HINDSIGHT

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Jay Enoch's Column:

A Discussion and Review of an Upcoming and Important book by Prof. Vincent Ilardi: *Renaissance Vision from Spectacles to Telescopes.* *Transactions of the American Philosophical Society.**

*Tentatively scheduled for publication in 2005 by the American Philosophical Society in its *Transactions* series. Publishers permission has been received for presentation of this review (M. McDonald, Philadelphia, 2/28/04).

I call the readers special attention to a new book in preparation for publication. This book is scheduled to appear most probably in 2005. It is of special pertinence to the ophthalmic professions in general, and specifically to those interested in its history. Vincent Ilardi, U. Mass., is a first class economic historian. Vince became interested in the early history of spectacles, not from a clinical point of view, rather from the aspect of how trade and the associated arts and sciences developed, costs of production and sale, exchange issues, orders and receipts of goods, movement and origins of raw materials and resultant manufactured products, manufacturing processes for glass, spectacle lenses, etc., costs of lenses and classes of lens goods and implications for their distribution, and much more associated with this general topic, including important clinical insights occurring in tandem. As the real starting point of this history, Ilardi selects the first public announcement of spectacles by Domincan Friar Giordano da Pisa (or da Rivalto) at Santa Maria Novella Church in Firenze, Italy in 1306. And of course, he goes backward in time to the inferred first utilization of spectacle corrections in the mid-1280's in Pisa). For those interested, the back of Santa Maria Novella Church is located across the street from the entrance to the main railroad station in Florence, Italy.

Ilardi states he became interested in the topic through his friendship with Rosen. I am sure our readers are familiar with Rosen's contributions to the early (and often contentious) history of spectacles. I sense that Vince chose this work, because as an economic historian it was an opportunity to study a newly evolving industry, associated professions, and their financial/commercial and scientific development. And he had access to the necessary and remarkable records required to perform this obviously rewarding task.

Recently, I had opportunity to review the first four chapters of this fascinating new book by Ilardi. This is a work in progress, nearing completion! Since its area of interest is so different from the sorts of material we often consider, and it was so close to our interests, I felt it would be of value to call attention of the reader-audience of Hindsight to this impending master-work! This is a scholarly text, filled with endless original citations, quotes, and translations from a variety of languages. It is filled with data on the early development of spectacles and covers a time period extending centuries, but it is particularly rich when covering the latter part of the 15th Century. The main focus is Florence, the effective center for arts and trade during the remarkable period of time known as the Renaissance.

Ilardi convincingly shows that early Venetian artisans produced fine glass, but the Florentines produced and shipped the finest or among the finest spectacles of the era. These artisans catered to all classes, from the rich and powerful to everyman. He has uncovered and studied, in detail, remarkable Florentine commercial records of all sorts. He carefully documents the costs of production of spectacles, sources of materials employed in their production, their shipment, taxes, duties, and shipping costs, both domestic and foreign, from translated orders, shipping documents, receipts, ledgers, ect. And much more. His findings lead to a variety of conclusions about early spectacle development. From comments already made, it is apparent that lenses and frames of apparent acceptable quality, from rather early times, could be manufactured both in volume and cheaply, varying mainly in materials used for the lenses and frames. Do not forget this was the era of the printing press and available reading materials, and a time of rising expectations. The finest spectacles were products of the goldsmith's art and employed rock crystal and other crystal lenses. At the lower end were frames made of bone and wood – some leather, and glass lenses. There was apparently no spectacle makers guild, rather the workers in this group could be found among a variety of the different guilds (goldsmiths, bone workers, mercers = tradesmen, etc.). The spectacle-worker guilds in this field came apparently rather late. And there was added production at local monasteries.

Associated with these incredible analyses are to be found a number of inferred clinical jewels! Examples are:

1. In the mid-15th Century, a good description is provided defining the early system for grading powers of spectacles. A critical document located by Ilardi noted that by age 60, the equivalent lens correction was ca. +3.00 D.S. in modern units. The scheme for plus lenses was categorized by age, in 5 year steps! At early presbyopic ages, weaker plus lenses were specified.

Clearly, this was an important feature making possible orderly broad distribution of spectacles. That is, a scheme was needed to specify effective power of pairs of spectacle lenses. Orders of hundreds, even thousands of spectacles had to be organized or graded.

2. Finding 1 implies that there existed an early understanding of effects of loss of accommodation (not so stated, but implied). Since the system of grading was an orderly one defined by age, there had to be recognition that there was need for stronger visual corrections with increasing presbyopia. No doubt this was a pragmatic deduction.

Since a common system was used by the lens-makers, this also suggests a degree of organization among spectacle producers, and their purveyors. Thus, by inference, some degree of understanding of presbyopia had emerged. This is much earlier than any accounts of accommodation, amplitudes of accommodation, presbyopia and aging known to the writer.

3. Perhaps most interesting, by the mid 1400s there was apparently at least modest use of concave lenses for early correction of myopia in young people. This *occurred well before* we commonly thought these visual corrections were discovered and in place(!), and these lenses were available in two different powers – they were designated clearly as lenses for the young! Ilardi leads us through a careful argument to indicate that this was indeed the way myopic corrections were designated and that concave lenses were available. Neither the term myopia, nor near-sighted vision entered into the discussion. However, there was clear realization of the problem and an approach towards its correction!

There is much more, and therefore, I feel this new book by Vincent Ilardi is an especially valuable study directly related to the origins of optometry. In a way, it is a breadth of fresh air in the history of optometry (and ophthalmic history in general). The book will be of special interest to members of OHS. The above discussion only touches on the contents of this scholarly work. Watch for it!

I received the following e-mail on March 12 about Vince Ilardi's emerging book!

"Dear Jay,

Thanks for your kind reply and the nice things you said about my forthcoming book. Coming from a former Dean of a distinguished School of Optometry, your comments have added meaning. I did not know that you had received permission from Mary McDonald, Editor at APS, to publish your review. I suppose she feels that your generous comments will serve to publicize the book among experts in the field.

Please allow me to suggest a couple of changes in your text. I am not an "economic historian", only a historian of Renaissance diplomacy. I found the first crucial documents – - the nearly prescription lenses, graded in five-year intervals, in diplomatic correspondence, which I showed to Rosen, who encouraged me to publish them. Following the first publication, I found other documents in diplomatic correspondence and private letters, and other documents were sent to me by friends and my life and research interests changed for a while. Subsequently I was able to interest leading economic historians to look for mention of spectacles in account books of the age, especially in Florence, because of its unique collections of such sources. (For Venice

and other places we simply don't have the documents; I am confident that Venice, Holland, Germany and other places produced spectacles in quantity and also quality, but we cannot prove it - - we can only surmise). These economic historians, who had previously not noticed entries about spectacles in ledgers largely because they were cheap and did not involve large sums, now found them and sent me dozens and dozens of them, and the latest arrived about a month ago from Florence again! They joke with me that I have unpaid research assistance all over Europe! In other words, Jay, this has been a cooperative enterprise without which it would have been a very different book. And we all have learned in the process particularly in discovering a separate industry in Renaissance Florence is totally unknown to economic historians. It has been a fascinating story of generous scholarly collaboration seldom equaled in the annals of scholarship. And I don't mind your saying this in your piece, if you wish. In fact, I believe that the topic is too big and the sources are so scattered in all sorts of unlikely places to be handled by one person, especially one that will be 79 years old in May!

Once again, many thanks and say hello to your bride. Ciao, Vincent"

J.M.E.

Lectures on the History of Optometry:

Each Fall Semester for the last few years, I have given a two hour set of lectures on the history of optometry to first year optometry students. Like most people of their age, they are not very interested in history. As an approach to try to maintain their attention, I have presented the material as answers to a series of questions about optometric history.

The lecture notes that I make available to the students via the internet are given below. I would appreciate hearing from any OHS members who have any recommendations for improvement in the material or who recognize any inaccuracies or significant omissions or who may have differing interpretations of the historical events. The notes are not presented in a polished narrative form, but rather in a form convenient for lecture presentation.

History of Optometry
David A. Goss, O.D., Ph.D.
Lecture Notes
Lectures in V578, Public Health Policy and the Optometric Profession
Indiana University

Why should optometrists know about their history?
a. Optometry is, and always has been, a unique and important profession.
b. Optometry has a lot to be proud of.
c. We should learn from the past. Those who don't know history will repeat past mistakes.

d. We should have respect for those who have contributed to our profession.

1. What are the origins of optometric science?

a. Optics
There is evidence that lenses for decoration existed a few thousand years BC.

The ancient Greek author Aristophanes wrote in 434 BC about a burning glass.

The Greek mathematician Euclid in about 280 BC wrote about light traveling in straight lines and the equality of the angles of incidence and reflection. He also talked about the concept of the visual cone which is the equivalent of our concept of visual angle today.

Claudius Ptolemy in about 150 AD measured angles of incidence and reflection from air to water but did not discover the exact mathematical relation.

Johannes Kepler (1571-1630) - In Kepler's 1611 book "Dioptrics" there are descriptions of the mathematics of lenses, prisms, and mirrors. Kepler presented many of the concepts taught today in geometric optics.

Sir Isaac Newton showed how white light could be split into component colors and then recombined into white light.

Snell discovered the law of refraction in 1621. Snell died at 35 years of age, and his contribution was not widely recognized until after his death.

Inventor of the term diopter - Monoyer, 1872.

b. Image formation by the eye
Empedocles (c. 450 BC) - extromission theory, visual ray.

Leucippus, Democritus (5^{th} century BC) - intromission theory, eidola.

Aristotle (4^{th} century BC) - mediumistic theory

Alhazen (965-c.1041 AD) - proved intromission

Johannes Kepler - first accurate description of image formation on the retina

Thomas Young (1773-1829) - first to measure astigmatism (1801)

George Biddell Airy - English astronomer credited with being the first to design and wear a spherocylindrical lens to correct astigmatism (published 1827). An optician named Fuller made the lenses. At about the same time the McAllister family of opticians in Philadelphia made a cylinder lens for a Rev. Goodrich. Goodrich had

previously obtained minus lenses, but as he explained in a letter to the McAllisters, vertical lines appeared clearer without his glasses and horizontal lines appeared clearer with his glasses. Based on their correspondence with Goodrich, the McAllisters made a planoconcave cylindrical lens which Goodrich started wearing in May of 1828.

c. Sensory physiology

Visual illusions were discussed by the ancient Greeks.

Christoph Scheiner (1611) described several observations about the eye, including the size of images reflected from the cornea. His double aperture principle is used in most present-day autorefractors.

The mathematician Aguillon published one of the first significant analyses of binocular vision in 1613.

William Porterfield made an optometer in the mid 1700s and noted the existence of a relationship of accommodation and convergence.

Thomas Young - trichromatic theory of color vision and crystalline lens as source of accommodation

Johannes Purkinje, Czech physiologist, published books on sensory physiology in 1823 and 1826. His name is attached to many phenomena - Purkinje images, Purkinje tree, etc.

Charles Wheatstone invented the mirror stereoscope and in 1838 used it to experiment on binocular vision and stereopsis.

Hermann von Helmholtz (1821-1894), physiologist and physicist, wrote "Handbook of Physiological Optics."

According to Hofstetter, the background sciences for early optometry were stronger than for any other profession.

Optometry has incorporated knowledge of optics, mathematics, psychology, and other sciences. And optometry has developed its own literature in clinical practice and vision science. Optometry has been the leader in investigations on clinical lens application, non-strabismic binocular vision problems, contact lenses, low vision, role of vision in learning, etc.

2. When were the first spectacles made?

The exact origin and inventor of spectacles are unknown.

Roger Bacon in the middle 13th century talked about placing a planoconvex lens on text for magnification.

Spectacles probably originated in the late 13th century in Italy. In a manuscript from 1305 AD, a monk from Pisa named Rivalto wrote, "It is not yet 20 years since there was discovered the art of making eyeglasses."

Most likely, the first person to make spectacles was an unknown artisan, who tried to keep his methods secret to avoid economic competition. By 1300 AD, there were spectacle manufacturing businesses in Italy, Germany, and the Netherlands. Some of the first spectacle frames were made from leather and wood.

3. When did optometry begin?

It is often stated that optometry began about 100 years ago when the first optometry licensure laws were passed in the US. But this is incorrect. Optometry was being practiced for centuries before that, even though the persons providing spectacles did not call themselves optometrists at the time.

Another extreme viewpoint - Chester Pheiffer suggested that optometry began with the pronouncement "Let there be light." (Genesis 1:3)

A reasonable time of origin for optometry is when spectacles appeared. Conventional wisdoms for use of spectacles developed after the advent of spectacles.

4. When were the first optometry books published?

In 1623 Benito Daza de Valdes published a book which covered optics, ocular anatomy, and the use and fitting of spectacles. He included a system of lens grades for lens power, and he presented a table of lens grades according to age in presbyopia. He suggested that minus lenses for myopia should not be so powerful as to cause perceived reduction in image size. Daza de Valdes also included case reports.

William Molyneux published an optometry book in Ireland in 1692. He suggested using the weakest lens that solves the problem and he discussed the occasional nearpoint problems of myopes when they get new glasses.

5. How is optometry different from medicine?

a. legally
Legal cases in the first half of the 20th century ruled that optometry was separate from medicine.

b. origins
Their origins differ both in the sciences from which they developed and in the shift of tradesmen into the professions.

scientific origins: optometry – optical sciences; medicine – biological sciences

tradesmen who entered the respective professions: optometry – jewelers (they had the tools to work on spectacles); medicine – barbers (they had the equipment with which early surgeries could be done)

c. areas of primary expertise
optometry – optics, refraction, vision science, non-strabismic binocular vision and accommodative problems
medicine – surgery, anatomy and physiology, pharmacology, disease

The difference between optometry and medicine today is not as distinct as it once was. Until the late 19th century and early 20th century medicine was largely opposed to the use of spectacles. This allowed optometry to develop to fill the need of the public for the prescription of spectacles. One important factor leading to ophthalmologists getting interested in refraction and spectacles was the publication of the book "On the Anomalies of Accommodation and Refraction of the Eye," by Dutch ophthalmologist F. C. Donders in 1864. Ophthalmologists have continued to increase their interest in refraction and there are more ophthalmology offices today with spectacle dispensaries than previously. In the 1970s, the scope of optometry expanded to include the traditionally medical areas of eye disease diagnosis and treatment.

6. How did optometry develop in the United States?

It is said that Peter Brown, a Pilgrim, brought a pair of eyeglasses to North America in 1620 and thus became the first to wear glasses on this continent. There is little known about the use of spectacles in North America for more than another hundred years. During this period of time spectacles were obtained ready made from Europe. Spectacles were uncommon and expensive.

The year 1783, when John McAllister, Sr., a Philadelphia whip and cane maker, purchased a number of spectacles, is often considered the beginning of the American optical industry. Soon he was making spectacles. In 1811, his son, John McAllister, Jr., joined him in business. The McAllister family of opticians continued in business until the early 1900s.

Because there were few places to get glasses, there was no demand for vision testing. So spectaclemakers became the first refractionists. The McAllister family taught refraction and the optical business to many people, notable among them James W. Queen, who started his own business in 1853.

Other notable early American optometrists were Benjamin Pike, who came to the US in the early 1800s, and James Prentice, who came to the US in 1847. They both were trained in optics in England, and they both trained their sons. James' son, Charles Prentice, would have an important role in the development of American optometry.

Gradually two types of persons providing spectacles could be discerned: dispensing opticians and refracting opticians. The refracting opticians were essentially optometrists, because they were doing vision testing and writing lens prescriptions.

7. When were the first American optometry licensure laws passed?

The first attempt was in 1897 in New York. This effort was a consequence of threats to Charles Prentice from ophthalmologists for charging a fee for a vision examination. The first law was passed in 1901 in Minnesota. All states and the District of Columbia had optometry licensure laws by 1924.

In comparison, the first medical licensure law in the US was passed in the late 1700s, but it was 1895 before almost every state had its own medical licensure board. The first state dental licensure law was passed in 1868 and all states had dental licensure laws by 1900.

Licensure is a sign of professionalization.

8. What were optometrists called before they were called optometrists?

First use of the term optometrist is thought to have been by Landolt in 1886 to describe the fitting of glasses. The term became popular in the first two decades of the 20th century. Before then optometrists were usually referred to as opticians.

In the 19th century there came to be a distinction between refracting opticians and dispensing opticians. Refracting opticians became known as optometrists.

9. When was the American Optometric Association formed?

It was formed in 1898 as the American Association of Opticians. In 1910, the name was changed to the American Optical Association. By this time, many of its members called themselves optometrists. In 1919, the name was changed to the American Optometric Association.

10. When did the existing US optometry schools start?

Private schools:
- Illinois College of Optometry traces it roots to 1872 (some of its predecessor schools were Northern Illinois College of Ophthalmology and Otology, Needles Institute, Northern Illinois College of Optometry, Monroe College of Optometry, Chicago College of Optometry)
- New England College of Optometry traces its roots to 1894 as the Klein School of Optics (NEWENCO was at one time known as Massachusetts College of Optometry)
- Southern California College of Optometry started in 1904 as the Los Angeles Medical School of Ophthalmology and later was known as the Los Angeles College of Optometry

•Pennsylvania College of Optometry, 1919
•Southern College of Optometry, 1932

University schools:
•Ohio State University, 1914
•University of California Berkeley, 1923
•Pacific University, 1945 (originally North Pacific College of Optometry, a private school founded in 1921)
•Indiana University, 1951 (pre-optometry started in 1951; first professional optometry class started in 1953)
•University of Houston, 1952
•University of Alabama Birmingham, 1969
•State University of New York, 1970
•Ferris State University (Michigan), 1974
•Northeastern State University (Oklahoma), 1979
•University of Missouri St. Louis, 1980
•Inter American University of Puerto Rico, 1981
•Nova Southeastern University (Florida), 1989

The first university optometry school was at Columbia University. It opened in 1910 and closed in 1954.

11. How did the use of the Doctor of Optometry (OD) degree develop?

Various doctor titles were awarded even before 1900. The Philadelphia Optical College may have been the first to give a doctor's degree to optometry graduates when it awarded the Doctor of Optics degree in 1889. Before about 1920, optometrists generally resisted using the term doctor, but this attitude gradually changed through the 1930s and 1940s.

In 1950, all ten of the optometry schools in existence at the time required five years of study past high school. The private schools all offered the OD degree. Ohio State, University of California Berkeley and Indiana did not offer the OD degree until switching to a six year pre-optometry and optometry curriculum. IU graduated its first OD class in 1968 and Berkeley graduated its first OD class in 1970.

12. What were the original stimuli for optometry to start studying ocular disease, and when were the first optometry diagnostic and therapeutic pharmaceutical agent laws passed?

Original stimuli for optometry to move into the area of ocular disease:
a. interest of some optometrists
b. Optometrists were distributed more evenly across the country and were the only eye/vision practitioner in many rural areas and small towns. Optometrists had to refer eye disease cases to either the local general practice physician or to an ophthalmologist that may have been many miles away. Optometrists had more knowledge f the eye and

had better instruments to view the eye (e.g., slit lamp biomicroscope) than the local GP MDs, so it was good for rural or small town patients to be treated for minor eye disease by the local optometrist than by the local GP MD
c. criticism by ophthalmologists - ophthalmologists criticized optometrists for being poorly trained in eye disease

first DPA law – Rhode Island, 1971
first TPA law – West Virginia, 1976

Despite this change, practices of IU alumni average only about 7% of their income from the treatment of eye diseases – see Goss DA, Grosvenor T. Summary of optometry alumni survey. Indiana Journal of Optometry 1998;1(2):26-28.

13. What were oculists and what lesson does the history of oculists and ophthalmologists provide for optometry today?

Oculists were eye care physicians who did not have residency training in ophthalmology.

Optometrists knew more about refraction and prescription of lenses.
Ophthalmologists knew more about eye surgery and eye disease.
So as residency training in ophthalmology became more common, oculists were no longer needed.

Ophthalmologists were not greatly interested in refraction and eyestrain until the late 19th century and early 20th century.

Thomas Hall Shastid quotation in Borish article, Indiana Journal of Optometry, Fall, 2001, p. 24:

"The M.D.s generally would not recognize even the existence of such a thing as eyestrain....If there was any worse quackery than this of the regular medical profession, I do not know what it was. Yet they called "quacks" those of us who fitted glasses to the eyes of the young....There were certain traveling "spec-peddlers" who went from house to house fitting glasses and unskillful though they were, relieving many of the simpler cases of eyestrain headache...Such men, speaking generally, excited extreme contempt and bitterness on the part of the "regular" profession, feelings which grew the more the "spec-peddlers" best these scientific M.D.s at the treatment of eyestrain and its numerous results....Hardly anything that now I can recall served so much to weaken the standing and influence of physicians in any community than this absurd, ridiculous, hard-headed, stubborn...opposition to the fitting of glasses."

Along with the "spec-peddlers" that Shastid refers to, persons who provided people in need with spectacles included respectable and professional optometrists, but in the minds of many physicians, the optometrists weren't much better than the spec-peddlers.

As American ophthalmologists started realizing the importance of spectacles, they learned the methods of refraction from optometrists - quotation on pages 136-137 of Hirsch and Wick (The Optometric Profession) discusses how the McAllisters taught oculists how to do refractions.

The emphasis on good refraction techniques by optometrists and the precedence of optometrists in refraction has resulted in our pre-eminence in this area to the present day.

Lesson for today: Every profession justifies its existence (in part) by being better at something than any other profession (a niche). We need to maintain our strength in the treatment of refractive problems and eyestrain.

14. What are some major optometric organizations and when did they begin?

a. American Optometric Association mentioned earlier

b. American Academy of Optometry - organized in 1922, serves to promote professionalism and high standards of patient care and to disseminate information through its journal, Optometry and Vision Science (previously known as American Journal of Optometry and Archives of the American Academy of Optometry and then later as the American Journal of Optometry and Physiological Optics)

offers Fellowship status (FAAO) in general optometry and diplomate status in optometric specialties

c. Optometric Extension program traces its roots to a plan developed by the Oklahoma Optometric Association in 1928 for membership education.

It quickly became a nationwide organization. It developed a standardized system of testing with numbered tests that helped promote standardization of testing that was badly needed at the time.

Today OEP emphasizes what is often referred to as behavioral optometry.

d. College of Optometrists in Vision Development developed in the early 1970s (see Wold history article in J Optom Vis Dev for details) by merger of three small organizations. This is an organization of optometrists who practice vision therapy.

They offer a certification program. Optometrists who complete it are Fellows of the College of Optometrists in Vision Development (FCOVD).

15. When and how did the optometry program at Indiana University begin?

Discussions began in the 1930s.

The person who had the most to do with developing the idea of an optometry school at IU and with leading the effort to convince the appropriate people for the need of the school was John P. Davey, an Indianapolis optometrist.

John Davey (1893-1954)
originally trained as a lawyer later went to optometry school
secretary of Indiana Board of Optometry for many years
promoted high standards - the Board failed many applicants from proprietary schools
Davey discussed the possibility of a new school with Indiana optometrist Noah Bixler and on fishing trips with Wilbur Pell, Sr. (lawyer for optometry state board) and Paul Harmon (physiology prof at IU)

Irvin Borish, who had been a professor and administrator at Northern Illinois College of Optometry, entered practice in Kokomo in 1944; Davey and Bixler asked him to work with them to start negotiations to start the school

Harmon arranged for Davey, Bixler, Borish to meet with Herman Wells (IU president); Wells met with them and asked them to come back as official representatives of the Indiana Association of Optometrists (IAO).

Initially there was resistance from some members of IAO, especially those with ties to William Needles, owner of the Northern Illinois College of Optometry. A speech by Ed Cain, 1945 president of the IAO, at the1945 IAO meeting led to support of almost all optometrists in the state. In 1945, the IAO formed the School Committee charged with founding the optometry school. Membership on the committee from 1945 to 1951 included John Davey (Chairman), Noah Bixler, Irv Borish, Loyd Wedeking, Galen Kintner, E. C. Doering, Kenneth Kintner, Robert Tubesing, and C. Earl Fisher.

Davey et al. returned to talk to Wells as official committee of IAO in 1945; Wells appointed Herman Briscoe, Dean of Faculties at IU, to handle working with the IAO concerning the school and to learn more about the requirements and implications of having an optometry school at IU.

In 1947, there was an attempt to pass a law to dedicate a portion of licensure fees to optometry school, but the bill failed.

In 1947, Briscoe presented a plan for an optometry school at IU to the IU Board of Trustees and the Trustees approved it. But later, due to medical school opposition, the Trustees rescinded their motion.

Indiana optometrists tried unsuccessfully for many months to convince ophthalmologists at IU School of Medicine of the importance of an optometry school.

Briscoe told the Indiana Optometric Association (IOA) school committee that they may have to go to the state legislature. They immediately tried in the 1949 session but the bill was held up in committee and the session ended without the bill being voted upon.

The next legislative session was 1951. The Indiana optometrists organized a huge effort to contact all legislators that they knew personally and tell them about the importance of having an optometry school at IU. Along with Davey and the School Committee, Virgil McCleary (IOA president in 1951) and other Indiana optometrists played an important role in organizing the legislative effort. The bill to start the school passed the state House of Representatives unanimously (92-0) and passed by overwhelming margin (39-3) in the state Senate.

Pre-optometry classes started at IU in 1951.

Briscoe hired Henry Hofstetter to be the first Director of the optometry program. Hofstetter started in 1952, and worked for a year drawing up curriculum, hiring faculty, ordering equipment, and making other arrangements.

The first optometry class at Indiana University entered in the fall of 1953.

For more on the history of the founding and early years of the optometry school at Indiana University, see: Goss DA. History of the Indiana University Division of Optometry. Indiana Journal of Optometry 2003; 6(2):27-74.

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D.A.G.

The origins of glass:

An overview of the origins of glass was published in the Spring, 2003 issue of Points du Vue (issue number 48, pages 42-49) by Maurice Hamon of Saint-Gobain, France. The author notes that knowledge of the early production of glass is based on archeological work rather than written descriptions, although the precise time and place of its first creation are not known. Important developments included glass blowing, decoloration, and production of flat glass. The author also briefly discusses production of glass for scientific instruments and in various industries. Eight references are listed.

D.A.G.

California Optometry history continued:

We are again fortunate to have permission to reprint an installment from the California Optometry series on the history of optometry in California. This is the fourth part of their series. It was published in the January-February, 2004, issue of California Optometry. The article starts on the following page.

Optometry's Screaming Eagles, Part 4

Vision Service Plan

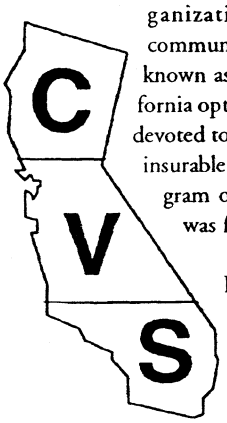
LAWRENCE THAL, OD, FAAO – PRESIDENT, CALIFORNIA OPTOMETRIC ASSOCIATION

On a warm summer day, Dr. Ren Anelle stopped along side the road to quench his thirst with cool lemonade. As he parked his car, he noticed the van next to him displayed a bumper sticker, "Screaming Eagles." Under an umbrella sat an elderly gentleman also with lemonade. "Were you a Screaming Eagle?" Ren asked. "Yes I was," he replied somewhat perplexed, "How did you know?" "I saw your bumper sticker and I just want to say thank you!" Tears came to the eyes of this old man. No one had ever thanked him before; much less someone who could only have been an infant during World War II. The 101st Airborne Division, the Screaming Eagles, teamed up with the 82nd Airborne Division and the British in Normandy and Holland. It was at Bastogne that the 101st heroically staved off cold, hunger and the German Army during the Battle of the Bulge. Corregidor, Leyte, Anzio, Salerno and Bastogne, once strange sounding names, are remembered today for World War II newscasts which told of the courage and the sacrifices of airborne troops on those distant battlefields. Men like Generals Matthew Ridgway, Maxwell Taylor, "Slim Jim" Gavin and Tony McAuliffe, who uttered the now-famous "Nuts" to the Germans at Bastogne - are but a few of the great airborne leaders whose names are indelibly inscribed on the rolls of these elite units.

Optometry has its own elite units with many unsung heroes, many of whom haven't heard the words Ren said this warm, summer day, "Thank you!" Many of optometry's battlefields also seem quite distant, but these leaders of the past and their accomplishments need not be forgotten – their names will be indelibly inscribed on the rolls of optometry's elite units.

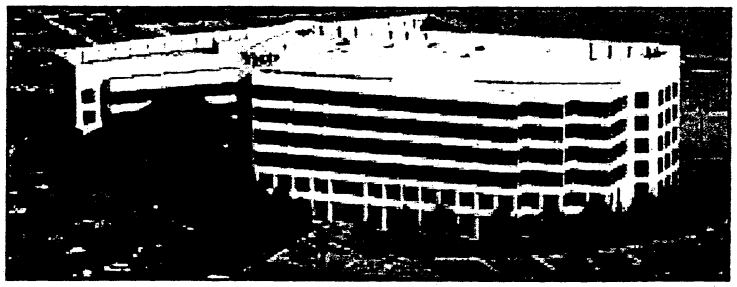
This is the fourth part of the series, "Optometry's Screaming Eagles." It chronicles the founding of Vision Service Plan. Other parts have chronicled the founding of our two schools of optometry in California and, of course, the California Optometric Association. The fifth and final part will cover the founding of Vision West, Inc.

The fourth group of our Screaming Eagles are Roy Brandreth, Lester Foumess, Harold McCartor, Henry Peters, Richard Peters, Marvin Poston, Stanley Poulsen, Bernhardt Thal and Nathaniel West. These nine individuals, in September 1955, filed the Articles of Incorporation for California Vision Services (CVS), a not-for-profit organization designed to increase the community's access to quality eyecare, now known as Vision Service Plan. These California optometrists were the first to become devoted to the principle that vision care was insurable, and that a prepaid vision care program offered by professional optometry was feasible and viable.



The original idea was conceived by Henry Peters and Bernhardt Thal. Pre-payment of health care services was not an original thought. Blue Cross and Blue Shield were already well entrenched, but they refused to include vision care. In 1952, Hank Peters and Bernhardt (Buzz) Thal began meeting regularly. As Hank often said, "If a prepaid vision care program can be spawned that works, they'll damned well include it!"

The year was 1954. Optometrists throughout the state were being urged to give financial support to the newly formed Joint Council on Vision Care. There were well known and respected optometrists behind this program. No one could doubt the motivation behind its origins. It included past presidents of the COA and the splinter association, the National Association of Optometrists. It included knowledgeable practitioners looking for a better way to sell optometry to the public. Early leaders in the program included Louis Jacques, Sr., D. LeRoy Leatart and David Kraus, among others. The program obtained the services of Glenn MacKinnon, whose background was with unions representing the theatrical and movie business. The selling point was that if a group signed with the Joint Council on Vision Care, services would be provided to their members at a given maximum cost. The presentation did not



Aerial view of the Vision Service Plan Headquarters in Rancho Cordova, California.

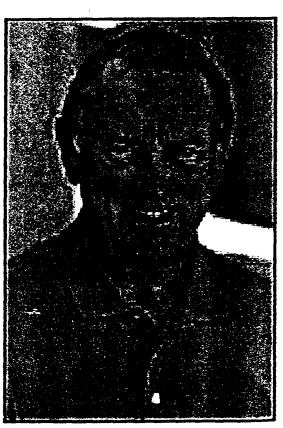
emphasize a "discount" on fees, but a maximum, which was thought to be more palatable to practitioners.

At about this same time, two energetic representatives of Bausch and Lomb Optical Company acquired the B & L prescription laboratory in Oakland. In order to increase the number of prescription units going through their laboratory, they devised a plan, which was first known as the Dodd-Haldren Vision Plan. The essentials of this plan were that all doctors doing business with this lab were eligible to participate, that there was a discount on professional services for any member of a group that signed with Dodd-Haldren, that there would be no registration or membership fees for the group, and that all prescriptions would be fabricated in the Dodd-Haldren laboratory. While the doctors were to discount their fees, the laboratory did not. When the Dodd-Haldren laboratory eventually failed, Mann Optical Company of Oakland picked up this program. Here, the program underwent a major change as Mann Optical management realized that greater optometric participation was needed, so they organized a professional board of directors.

Remember that Hank Peters and Buzz Thal had begun meeting two years earlier and had convinced the leadership of the Alameda and Contra Costa Counties Optometric Society (ACCCOS) of the need for both a public relations program and a group vision care program to further optometry's interests. To meet these needs, the ACCCOS established Community Vision Services for public relations and a committee to investigate the possibility of prepaid vision care programs. Under the direction of the ACCCOS president, Richard Peters, investigation tasks were split between these two committees. Roy Brandreth, an Oakland optometrist, chaired one committee. The other phase of the study was under the already existing Industrial Vision Committee, chaired by Bernhardt Thal of Berkeley. One committee evolved from these two, the Prepaid Vision Care Committee. This committee consisted of Buzz Thal as chairman, and Roy Brandreth, Richard Peters, Henry Peters, Marvin Poston (all of Oakland), Harold McCartor (Hayward) and Nathaniel West (Berkeley). A consultant to the committee was Philip Breck.

Numerous meetings were held with leaders within labor and management, as well as with those in the insurance industry. Labor and management indicated interest, but offered no real encouragement. Both sides felt that after medical plans were instituted in all programs, increases in pension plans were needed, and that these increases or increased medical benefits (even perhaps, dental coverage) were of higher priority than would be a vision care plan. "Those that need eye care can get it on their own" was a prevalent attitude. Insurance company representatives felt that eye care and glasses were neither insurable nor actuarially predictable. Not discouraged, the committee made contact with the University of California Institute of Industrial Relations. Here, they found some encouragement and through the efforts of Hank Peters, valuable contacts were made. Buzz Thal resolicitted local industrial leaders and came back with assurances that once something formal was ready to present, they would certainly study the plan and consider its adoption.

Within weeks, Buzz Thal had three local manufacturing plants on Industrial Vision Programs that covered, for the first time, more than the dispensing of only safety eyewear. One such plant, Tinsley Laboratories, had a safety-dress eyewear program. Tinsley Laboratories paid for refractions and either safety or dress eyewear. If the patient required safety glasses for the job, that is what Tinsley paid for, and the individual would have to pay for dress eyewear, but not the examination or refraction. While Dr. Thal had been discussing a prepaid program for Tinsley (as precision optical manufacturers of spotting scopes, TV lenses, astronomical telescopes and mirrors, they had almost eighty percent of employees wearing ophthalmic devices), they ultimately opted for the "pay as you go" plan. Soon, they signed contracts in Fresno, Monterey, Santa Rosa and other communities which made a two county program (Alameda and Contra Costa) no longer feasible; thus, a change in status to a 9201 Corporation and involvement by the California Optometric Association by resolution of the House of Delegates in February 1957 in supporting a statewide panel. George Rice was hired as CVS's first executive director and COA began loaning CVS $20,000 per year for a maximum of three years. Additional financing came from a fifteen percent withholding on professional fees due doctors.



John Anthony O' Donnel, pictured here, named CEO of Calironia Vision Services (today, VSP) in April of 1967

The first multi-state contract was signed in April 1958 with the Masters, Mates and Pilots Local 90. Claims were paid in the port cities of Boston, New York, Philadelphia, New Orleans, Galveston, Portland and Seattle. In 1960, George Rice resigned as executive director due to cancer and CVS hired his replacement, Charles Garoni. In September 1958, ownership was of-

fered to the American Optometric Association; however, other states were not yet convinced of a need for a CVS-type organization, and the offer was declined.

By 1967, it became apparent that the growth of prepaid vision care would soon overwhelm the abilities of the original founders who, at the same time, had full time optometric practices. The COA Board appointed a special committee to oversee an evaluation of the prepaid vision care concept. The committee, chaired by Charles Brown, included Buzz Thal and Len Osias. The committee hired an independent consultant and a report followed. The most significantrecommendation was to hire a full time CEO. This resulted in Buzz Thal chaired the search committee that resulted in Dr. Harry Levin, then president of CVS, hiring John Anthony O'Donnel as CEO in April 1967 and California Vision Services never stopped growing. John immediately signed the California Teachers' Association. The company changed its name from CVS to Vision Service Plan (VSP) to reflect an expansion towards a national network. By the mid-1980s, regional offices were opened in New York City, Atlanta, Washington D.C., St. Louis, Seattle, Indianapolis and Dallas. In 1986, the California Optometric Association, which owned the only share of stock in the company, totally relinquished its ownership and control. The company has taken a joyous ride through the decades. VSP has grown from a small, prepaid vision care company in California, serving school districts, labor and management trust funds, to an organization that provides eyecare services to one in ten employees in America. Today, Vision Service Plan is a billion-dollar business.

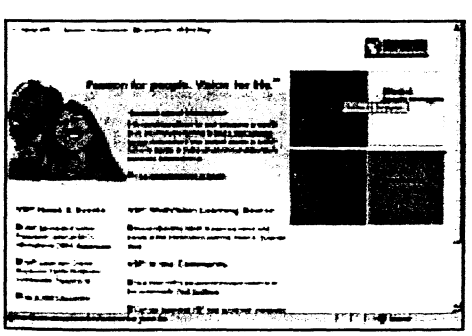
During the first four years that CVS was in existence, its founding president never had a CVS patient. Finally, the ice was broken and an appointment made. It was for a dependent son of an HOD carrier who came in with his mother.

With great amusement, Dr. Thal remembers what a huge mistake was made when that appointment was scheduled; it turned out that the mother's expectations were that her son was to have a circumcision at that visit.

When asked about his recollections from those early years. Dr. Thal said, "During the early days of formation and planning, the small group of us met so frequently that we half expected to find door locks at our homes changed. Instead, we found understanding spouses who were able to feed a group of seven or eight breakfast, lunch or dinner at odd hours. The support that we received from our families carried right over to the doctors in our optometric society. They ponied up money to finance the project initially and continued to pay monthly dues, even though there was no program, only a paper organization. I would judge that seventy percent of the doctors in the Alameda and Contra Costa Counties Optometric Society supported this vision."

Roger Valine, current president & chief executive officer of Vision Service Plan

The company, now known as VSP, started small and struggled in the early years as it set the stage for high quality group vision services. The company struggled with paying claims at times and often withheld payment to optometrists, because there was no money in the claims account. As a testament to the management, employees and mission of the organization, California optometrists supported the company in the early days. They saw the potential which continues to unfold as VSP embarks on the new millennium with a new identity, an embrace of technology and a crystal clear desire to provide the best vision services anywhere in the world.



www.vsp.com keeps Vison Service Plan (VSP) in touch with today's increasing online community

History of Optometry in the U.S. Army:

A twenty-five-page document covering the history of optometry in the United States Army is available on the internet at http://history.amedd.army.mil/ameddcorp/medicalservicecorps/optometryginn.htm. The author is Richard V.N. Ginn, COL, USA, Ret. He is listed as being in the Office of Medical History, Office of the Surgeon General, Department of the Army. The document is dated March 31, 2003. It is an expanded version of three pages devoted to the topic in his 536-page book entitled "The History of the U.S. Army Medical Service Corps."

Prior to World War I, the Army did not provide soldiers with spectacles. In World War I, there was no provision for optometrists to serve in the Army professionally, but it was possible for them to enlist as medical officers and hope their hospital commanding officer would take advantage of their expertise. In World War II, optometrists were recognized professionally, but were frustrated by the fact that they were not commissioned officers.

In 1947, Congress passed a law establishing the Army Medical Service Corps (MSC), with Optometry as one of its four sections, along with Pharmacy, Supply, and Administration; Medical Allied Sciences; and Sanitary Engineering. In September, 1947, Captain John W. Sheridan, who had been an Army Ordnance officer during World War II, became the first optometrist commissioned in the Medical Service Corps. However, enlisted optometrists continued to be used until 1957. In 1968, the Army started placing optometrists in combat divisions, and at one point there were 28 optometrists in Vietnam.

This history continues through the post-cold war period. The author notes that "the development of optometry as a recognized profession and a component of the Army Medical Service Corps was an evolutionary process that began during World War I, and continued throughout the twentieth century in war and peace. Time and again, the United States found that the support of soldiers in combat necessitated a medical team that included officers skilled in administrative and scientific specialties, such as optometry, that were not incorporated within the professional purview of physicians, dentists, nurses and veterinarians. The emergence of those specialties and their eventual amalgamation into the MSC as members of a permanent organization was evidence of that need. The optometry story, as was the case for other specialties, was not a straight line development, but rather an up and down saga of gains and losses as an emerging profession eventually gained recognition and acceptance." The document includes nine pages of reference notes.

D.A.G.

The vision of Degas:

"The late vision of Degas" is the title of an article in the Spring, 2002 issue of Points du Vue (issue number 46, pages 36-44) by Michael Marmor, Professor of Ophthalmology at Stanford University Medical Center. The author examines the likely levels of visual acuity loss of painter Edgar Degas (1834-1917), and how it may have affected his painting and his own perception of his work. Degas had poor vision with his right eye throughout much of his life. His vision in his left eye started declining in his later years. The cause of his visual difficulties is unknown, but Marmor speculates that it was "probably some type of maculopathy." Marmor estimated Degas' visual acuity at various stages by studying correspondence mentioning Degas' visual problems, the changes in his handwriting over time, and the spacing of shading lines in his paintings. The author also did a computer simulation of how a person with 20/200 visual acuity would see one of Degas' late paintings, as an illustration of how Degas may have seen his own work at that time. Marmor is co-editor of the book "The Eye of the Artist" (1997) and is the author of the recently published book "Degas Through his own Eyes."

D.A.G.

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