treasurer Maria Dablemont. Dated December 6, 1979, the report shows the Society holds \$1,769.02 in savings, \$666.70 in a checking account, and \$61.39 in petty cash for total assets of \$2,497.11.

The time passed all too quickly as individuals volunteered, or were forced by Henry Hofstetter, to relate how they became involved in optometry. The group was also fortunate to have several librarians share their stories of the development of Optometric libraries. Although the tour of the SCCO campus was delightful and informative, the highlight of the O.H.S. meeting was the presentation of a bound collection of the O.H.S. Newsletter to Dr. Henry W Hofstetter. In behalf of the O.H.S., Dr. James Gregg presented the gold titled volume and expressed everyone's heartfelt appreciation for the ten years work Dr. Hofstetter has performed as editor of the Newsletter. For the many people unable to attend I will now add, "Thank you Henry!"

D. K. P.

Old books for sale:

The following visual-science-related publications are listed in the 1979/2 catalogue of Harriet Wynter Ltd, 352 Kings Rd., London SW3 5UU, England, Telephone 01-352-6494:

18. BROWNING (JOHN). OUR EYES and how to preserve them from infancy to old age. With special information about spectacles. 8vo, 70 ills, orig. cloth, worn, hinges weak. 3rd. ed. London, 1890. £12.00

82. HENKER (PROF. OTTO). INTRODUCTION TO THE THEORY OF SPECTACLES. 8vo, 339 ills, and a photogravure. Very good copy of 1st ed. Jena, 1924. £20.00

110. LITTEL (S.). A MANUAL OF THE DISEASES OF THE EYE: or treatise on ophthalmology, 8vo, orig. cloth, faded and worn, library stamp on t.p., contents good. Scarce, London, 1838. £40.00

135. NETTELSHIP (E.). THE STUDENT'S GUIDE TO DISEASES OF THE EYE. 8vo, ill's in text, orig. cloth, worn, 3rd ed. London, 1884. } 7.00
166. SOELBERG WELLS (J.). A TREATISE ON THE DISEASES OF THE EYE. 8vo, pp. 797, ill's, hinges cracked, cloth worn, contents clean. 2nd edition. London, 1870. } 55.00
215. ARLT (DR. FERD.) DIE PFLEGE DER AUGEN im gesunden und kranken Zustande nebst einem Anhang über Augenglasser. 8vo black letter, orig. wrappers, shaken, 1st ed., Prag, 1846. } 10.00
216. ARLT (DR. FERD.) DIE PFLEGE DER AUGEN im gesunden und kranken. . . . 8vo, 1 plate, coloured, good copy of 3rd, ed, in original wrappers, worn. Prag, 1865. } 10.00
220. BIELSCHOWSKY (A) DIE MOTILITÄTSSTÖRUNGEN DER AUGEN NACH DEM STANDE DER NEUESTEN FORSCHUNGEN. 8vo, 3 vols, 59 figs, 22 plates. Orig. printed wrappers, worn, from the Handbuch der gesamten Augenheilkunde series, 2nd ed. (see G.M. 5944) Leipzig, 1907-10. } 15.00
221. BERNHEIMER (ST.) ÄTIOLOGIE UND PATHOLOGISCHE ANATOMIE DER AUGENMUSKELLAHMUNGEN. 8vo, ill's, orig. printed wrappers, lower cover loose. From the Handbuch der gesamten Augenheilkunde series, 2nd ed. Leipzig, 1902 } 10.00
242. NEAL (H.V.) THE MORPHOLOGY OF THE EYE-MUSCLE NERVES. 8vo, 9 plates, orig. printed wrapper with inst. stamp. Reprinted from the Journal of Morphology. Good copy. Tufts College, Mass., 1914. } 10.00
- TERSON (DR.A.) TRAITE DES PLAIES DE L'OEIL. 8vo, orig, printed wrapper, torn, a report presented to the Societe Francaise d'Ophthalmologie Congres of 1908. Paris, 1908. } 8.00
255. THOMSON (SIR J.J.) THE STRUCTURE OF LIGHT. The Fison Memorial Lecture 1925. Sm1. 4to, portrait f.p., diag's. in text, original wrappers, scarce. Good copy, Cambridge, 1925. } 16.00
260. WRIGHT (LEWIS) LIGHT. A COURSE OF EXPERIMENTAL OPTICS CHIEFLY WITH LANTERNS. 8vo, col. f.p., 7 plates, 190 ill's, orig. cloth, spine discoloured, good copy, London, 1882 } 16.00
261. ADAMS (GEORGE) AN ESSAY ON VISION, briefly explaining the fabric of the eye and the nature of vision; intended for the service of those whose eyes are weak or impaired; enabling them to form an accurate idea of the true state of their sight, the means of preserving it, together with proper rules for ascertaining when spectacles are necessary, and how to choose them without injuring the sight. 8vo, 1 folding plate, a few contemporary notes in margins, 14 pp.

instrument catalogue. Orig. boards, rebacked, good copy of this scarce work. London, 1789. f200.00

For sale:

Listed in Catalogue 158, Fall 1979, of F. Thomas Heller, 308 East 79th Street, New York, N.Y. 10021 is the following:

"114 HELMHOLTZ (Hermann von) Handbuch der Physiologischen Optik. Hamburg & Leipzig, Voss, 1896. Roy. 8 vo. Half cloth. XIX, 1008 pp. With 8 plates, one folded and colored, and 254 figures in text. Some foxing, and penciled scoring and annotations; else nice copy. \$245."

Collectibles:

Catalogue 100, HISTORY OF MEDICINE, of the Chatham Bookseller, 8 Green Village Road, Madison, New Jersey 07940, U.S.A., lists three items of visual science interest, as follows:

- #17. Armstrong, David Malet, "Berkeley's Theory of Vision: A Critical Examination of Bishop Berkeley's 'Essay Towards a New Theory of Vision,'" Melbourne University Press, 1960, 106 pages, \$12.50
- #185. Graham, Elsie Challand, "Optics and Vision: The Background of the Metaphysics of Berkeley," 1929, a Ph.D. dissertation at Columbia University, \$8.50
- #214. Herbert Ives's copy of Helmholtz, Hermann Ludwig Ferdinand von, "Handbuch zur Physiologischen Optik" vol. 1, 1909; vol. 2, 1911; vol. 3, 1910, \$250.00

Of interest to medal collectors:

Tom Atwood, 2828 Rockhaven Ave., Louisville, Kentucky 40220, has written to Jim Leeds to report a medallion, a "Bausch & Lomb Honorary Science Award" showing a "draped female holding a wreath in one hand and a lens in the other." The medal appears to be made of bronze and is engraved "Lawrence Porterfield 1938½" on the back. Its dimensions are approximately 50 x 65 x 5 mm. He offers it at \$15.00.

For calendar collectors:

In longhand, on a postcard, Mr. Ray Bishop, 75 Summer Street, Lisbon Falls, Maine 04252 offers a 4½" x 9" calendar (year not stated) with the legend promoting the patronage of optometrist Charles J. Libby and with a picture showing a little girl trying on her grandmother's glasses. His price is \$7.50.

Another spectacles collector:

Jay De Mesquita, O.D., of Pennsauken, New Jersey, has collected 400 pieces in only five years of pursuit of his hobby. So writes Marilyn L. Margulis in an article entitled "An Optometric Detective: In search of antique eyewear" in the December 1979 issue of the Journal of the American Optometric Association, Vol. 50, no. 12, pp. 1337-1342, with 22 photographs.

Suddenly a buff:

Recently Thomas Eade, O.D. 320 S. Main Street, New Castle, Indiana 47362, was presented with the opportunity to purchase the personal collection of ophthalmic oddities and antiques accumulated by Bill Glosser, a retiring sales representative for Duffens Optical Company for ten years, and for many earlier years business manager for the Herron School of Art in Indianapolis. Dr. Eade, Tom, bought it on sight and now is engaged in trying to sort out, classify, and identify each item, of which there are hundreds.

Though Bill Glosser had long been an ardent collector of antiques and uniques, Tom Eade is really not, or should we say has not been. But addiction is clearly setting in as Tom makes inquiry about reference atlases and names of experts.

A searching request

The following is a letter out of the blue from Robert C. Coleman, O.D., 2615 Voorhees, no. 2, Redondo Beach, California 90278, to "Members of the Optometric Historical Society":

"I would like to learn more about the activities of your group. I enjoy history and optometric memorables and feel your goals coincide to mine. One aspect of my interest. I would enjoy sharing relates to eye health as pictured on world postage stamps. Too bad there is no optometry related stamp but dozens on blindness prevention, Braille, ophthalmology and eye disease prevention. Would you be interested in doing an article on this topic in the near future?"

Indeed.

Who was Mr. James Ware?

On more than one occasion I have noted a reference to one or another opinion expressed by Mr. Ware. Recently I tracked down one such reference as "IV. Observations relative to the near and distant Sight of different Persons" by James Ware, Esq. F.R.S., in Philosophical Transactions of the Royal Society of London, Vol. 103, Part 1, 1813, pages 31-50. In this article Mr. Ware makes such statements as: "Near sightedness usually comes on between the ages of ten and eighteen." and, "It affects the

higher classes of society more than the lower."

In the same publication, pages 110-113, Sir Charles Blagden, F.R.S., responded with a paper entitled, "XIV. An Appendix to Mr. Ware's Paper on Vision" to give testimony based on his own recollection of beginning myopia at the age of nine or ten for which he was able to compensate for a year or so by means of a meniscus watch-glass. As a secondary visual observation he described a stereoscopic effect which he indulged in as a child which consisted of looking at the multiple vertical fluting on an eye level block of a marble chimney piece and changing its apparent distance by varying the convergence of his eyes.

If I recall correctly, Helmholtz made essentially the same observation on checkered wallpaper years later, and most of us have observed the same effect on floors of small tile pieces.

But who were Blagden and Ware? It is not evident from their articles that either was an optician or oculist, and yet their comments indicated considerable familiarity with the eye and lenses. Certainly, because they were both Fellows of the Royal Society, their biographies are quite available, but I hope a reader of this newsletter might offer some time-saving help.

Joseph Dallos, M.D., 1905-1979:

Henry Knoll writes, "George Nissel of England has given me permission to reproduce the following biographical sketch of Joseph Dallos who passed away on June 27, 1979. His death follows closely the passing of John Neill and Frank Dickinson. No doubt they have joined Obrig, Touhy and others and are arguing the merits of steep vs. flat, large vs. small, front toric vs. back toric, corneal vs. scleral, hard vs. soft lenses and having a grand time of it all!"

Joseph (Jozsef) was born in Budapest, Hungary on the 5th January 1905, of Hungarian parents. His father Alexander (Sandor) was a secondary school teacher, later headmaster.

He finished his education in record time, entered University and qualified as an M.D. in 1928 at the very early age of 25. Joseph entered No. 2 Eye Clinic, where Prof. Emil de Grosz reigned supreme and Joseph worked under assistant Prof. Horay. Within a very short time Joseph took up contact lenses and, as there were only Zeiss lenses in existence, he began working with them. Very soon he realised the limitations of the rigid geometrical construction of these lenses and suggested an improvement on the design of the lenticular lenses, which Zeiss duly patented in association with Joseph.

Joseph set himself the task of creating a new type of contact lens and to build a new manufacturing process to go with it. And it is here where his true pioneering work began. He had to search for a suitable material to take impressions of the living eye and eventually he adopted the Negocoll and Hominite process. He took up the study of moulding glass into shape and the subsequent grinding of it.

At the beginning he worked with incredibly primitive tools, nevertheless producing outstanding results. A distant relative of his, a dental technician by the name of Istvan Rakos was his first technician, working in a box room behind the kitchen of his apartment. There it was that I met him in 1933. Not only did I observe the technical process but I also watched the fitting of a gypsy musician, who had high myopia and nystagmus and who, when the fitting was completed, not only did not pay, but actually received payment and a good meal from Joseph for offering himself to be fitted. This illustrates the man's dedication and his eagerness to learn.

And then followed a few years which could be described as the golden era of his professional career.

In 1935 appeared his famous article in a German ophthalmological journal on his method of taking impressions of the eye, which method was used less and less later on, and he relied on several fitting sets of his own design.

Patients and ophthalmologists were coming to Budapest from all parts of the globe and Joseph worked day and night to improve his method. He never cared about money and was extremely generous on all occasions. He was only happy working, begrudging himself a holiday year after year.

One of his early supporters was Prof. Sattler from Konigsberg, Germany. He came to Budapest himself and later on he sent one of his assistants to Joseph who stayed for several months. Ophthalmologists from Argentina, Brazil, Holland, United States and many other countries came to watch him at work. In one of these groups from the States was Theodore Obrig, who saw how an impression was taken. Joseph collaborated with the Müllers of Wiesbaden who came regularly to Budapest to provide glass scleral cosmetic blown lenses to his patients. In this period Joseph reached the equivalent status of a Senior Registrar at the University Clinic and could count many Royalty amongst his patients. Following a visit from four British ophthalmologists, Rugg-Gunn, Williamson-Noble, T.J. Phillips, and Ida Mann, Joseph was invited to come to London by Gerald Henry Wingate of Theodore Hamblin Ltd. This was in 1936. He came to London in May 1937 and started working at No. 9 Wigmore Street, adjacent to the main Hamblin showroom, having been duly installed by Richard Smellie. Reflecting on the years which followed, I have the feeling that Joseph was not cut out for a commercial career. Joseph had an appointment at Moorfields Eye Hospital for a few years as a contact lens specialist. He contributed to the war effort by fitting scores of servicemen with glass haptic lenses and fitted many first war mustard gas sufferers. Soon after he settled in England Joseph was asked to hold a lecture at Oxford on contact lenses. He disliked publicity and very seldom did he attend any social functions. He was a member of the Ophthalmological Contact Lens Society, but he very seldom spoke at their meetings. He was Honorary Member of several Contact Lens Associations.

A few years after the death of Gerald Henry Wingate in the 1950's, Joseph established his own consulting room and attached to this was a small laboratory where he continued to make glass contact lenses. He

progressed with time and was prescribing almost every type of contact lens available. An article by Joseph in the optical press describing his method of asepticing hydrophilic lenses has become standard procedure. He called it pasteurising. As the number of technicians who were able to assist him with the manufacture of glass contact lenses waned, the work of making an occasional lens fell back on him and he would sacrifice all his spare time to make a pair of lenses, regardless of cost.

Whereas he worked for the past twenty years or so at several Medical Eye Centres, he regretted having given up proper ophthalmological work. Nevertheless, he spent his entire life in the service of mankind with complete disregard for his own personal material well being. He passed away peacefully on 27th June 1979.

Many ophthalmologists who watched Joseph will remember his work, and there were a few assistants who worked with him, like Stephen Gordon, Bob Turner, Anne Silk, Ted Meredith, and Shaw, who will no doubt carry on to emulate their former master. Unfortunately, there is very little literature for further study.

Dr. Joseph Dallos leaves behind his widow, Dr. Vera Dallos, MRCP., Consultant at Whipps Cross Hospital. Also his first wife Dolly (nee Nissel), and son David, Medical Technician, Royal Free Hospital, and thousands and thousands of satisfied patients.

Richard Kelly (1910-1977)

Known as one of the first professionals to practice lighting design consulting, and a designer of over 300 major projects for over 80 prominent architects, Richard Kelly was awarded the 1979 Gold Medal of the Illuminating Engineering Society posthumously. "A Personal Memento", reciting numerous legendary incidents and events to portray Kelly's philosophy and impact, is an article by Der Scutt in the October 1979 issue of Lighting Design and Application, Vol. 9, no. 10, pp. 56-58.

W. E. Hardy writes of Owen Aves:

The contributions of many a person are known only to his contemporaries, and unless at least one of the contemporaries bothers to record the contributions in print or on a monument or in the form of a memorial, the grateful memories fade very quickly. Even more serious is the resultant loss of explanation and full description of historical developments and related social trends, leaving great gaps in our understanding of why things happened the way they did. Consequently, much of what we presume to be history is mere conjecture by imaginative writers who fill these gaps with plausible fiction.

Mr. W. E. Hardy has eliminated one such gap by means of an article entitled "OWEN AVES (1991-1929); Marking the half century" in the September

1979 issue of The Ophthalmic Optician, Vol. 19, no. 17, pp. 653-654. Mr. Aves' career ended prematurely 50 years ago, but Mr. Hardy remembered him as "a natural publicist; a sound judge of men; a doughty fighter in any cause he believed to be right or just; and a hurrier." He tells us that Aves had been a prime mover in launching the first attempt at organized research in ophthalmic optics. Several declared that the London Refraction Hospital would never have been successfully established without his initiative, drive, and organizing capacity. These and numerous other contributions, an almost incredible number for such a brief career, give us a much better grasp of the status of optometry in Great Britain during the first three decades of this century.

Braff, Graham, and Greenspoon:

Three early developers of the contact lens are Drs. Solon Braff, Robert Graham, and Reuben Greenspoon, all residing presently in southern California, where they have devoted most or all of their career time. Respectively 64, 73, and 80 years old, they continue to be optometrically involved, according to an article in the October 1979 issue of the California Optometrist, pages 15 and 17. Supplementing these personality and historical write-ups is an interesting review of "Early Contact Lens Fitting Techniques" on page 18.

I was given zerographic copies of only these three pages so I do not know whether these are parts of a more extensive historical article, or who the author is.

Of pride and prejudice:

The reference to Kevin Touhy on page 71 of volume 10 (incorrectly indexed as page 19 of volume 7!) prompted Dan Hummel to divulge an early experience of his, probably in the early 1950's, in connection with the American Academy of Optometry, in which Dr. Hummel was himself a most prominent and influential figure. He writes:

"At my invitation Touhy came to an AAO meeting in Chicago. After considerable discussion I suggested that he make application for Fellowship in the AAO.

"He was turned down in no uncertain terms. For my part I received some terrific criticisms and silent treatment, about the same as my bringing the first Black into the AAO.

"Times and membership requirements have really changed. Touhy was a gentleman and deserved better treatment."

Another optometrist memorialized

This one is the Dr. Leslie W. Scown Award, established by the Southern California College of Optometry Alumni Association. Dr. Scown taught clinical optometry for 33 years beginning in 1921.

Early standard candle and specifications:

Possibly the earliest official standardization of the candle for the purpose of measuring illumination is that published in the January 8, 1894, issue of American Gas Light Journal, Vol. 60, page 41. The title of the article is "The Metropolitan Gas Referees in the Candles to be Used in Testing the Lighting Value of London Gas" and is reproduced here in full, as follows:

The Metropolitan Gas Referees have issued the following notification respecting the candles to be employed in testing the lighting value of the gas supplied by the companies over which they have jurisdiction:

The candles to be used for testing the illuminating power of gas are defined by the Metropolitan Gas Acts as "sperm candles of 6 to the pound, each burning 120 grains an hour." But whereas candles coming within this definition, but differing in other particulars, differ greatly in the light they give; and whereas a controversy has arisen between the London County Council and the Gas Companies as to the candles which should be used in testing; and whereas the Chief Gas Examiner has disallowed a return of the illuminating power of gas on the ground that "candles of different manufacture, possibly of different illuminating power from those usually employed in the testing places, and which had not been prescribed nor certified by the Gas Referees, were employed in the tests against which the Company have appealed;" and whereas the London County Council have called upon the Gas Referees to prescribe and certify the candles to be used in the testing-places; and whereas it is the duty of the Gas Referees (Gaslight and Coke Company Act, 1876, Sec. 34) from time to time to prescribe and certify the apparatus and materials in the testing-places for testing the illuminating power of gas, and of the Company to provide such apparatus and materials accordingly; and whereas sperm candles are the materials by which the illuminating power of gas is tested; we do therefore hereby prescribe as follows:

(1) All candles to be used in the testing-places shall be made with the materials hereinafter prescribed, and shall, when made, be examined and certified by the Gas Referees.

(2) The wicks shall be made of three strands of cotton plaited together, each strand consisting of 18 threads. The strands shall be plaited with such closeness that, when the wick is laid upon a rule, and extended by a pull just sufficient to straighten it, the number of plaits in 4 inches shall not exceed 34, nor fall short of 32. Each wick shall be of suitable length, and looped ready for fixing in the mould. After having been bleached in the

usual manner and thoroughly washed (see Appendix), the wicks shall be steeped in a liquid made by dissolving one ounce of crystallized boracic acid in a gallon of distilled water, and adding two ounces of liquid ammonia. They are then to be gently wrung or pressed till most of the liquid has been removed, and dried at a moderate heat. Twelve inches of a wick thus made and treated shall not weigh more than 6.5, nor less than 6 grains. The weight of the ash remaining after the burning of ten wicks which have not been steeped in boracic acid, or from which the boracic acid has been washed out, shall not be more than 0.025 grain. Wicks made in accordance with this prescription shall be sent to the office of the Gas Referees, by whom they will be examined and certified. The wicks so certified are to be used by the candlemaker in the condition in which they are returned to him.

(3) The spermaceti of which the candles are made shall be genuine spermaceti, extracted in the United Kingdom from crude sperm oil, the produce of the sperm whale (*Physeter Magrocephalus*). It shall be so refined as to have a melting-point lying between 112° and 115° F. An account of the method by which the melting-point of the spermaceti is to be determined is given in the Appendix. Since candles made with spermaceti alone are brittle, and the cup which they form in burning has an uneven edge, it is necessary to add a small proportion of beeswax or paraffine to remedy these defects. We therefore prescribe that the best air-bleached beeswax, melting at or about 144° F., and no other material, shall be used for this purpose, and that the proportion of beeswax to spermaceti shall not be less than 3 per cent., nor more than 4½ per cent.

(4) The candles made with the materials above prescribed shall each weigh, as nearly as may be, one sixth of a pound, and will be found to answer to the following test: Immerse a candle, taper end downwards, in water of 60° F., with a brass weight of 40 grains attached to the wick by a small piece of thread. When a further weight of 2 grains is laid on the butt end of the candle, it will still float; but with a weight of 4 grains it will sink. As the rate of burning of a candle is affected by the force with which the wick is pulled when it is set in the mould, the strain commonly applied by an experienced maker of candles has been measured, and is found to be about 24 oz. The candles shall be accompanied by a specimen of the spermaceti (unmixed with beeswax) which was used in making them. Packets of candles approved by the Gas Referees will be sealed by them, and certified for use in the testing-places.

(5) The candles are to be used by the Gas Examiners as heretofore, in accordance with the half-yearly "Notifications" of the Gas Referees. The results are to be corrected as usual, on the assumption that for small variations the light of a candle varies directly with its consumption; and if any candle in a packet certified by the Gas Referees is found by a Gas Examiner to burn at a rate exceeding 126, or falling short of 114 grains per hour, the testings made with that candle are to be rejected.

Appendix

Method of Determining the Melting-Point of the Spermaceti.

As various methods are used by different refiners of spermaceti for determining the melting-point, which lead to different results, it must be noted that the temperatures here given as the limits within which the melting-point of a sample of refined spermaceti should fall -- viz., 112° and 115° F. -- have been found by the following method, which is known as the capillary tube method:

A small portion of the spermaceti is melted by being placed in a short-test-tube, the lower end of which is then plunged in hot water. A glass tube drawn out at one end downwards, into the liquid spermaceti, so that, when the tube is withdrawn, 2 or 3 mm. of its length are filled with spermaceti, which immediately solidifies. The corresponding part of the exterior of the tube is also coated with spermaceti, which must be removed. The narrow part of the tube is then immersed in a large vessel of water of a temperature not exceeding 100° F. The lower end of the tube which contains the spermaceti should be 3 or four inches below the surface, and close to the bulb of a thermometer. The upper end of the tube must be above the surface; and the interior of the tube must contain no water. The water is then slowly heated; being at the same time briskly stirred, so that the temperature of the whole mass is as uniform as possible. When the plug of spermaceti in the tube melts, it will be forced up the tube by the pressure of the water. The temperature at the moment when this movement is observed is the melting-point.

The electric lamp:

Featured on the front cover and on pages 32-38 of the October 1979 issue of Physics Today, Vol. 32, no. 10, is a history of the 100 year old electric lamp by John M. Anderson and John S. Saby. The title is "The electric lamp: 100 years of applied physics."

Institute of Optics 1929-1979:

This is the title, subtitled "a brief commemorative," of a report by Hilda G. Kingslake in the October 1979 issue of Applied Optics, Vol. 18, no. 19, pp. 3222-3229, on the Institute of Optics of the University of Rochester. The author, herself an optician, is the wife of one of the two original faculty members.

The first five years of the Institute were jointly sponsored by the University, the Bausch & Lomb Optical Company, and the Eastman Kodak Company. The first students were from the Rochester School of Optometry which, together with its two chief instructors, Ernest Petry and Herbert Wilder, had been taken over by the University. Forty students were graduated in optometry up to 1936 when the optometry courses were discontinued. Altogether the Institute has conferred some 270 B.S., 340 M.S., and 111 Ph.D. degrees.

The introduction of spectacles into China:

This is the title of a 1936 article by Kaiming Chiu in the Harvard Journal of Asiatic Studies, Vol. 1, pages 186-193 recently brought to my attention by my student Viven Chan. Chiu reminds us that Berthold Laufer, a German, provided the earliest systematic discussion by a Westerner on the introduction of spectacles into China. This article appeared in 1907 and was used by George Sarton, with some reservations, as the principal source for his 1931 account of the introduction of spectacles into China. Prompted by Sarton's suggestion Chiu delved deeper and deeper into the subject until he found all of the Chinese sources used by Laufer, and thereby found that Laufer had made quite a few mistakes. Among these was the suggestion that spectacles were mentioned c. 1260, during the Sung dynasty (960-1279 A.D.) Chiu concluded that "it is clear that spectacles were introduced into China from the Western Regions during the latter part of the Yuan dynasty, that is the 14th century."

Chiu also discussed the origin of the term ai-tai for spectacles during the Ming dynasty (1368-1644). He believed this to be a transliteration of some foreign word, possibly the Arabic word uwaināt, rather than an original Chinese term, especially because the Chinese accounts pointed repeatedly to Malacca as the source of spectacles.

Malacca was an early oceanic trade center on the southwest coast of the Malay peninsula.

The more modern Chinese term for spectacles, yen-ching, probably dates back to the beginning of the 16th century rather than the 18th century, concludes Chiu.

Contrast of credibility

Two attractively bound cloth-covered books of almost identical size, approximately 61 x 24 x 1.5 cm identically priced at \$6.95, and about 100 pages each were called to my attention by reason of the subtitle of one as "The Story of Visions Aids," and, the catalog summary of the other as "Traces the history of spectacles over seven hundred years...". The former is "Lenses, Spectacles, Eyeglasses, and Contacts" by Alberta Kelley, published in 1978 by Thomas Nelson, Inc., Nashville, Tennessee. The latter is "Look How Many People Wear Glasses" by Ruth Brindze, published in 1975 by Atheneum, New York. Both are obviously intended for popular reading at about the junior high school (ages 13-15) level of difficulty, and both are nicely interspersed with illustrations which suggest an appropriate degree of sophistication and documentation.

There the similarities ended. Whether due to the two styles of writing or my own limited, if not substantially biased, knowledge of ophthalmic history, I judged the two books to have a great difference of credibility. That the young naive reader might not detect this would be regarded by many as being of no consequence. Why, one might ask, should history, or even science, for the casual reader be so correctly stated. In the same way that artists distort shapes and colors to induce "truer" impressions, why, others might ask, should not a historian indulge in moderate twists of phrases such as, for example, "Experts believe" or "Specialists think" to give a hypothesis or theory something nearer factual appearance?

I do not happen to agree that such license is justifiable.

In the Kelley book one can gain the notion that the information was obtained largely by interviewing persons without checking into their knowledge of history. If ophthalmic history is indeed as the author describes it I shall have to start all over again. A bibliography of 15 mainly popular publications is appended, but citations are not specific, and most of the illustrations lack explanations or source credits.

The Brindze book on the other hand, while of easy and casual style, seems quite free of inaccuracies and distortions. Some of the concepts and descriptions are oversimplified but not so as to mislead the reader. Reasonably specific resources are cited so that the more curious reader can pursue any detail more thoroughly elsewhere. The historical aspects are far too few, however, to justify the catalog card summary that it "Traces the history of spectacles over seven hundred years..." I daresay that a sales promotion artist rather than the author wrote the summary statement for the catalog card.

The elusive sensory core:

"In the eighteenth and nineteenth centuries the majority of theories of visual perception were built upon the view that during the process of

vision there occur two conscious states with quite different phenomenal properties. The first state is a mental representation of the two dimensional retinal image. The second is our experience of the 'visual world' of objects distributed in depth."

So stated Gary C. Hatfield and William Epstein in an article entitled "The Sensory Core and the Medieval Foundations of Early Modern Perceptual Theory" in the September 1979 issue of ISIS, Volume 70, Number 253, pp. 363-384. The first abovementioned state, which they call "the sensory core" would be the awareness, however fleeting, of a circle as an ellipse when it is viewed obliquely so as to form an elliptical image on the retina. The second state would be its ordinary perception as a circle however obliquely it may be viewed.

Hatfield, of the Department of History of Science, and Epstein, of the Department of Psychology, both at the University of Wisconsin, Madison, Wisconsin, discuss at great length the centuries-long failure to grasp the complexity of the visual stimulus, especially the binocularly processed stimulus, which enables the visual system to interpret the elliptical retinal image as a circle tilted in the third dimension. Their paper explores in a very understandable way, though clumsily replete with enormous footnotes, the theoretical and historical context within which the notion of a sensory core developed.

My attention to this article was called by our ever alert Secretary-Treasurer Maria Dablemont.

An early classic in ophthalmology

Reprinted in 1979 is the 1833 edition of an almost 400,000 word book entitled "Treatise on the Eye" by William Mackenzie (1891-1868). Mackenzie ranked with the most influential ophthalmologists in the United Kingdom. He was the founder of the famed Glasgow Eye Infirmary and, in 1838, was named Surgeon-Oculist to Queen Victoria. This treatise, his masterpiece, had four English editions and was translated into German, French, and Italian.

Ophthalmologists of that era were still several decades short of including optometric care among their offerings, even though the use of spectacles was widespread and ophthalmic opticians were well established with a heritage of several centuries. Nevertheless, Mackenzie did include a number of pages of commentary on certain aspects of ocular refraction which he considered to be of interest to physicians. Specifically he devoted about a thousand words to "Cataract-Glasses," about six thousand to "Myopia, or Near-sightedness," and about three thousand to "Presbyopia, or Far-Sightedness," totalling approximately one fortieth of the book.

Though written in very sophisticated style the text of the book is almost totally anecdotal, and the "optical" portions are no exception. By meticulously cited references it is apparent that Mackenzie relied primarily on others as his resources on ophthalmic optical matters. The following excerpts are indicative of the limited involvement of eye physicians of that

era in ophthalmic optical matters:

"These glasses are employed for the purpose of rendering the vision of those who have been operated on for cataract, as distinct and perfect as possible; for there is a distinction, perhaps not a very accurately expressed one, admitted by opticians between distinct and perfect vision."

"The too hasty employment of cataract-glasses after the most successful operation, may soon bring the eye to a state of weakness which will render it unfit even for those employments which require but a moderate degree of sight. No cataract-glasses ought to be given to a patient so long as his vision appears to be improving without this use. This generally continues to be the case for at least two months after the operation."

"There is a certain distance from the eye, called the point of distinct vision, at which objects are perceived better than at any other distance. This point, however, is different in different individuals, or even in the two eyes of the same person. It averages from about 15 to 20 inches. The least distance at which objects can be seen with any ordinary degree of distinctness by common eyes, is about seven or eight inches."

"Mr. Ware... observes that most of the nearsighted persons with whom he has conversed, had the right more affected than the left, and he thinks it not improbable the differences had arisen from the habit of using a single concave hand-glass, which, being commonly applied to the right eye, contribute to render it more shortsighted than the other."

"When persons in the higher ranks... discover that their discernment of distant objects is less quick or less correct than that of others, though the difference may be very slight, influenced perhaps by fashion more than by necessity, they immediately have recourse to a concave glass; the natural consequence of which is that their eyes in a short time become so confirmedly myopic, that the recovery of distant vision is difficult, if not impossible."

"It is but rarely the case that the medical practitioner has an opportunity of advising those in whom myopia is not yet confirmed, to that source of treatment, which might remove the incipient symptoms of this very serious imperfection of sight."

"...The cure [for myopia] would probably be found in... refraining also from the use of concave glasses..."

"If, instead of such a plan of treatment, recourse be had to the employment of concave glasses, and the frequent

and long-continued observations of near objects be persisted in, the disease [myopia] becomes not only confirmed, but sometimes greatly aggravated."

"When a near-sighted person wishes to be fitted with glasses, the simplest and surest plan is to try each eye with a series of them, at an optician's shop."

"The following are the foci in inches of the concave glasses usually kept in the [opticians'] shops.

No. 1-----48	No. 5-----14	No. 9-----5
2-----36	6-----14	10-----4
3-----24	7-----9	11-----3
4-----18	8-----7	12-----2½"

It is advisable that near-sighted persons should not wear spectacles constantly, but only on occasions when they more particularly require such assistance."

"The assistance, which the presbyopic eye derives from a double convex-glass, ought neither to be too soon had recourse to, nor too long delayed."

Mackenzie took cognizance of the fact that individuals "in the country" who do not have access to opticians' shops may have to write for their glasses, so, he carefully included procedures which might be followed to determine appropriate focal lengths. For myopes' distant corrections the focal lengths corresponded to the far points of distinct vision, and for near corrections for a 12 inch reading distance the lens was the same with a 3.33 diopter addition. The near corrections for presbyopia for a 12 inch reading distance represented a lens which required simply that the wearer utilize his full amplitude of accommodation. These mathematical interpretations are quite derivable from the described procedures.

For presbyopia in subjects much under the age of forty years cases are cited in which "cure was accomplished by the application of leeches to the temples, and the use of purgative medicines." In one case the cure was not complete, "partly on account of her not having abstained from the use of her spectacles with equal steadiness."

The 1979 book is published by the Robert E. Krieger Publishing Company, Inc., 645 New York Avenue, Huntington, New York 11743.

Snell's Law

Not only is there question as to the correct spelling of Willebrord Snell's (1580-1626) name, there is question as to who has priority to the discovery of what we now commonly refer to as Snell's Law of Refraction. The actual manuscript on which Snell wrote his geometrical proportion

(not using sines) has disappeared, but from eyewitness accounts and from an index of the manuscript in Amsterdam, the actual working is known. There is little doubt Snell's results came after many experiments of his own in conjunction with Kepler's previous work on refraction. Although he never published his work, Snell's work was known to his students and peers. The date 1621 is given as the year Snell formulated his proportion of refraction.

The story gets a bit complicated with the entrance of Rene Descartes (1597-1659). In 1637 he published Dioptric in which he derived his law of refraction using the sines of incident and refracted light. Never having experimented with refraction (he did after he derived the equation) Descartes made theoretical assumptions concerning the nature of light which lead to his derivation. Only after his death were grave accusations of plagiarism made against Descartes. From records of his correspondence it is believed that in 1626 or 1627 he "discovered" the sine law and it wasn't until 1632 that he heard of Snell's previous work. There is still controversy concerning the originality of Descartes' work.

No story of 17th century science is complete without mention of an Englishman and this is not an exception. The mathematician Thomas Harriot (1560-1621) made geometrical constructions in 1601 of refraction at a plane surface which would indicate his understanding of refraction.

For further detailed reference the following are excellent reading: A.I. Sabra, Theories of Light, Vasco Ronchi, The Nature of Light., and Levene and Gerstman, "A comparative analysis of optical constructions for refraction at a plane surface from Thomas Harriot (1601) to Thomas Young (1807)" Atti Della Fondazione Giorgio Ronchi. Sept. - Oct., pp. 741-744, (1975).

Demon of Modern Physics

1979 marked not only the 100th anniversary of Albert Einstein's birth but also the death of James Clark Maxwell in November of the same year. To commemorate this event the English weekly New Scientist presented in its November 1, 1979 issue an eight page article on Maxwell's life and scientific work which laid the foundation of modern physics. The illustrated article includes mention of his important work in the field of colour vision.

Sixty Years of Optometry

This is the title of an article in the June 1979 issue of the Australian Journal of Optometry, Vol. 62, no. 6, pp. 252-255, by Charles Wright, historian of the Australian Optometrical Association. Accurate, documentary, and personalized commentary make it a valuable historical contribution, but withal it is a thesis on the role of publications in the development of a profession. In fact the article is essentially a history of published Australian journals and newsletters before and after the formation of the Australian Optometrical Association.

H. W Hofstetter
D. K. Penisten, Editors