THE COLLEGE OF SYNTONIC OPTOMETRY

JOURNAL

OF

OPTOMETRIC PHOTOTHERAPY

MARCH 1998

PRESIDENT'S LETTER

Dear Colleagues:

As our annual conference approaches, I look back at this year and reflect on what we have accomplished and look forward to achieving goals which will help Syntonic Optometry take its rightful place within our profession and in the general field of phototherapy.

We had our mid-year meeting which was published by Dr. Luke in *The Syntonogram.* Our survey, designed by Dr. Tesler, is published in this journal, our web site is under construction, research outcomes of studies by Drs. Metter and Ingersoll are in, and we have a wonderful conference planned for you all. Relative to this year's conference are two articles from outside sources, one describing brief strobic psychotherapy from *The Sun* magazine, and an article excerpted from an upcoming OEP publication on macular degeneration, written by Sarah Cobb, which will include syntonics. Sarah is a veteran OEP author and will join our staff next year as a writer for our journal.

Unfortunately, Dr. Sam Pesner had to resign as editor of our journal. We thank him for his years of service and hope that he will rejoin us soon. I have temporarily taken on the task as editor and have included articles written outside of our field to replace the synopses that Sam usually produced. If the membership likes this idea, please forward any articles that pertain to our field to me for inclusion in future issues.

My experience this year at the International Conference for Closed Biological Circuits and Electromedicine in Minneapolis has directed me to another area of science that may further explain the underpinnings of phototherapy. That experience led me to connect to one of the pioneers in bioelectric therapy, Jim Girard, who will speak to us in Vancouver about his bioelectric light therapy.

The call, again, is in for fellowship applications. It is an important avenue to help the organization and the science of Syntonics. The protocol is included.

I look forward to seeing you all in Vancouver. Besides our wonderful educational program, chairman Dr. James Thompson has many exciting events planned that will make it a conference to remember.

Sincerely,
Larry B. Wallace, O.D., F.C.S.O.

College of Syntonic Optometry

A NONPROFIT CORPORATION DEDICATED TO RESEARCH IN PHOTORETINOLOGY,
THE THERAPEUTIC APPLICATION OF LIGHT TO THE VISUAL SYSTEM

MISSION STATEMENT

To further the Art and Science of Phototherapy in the treatment of the visual system, for the promotion of human health and potential, and this includes promoting and expanding the therapeutic use of light in clinical practice through postgraduate education and research. Furthermore, the College strives to improve the quality of life of our patients and practitioners, to create healing conditions, so that patients an attain their potential.

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CALL FOR USED EQUIPMENT

Needed: Any used equipment for the Getting Started program for new members.

Contact: Stuart Tessler, O.D.
(303) 850-9499

The 66th Annual Conference on Light and Vision of the College of Syntonic Optometry

James Thompson, O.D.
3150 Crescentview, Suite 101, N. Vancouver,
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Wednesday, May 20, 1998

10:00 AM BOARD OF TRUSTEES MEETING
8:00 PM FELLOWS EXAMINATION *(indicate on registration form)*

Thursday, May 21, 1998 THE BASIC COURSE

8:00 – 9:00 **Registration**
9:00 – 9:15 **Welcome** – Larry Wallace O.D., FCSO, CSO President
9:15 – 10:15 **History of Phototherapy**
Lecture and slide presentation covering the therapeutic application of light from ancient to present times
Brian Brieling, Ph.D. and Lee Hartley, Ed.D.
10:15 – 10:45 Theoretical Overview of Syntonics
Scientific and historic models of syntonic light therapy.
Larry Wallace O.D., FCSO, CSO President
10:45 – 11:15 **Visit Exhibits**
11:15 – 12:30 **Basic Syntonics: Diagnoses and Treatment**
Case history, symptoms, ocular motility, pupils, analytical data, fields, treatment protocols, filters, case management, goals, prognosis.
Bruce Rosenfeld, O.D., FCSO, CSO Vice President
12:30 – 1:45 **Lunch at Hotel**
1:45 – 2:45 **Case Illustrations of Syntonic Syndromes**
Specific case types and treatment plans.
Betsy J. Hancock, O.D., M.S., FCSO, CSO Librarian
2:45 – 3:30 **Visual Fields and Pupil Responses**
Background and clinical demonstration of special diagnostic testing procedures.
Ray Gottlieb, O.D,., Ph.D., FCSO, CSO Dean
3:30 – 4:00 **Practicum**
Practicing syntonic field and pupil testing procedures.
Brad Smith, O.D., FCSO, CSO Secretary
4:00 – 4:30 **Visit Exhibits**
4:30 – 5:00 **Getting Started**
Practical steps to begin practicing syntonics in your office.
Stuart Tessler, O.D., FCSO
5:00 – 6:00 *Exploring the Spectrum* – a Film by John Ott
Dinner On Your Own

Friday, May 22, 1998 THE ADVANCED COURSE

8:30 – 9:30 **Syntonics and Head Trauma**
Description on syntonic use with traumatic brain injury: general principles and case histories of diagnostic, prescriptive, progress checks and case management.
Larry Wallace O.D., FCSO, CSO President
9:30 – 10:00 **Visit Exhibits**
10:00 – 11:30 **Syntonics in a School Setting**
Report on syntonic use after one year as part of the curriculum in a school setting. Topics include phototherapy for learning readiness, overstimulated children, peripheral awareness development, binocularity stabilization, improving saccadic accuracy, widening attention, and color considerations in classroom design. – Steven Ingersoll, O.D.
11:30 – 1:00 **66th Annual Meeting – CSO Membership**
Three Tours Around Vancouver: No trip to Vancouver is complete without experiencing the breathtaking beauty of the clear blue waters and the green lush rainforests for which Vancouver is famous.
Friday Afternoon: A choice between land and sea:
Enjoy the serene beauty of a Guided Walking Tour of a rain forest – 3 hours, $15 or Ocean Kayaking on False Creek – three hours, no experience necessary, $35.
Friday Evening: Pacific Starlight Dinner Train. This one is a must! Roll into sunset along the scenic shoreline of Howe Sound all the way to beautiful Porteau Cove. Relax in restored period rail coaches so magnificent they compete with nature's trail along the way. Savor fine West Coast cuisine and enjoy elegant service. It's gourmet dining you'll never forget. – three hours. $58 / children $48

Saturday, May 23, 1998

8:30 – 10:30 **Light Assisted Psychotherapy**
Light is a potent tool for transformation. It alters the physical body and mobilizes emotions held in the body and subtle energy fields. Every cell is impacted. Learn how flashing, colored light administered via the eyes is used to quickly and gently facilitate the recovery and release of repressed emotional traumas. – Brian Breiling, Ph.D.
10:30 – 11:00 **Visit Exhibits**
11:00 – 12:30 **Aculight & Colorpuncture**
Colored light stimulation at acupuncture points effects human energy emission and healing. Learn how acupuncture light treatments are used in conjunction with visual phototherapy and Visual Integration Training. – Helge Prosak, Ph.D., L.AC.
12:30 – 2:00 **Lunch at Hotel**
2:00 – 3:30 **Vision and Chinese Medicine**
Five Element Theory in classical Chinese medicine integrates healing the body, mind and spirit. Learn how to use this knowledge to diagnose and treat individuals with various visual conditions. Recommendations will be given for specific acupressure points and herbs to be used with color and vision therapy techniques. – Mark Grossman, O.D., L.AC.
3:30 – 4:00 **Visit Exhibits**
4:00 – 5:00 **Research – Syntonics & Reading Disability**
Discussion of findings from recent research correlating changes in reading comprehension, eye movements, eso and exophoria, visual fields and EEG resulting from a series of 20 minute red and blue light treatments. – Julian Metter, Ph.D.
6:30 – 7:30 **Open Bar Cocktail Party**
7:30 – **Annual Awards Banquet**

Sunday, May 24, 1998

9:00 – 9:30 **Advanced Syntonic Filters**
Recent use of filters and filter combinations is limited compared with those used in the first decades of syntonics. This presentation will review exotic phototherapy prescriptions for a variety of visual conditions garnered from early syntonic literature. – David Luke, O.D., FCSO, CSO Treasurer
9:30 – 10:30 **The Spectra of Healing Frequencies**
Since the turn of the century, a number of electrotherapeutic, magnetotherapeutic, electromagnetic, and light therapy medical devices have emerged. Some of these devices have proven highly efficacious in certain applications. This paper will compare spectra of frequencies (from ELF to visible light) from devices from 100 years ago to present day. This paper will also address possible biochemical reactions associated with various spectra of frequencies. – Jim Girard, B.A.
10:30 – 11:00 **Break and Hotel Check Out**
11:00 – 12:00 **Recent Advances in Light & Photomedicine**
A review of electromagnetic research findings relating to the future of syntonic optometry. The session will include a question and answer period with conference presenters and CSO officers and closing remarks. – Ray Gottlieb, O.D., Ph.D., FCSO, CSO Dean & Larry Wallace, O.D., FCSO, CSO President
12:00 – Lunch on Your Own – Have a Safe Journey

A BRIEF OVERVIEW OF LAST YEAR'S CONFERENCE

Our **basic course** is available on tape and video for anyone who may want to review or cannot attend a conference. Call: Back Country Production – phone: 303-772-8358.

Last year's lectures included Geriatric Syntonics by Larry Wallace, O.D. which discussed the role of light therapy in the aging process via regulating the pituitary-hypothalamic-adrenal axis' immune function, and pineal regulation. A discussion of common visual disorders found in the elderly was presented as well as treatment protocols which clearly point out the tremendous potential for improvement regardless of age.

We had a very practical presentation on VDT's and vision problems by Jeffrey Anshel, O.D. including the specialized lenses that can be prescribed to meet the growing visual demands produced by computer use.

Robert-Michael Kaplan, O.D., M.S. presented an overview of his "Integrated Vision Therapy", the result of 25 years of integrating many types of treatment modalities to evolve vision and consciousness. Techniques include appraising one's life in a holistic framework which releases "the power behind your eyes" to change both your life path and your physical vision.

Wayne Pharr, O.D demonstrated how cranial manipulations can immediately effect changes in the visual field and blind spot. I have shared his excitement in my office after watching cranial adjustments, chiropractic, and hypnotherapy create immediate field improvements during treatment.

Dr. Pharr's wonderful computer therapy and office management systems were presented by Dale Fast, O.D.

The use of lenses and prisms was presented by Ellis Edelman, O.D., demonstrating the effectiveness of lateral and yoked prisms used in conjunction with phototherapy.

Julian Metter, M.D., Ph.D., presented for the second year results from ongoing research he is coordinating for the College. The research shows the effect of Syntonic therapy on EEG patterns and physiological markers like temperature, galvanic skin response and blood pressure.

Moses Albalas, O.D., Ph.D., revealed his latest methods of determining filter selection and optimal response to chosen frequencies.

Jacob Liberman, O.D., Ph D., was our banquet speaker sharing his insights on the future of light therapy, energy medicine and the expanding role of consciousness in healing.

Our keynote speaker was Bruce Lipton, Ph.D., who presented the Biology of Consciousness and New Medicine. Dr. Lipton, using concepts from quantum biology, demonstrated the primacy of environment over genetics in determining cellular functions. His detailed explanations of how electromagnetic energies direct nuclear functions through cell membranes was astounding. This video should be shown to biology classes around the globe.

The conference concluded with Drs. Gottlieb and Wallace discussing new advances in photomedicine. This included the effects of cold laser stimulation on biological function, physiology, and healing. Of particular interest was a discussion by Ray Gottlieb, O.D., Ph.D., of a Russian study showing significant myopia control by the use of red light stimulation through the eye into the ciliary muscle to build accommodation.

Larry Wallace, O.D., F.C.S.O.

SURVEY RESULTS: ENLIGHTENING

A hearty thanks to all those who participated in our membership survey last fall. A 36.6% response arrived in time for our mid-year planning meeting. 20-25% is considered excellent by marketing experts! Adding the stragglers, our total response was a resounding 40.3%!

The huge response alone made the survey worthwhile. At a time when the College was truly looking to re-evaluate its purpose and its future the membership delivered a loud and clear message that it cared. Many had insights into the College's successes and failures Some had suggestions to help plan for our future. Others were very protective of the status quo.

But you responded! And responded in numbers that energized your officers and trustees to act . The net result was the most enlightening, meaningful and productive College meeting in memory.

We have a mission with a plan, goals and a schedule for action and implementation. I personally see the College with more direction and incentive than at any time in my 8-year membership.

What follows is a synopsis of our survey results Again, thank you for your contributions. Now is your opportunity to make a difference. Get active! Come join us as we take the College into the next century.

(1) WHO ARE WE?

Though we attract a variety of practitioners to our conferences, our foundation still remains heavily optometric with OD's (85.5%) and vision therapists (2.5%) totaling 88% However, the psychologists (4%), chiropractors (1%) and others (7%) (mostly massage/ energy and other alternative practitioners) represent a significantly large segment for an organization whose roots are optometric.

14% of those responding to the survey do not currently use light in their practices. The vast majority of these seemed to be lacking some training, motivation, and/or practice management skills.

This led us to wonder how many others have shown interest over the years but were left without whatever they needed to get started.

Hence we are instituting a new "GETTING STARTED" class at this year's conference program. Presented by yours truly, we will attempt to provide the insights, perspectives strategies and finances of how to incorporate syntonics into the various types of optometric practice. Bring your ideas questions and concerns. This class will be scheduled at the end of the day with plenty of time for discussion.

(2) MENTORSHIP:

Though several were not interested in, or felt they did not need a mentor, clearly 2/3 of the responders were interested in some kind of mentor program. Though quite a few are taking advantage of the informal program currently in place, we will be developing a more specific program designed to meet individual needs.

Under the guidance of Ellis Edelman, mentorship will be a benefit of active (paid) membership in the College. Each will be matched with a mentor who has a similar practice and/or philosophy. The relationship can be informal, meaning you call whenever a question arises, or the program can be more formal. with weekly or monthly interactions to guide you through the learning process

Ellis will be present at the "GETTING STARTED" class to help new practitioners understand how they can benefit from mentorship. Under his guidance, this program should prove to be the fast track toward fellowship.

(3) MEMBERSHIP

86% anticipated renewing their membership, but quite a few sought more tangible benefits. Active membership provides other benefits beyond mentorship. You asked for more communication, and you got it! Many have already received the new improved SYNTONOGRAM from David Luke. This will be a periodic newsletter filled with news, case studies, research, etc., to keep you updated on what's going on with the College and what's new in light and color.

The College Journal will still be published yearly, and will be reserved for more formal presentations.

Another benefit of active membership will be your listing in the College directory. With the advent of our new web page, added to the other requests for practitioner lists, just one patient referral could ultimately pay for many years of College membership.

Don't miss this year's directory! Pay those dues.

(4) COLLEGE DIRECTION:

The question as to whether or not the College should remain exclusively optometric inspired the greatest debate.

48.5% wanted optometric exclusively, 46.5% wanted some measure of opening to other light and color disciplines. Remember, 12% of the responders were non-OD/VT's.

There is a general frustration over the fact that our profession has not embraced our work. Add that the College to date has been unable to produce quality research from accredited institutions. Throw in a natural fascination in the power of light and color whether

optometric or not. It's clear to see why many feel a need to change course.

We are blessed with options for our future. We already attract wonderful non-optometric practitioners doing exciting work. If we choose to take a broader course there is a wealth of knowledge and energy to be tapped, along with a much larger and no doubt more receptive audience.

At present, though, we are encouraged by the College's new found energy. New overtures are being made to produce the supportive research we clamor for. Despite their negative official position, Larry was excited about the huge practitioner interest at COVD. And our "GETTING STARTED" and new mentorship programs could start paying benefit, almost immediately, to increase our numbers.

Rather than take on a new direction with new challenges, the College is taking upon itself the challenge of being a better champion of optometric phototherapy. This includes membership and educational programs that are enriched by non-optometric facilitators and applications. For now, our specific mission is defined as follows:

To further the art and science of phototherapy in the treatment of the visual system for the promotion of human health and potential. This includes promoting and expanding the therapeutic use of light in clinical practice through post-graduate education and research.

(5) CONFERENCE:

The overwhelming majority felt our yearly conference has been a quality effort. Data collected regarding location, schedule and format, etc. will be directed to future conference committees.

(6) QUESTIONS:

Many raised specific questions and concerns on the returned survey. Most of these issues are being addressed in terms of new College initiatives in policy, direction, and goals. Others I have attempted to contact individually

If anyone feels their needs and concerns have not been adequately addressed please feel free to write me. I will gladly act as your liaison with the College to insure that your voice has been heard.

Thanks again for your response! See you in Vancouver.

M. Stuart Tessler, OD, FCSO
1174 S. Corona Street
Denver, CO 80210

LOWER BRAIN ACTIVITY IN VISUAL CORTEX ASSOCIATED WITH DYSLEXIA

STANFORD, CA – A study conducted by Stanford researchers supports the idea that dyslexia may be caused by impairment of vision. The study found that the level of brain activity in the visual cortex may effect the speed at which a dyslexic can read.

Since the 20's there has been interest in the theory that dyslexia, which effects 2%-9% of the population, may be caused by a specialized type of visual impairment. To date this theory has been greatly superseded by the view that dyslexia is caused by a condition within the brain's language centers which interferes with the way a dyslexic isolates and manipulates sounds.

These study results are too preliminary to effect the diagnoses or treatment of dyslexic individuals. However, the study does suggest advancement into further research which could provide additional information about the relationship between the visual system impairments and dyslexia. If further research finds a correlation between specific types of brain activity and dyslexia it may bring forth earlier detection of dyslexia.

The technique used by the Stanford researchers was functional magnetic resonance imaging (MRI). The MRI was used to measure brain activity in both dyslexics and non-dyslexics. The MRI relies on the fact that when the body is placed in an external magnetic field, its atomic nuclei absorb radio waves at precise wave lengths. Functional MRI, a specialized type of MRI, allows scientists to take images of the brain as a subject is thinking by remotely sensing the ratio of oxygen-rich and oxygen-depleted blood in different regions of the brain. Functional MRI provides a map of the neural activity in the brain by detecting increased amounts of oxygen-rich blood flowing to the region where the thinking occurs.

Neurons that originate in the retina travel to the Lateral Geniculate Nucleus (LGN), a pea-sized part of the thalamus located in the middle of the brain, before traveling to the back of the brain connecting to the primary visual cortex. When the neurons reach the primary visual cortex they then fan out and connect to many secondary locations in the back of the brain which is devoted to processing visual information. A pathway is then formed as some of the neurons are grouped together. One pathway, made up of large neurons, is called the magnocellular or M pathway. A previous study, published in 1991, by Margaret Livingston, Albert Galaburda and colleagues at Harvard Medical School found that cells were smaller in dyslexics in the subdivision of the LGN which contains the M pathway.

These results lead researchers to propose that the deficiencies in the M cells are linked to dyslexia.

BREAKTHROUGH ... BELIEVE IT OR NOT

Suffering from jet lag? Shine some light on the backside of your knees. According to a report last week in the journal *Science*, two researchers from Cornell University Medical College found that the human circadian clock (the brain's timekeeper) can be manipulated by focusing bright light on the area behind the knees, the popliteal region. It is in this area that Scott Campbell and Patricia Murphy of the college's Laboratory of Human Chronobiology located photoreceptors that communicate with the circadian clock. With the discovery, jet lag, insomnia, winter depression, and other time-related disorders eventually could be treated by simply aiming a special light at the backs of your legs.

Scientists have long been aware that human circadian rhythms influence a variety of physiological maladies. Until now, it was believed that the only means of accessing the biological clock—located in the hypothalamus—was through light reaching the retina. But with the scientists' recent discovery of photoreceptors in the popliteal region, there's an alternative and more practical route to that internal timer. Campbell believes that, unlike the tedious and time-consuming eye treatments, the convenience of back-of-the-knee light therapy would go a long way to rendering "light treatment more acceptable and more common" for a variety of prevalent ailments.

Title: Automated pupil perimetry in amblyopia: generalized depression in the involved eye.

Author: Donahue SP; Moore P; Kardon R11

Author Affiliation: Department of Ophthalmology and Visual Sciences, Vanderbilt University Medical Center, Nashville, Tennessee 37232-8808, USA.

Source: Ophthalmology 1997 Dec;104(12):2161-7

NLM CIT. ID: 98061951

ABSTRACT: **OBJECTIVE:** This study was designed to determine whether the relative afferent pupillary defects observed commonly in amblyopic eyes are associated with a uniform depression of the pupillary light reflex throughout the visual field or solely by a focal decrease in pupillary response near fixation.

DESIGN: The authors used pupil perimetry to evaluate the contraction amplitude of the pupil in response to focal light stimuli at 76 points throughout the 30 degrees field in each eye of 28 patients with amblyopia. The "pupil fields" were recorded using a computerized infrared pupillograph linked to a Humphrey Field Analyzer, so that the pupil contraction could be recorded in response to perimetric light stimuli.

PARTICIPANTS: Nine patients had strabismic amblyopia, ten had anisometropia, six had a combination of anisometropia and strabismus, and three had deprivation amblyopia due to monocular congenital cataract.

MAIN OUTCOME MEASURES: Mean pupillary contraction amplitude for the entire field and focal amplitudes at each tested location were compared. Mixed-model analysis of variance was used to assess effects of perimetry location, type of amblyopia, and interaction effects.

RESULTS: The overall average of all the pupil contractions throughout the 30 degrees field was less for the amblyopic eye compared with that of the fellow eye. This decrease in focal pupil response for amblyopic eyes was present in each type of amblyopia and was greatest for deprivation amblyopia. The contraction amplitude was depressed diffusely throughout the pupil field and showed neither focal deficits nor a selective depression about fixation.

CONCLUSION: Amblyopia produces a global depression of focal pupillary responses across the entire 30 degrees field.

MAIN MESH: Amblyopia/PHYSIOPATHOLOGY

SUBJECTS: *Perimetry
Pupil/*PHYSIOLOGY
Pupillary Functions, Abnormal/*PHYSIOPATHOLOGY

MOTION PERIMETRY SENSITIVE IN DETECTING FIELD DEFECTS OF AMBLYOPIA

Adapting technique may allow practitioners to perform formal testing in young children.

NASHVILLE, Tenn. – Motion perimetry may someday replace conventional automated perimetry for formal visual field testing in young children.

"The problem with conventional automated perimetry is that there are large amounts of variability," said Sean P. Donahue, MD, PhD, an assistant professor of ophthalmology, pediatrics and neurology at Vanderbilt University Medical Center. Motion perimetry is a computer-based system that tests motion perception at 44 individual points throughout the visual field.

"Motion perimetry is quite sensitive in detecting field defects in various neuropathies and may be specific for detecting M-cell damage," Dr. Donahue said.

He explained that the classic tenet of pediatric vision testing is that the visual field of the amblyopic eye has a central suppression scotoma surrounded by a relatively normal peripheral field. "However, recent studies that indicate a full-field depression in amblyopia have called this teaching into question."

Limited study

For their limited study, Dr. Donahue and motion-perimetry developer Michael Wall, MD, an associate professor of neurology and ophthalmology at the University of Iowa, hypothesized that anisometropic amblyopes might have abnormal motion perception when tested with motion perimetry.

Ten anisometropic patients without manifest strabismus were evaluated using motion perimetry. "Each of 44 locations in the field, corresponding to the test sites of the Humphrey 24-2 program, was tested using random dot cinematograms displayed on a computer screen," Dr. Donahue said.

Stimulus patch size was reduced in a staircase manner to determine the smallest patch of detectable motion at each test location (threshold). In addition, data from 15 age-matched normal subjects were used as controls.

Defects found throughout visual field

"We found that these patients, generally, had abnormalities throughout their visual field, not just in the center of their vision," said Dr. Donahue, who presented results at the annual meeting of the American Association for Pediatric Ophthalmology and Strabismus. "Classic teaching in pediatric ophthalmology using automated perimetry has not been able to find these defects."

Vision in the amblyopic eye ranged from 20/25 to finger count. "The mean overall size threshold of the anisometropic eye was 70% greater than both normal eyes and uninvolved fellow eyes ($P < .03$)," he said. Further, the motion threshold of the amblyopic eye was greater than the fellow eye for 39 of the 44 individual locations and equal in an additional 3 locations.

Threshold increase uniform

"This increase in threshold was uniform throughout the tested visual field and included the most peripheral locations," Dr. Donahue said. "The effect was not due to differences in refractive error, or to changes in local luminance (flicker), but was related to visual acuity."

The uniform depression found both centrally and throughout the mid-periphery of the visual field support the authors' previous studies using automated light perimetry.

Long-term suppression, chronic blur

"These new findings suggest that the long-term effects of suppression related to chronic blur are the result of a much more generalized process than has been previously thought," he said. "Amblyopia is a process that is diffuse in nature rather than simply being limited to central vision.

The authors believe that adaptation of motion perimetry may allow formal visual field testing in young children. "It turns out that when you use a test with less variability, you can detect these defects that exist," he said.

He also noted that motion perimetry is easier to perform than conventional automated perimetry.

Dr. Wall has been working on motion perimetry since about 1990. However, there are no immediate plans to make the system commercially available.

"At the present time, it is still an academic test," Dr. Donahue said.

by Bob Kronemyer
Correspondent

For your information:

Sean P. Donahue, MD, Ph.D, is an assistant professor of opthalmology, pediatrics and neurology at Vanderbilt University Medical Center, 8015 Medical Center East, Nashville, TN 37232; (619) 936-2020; fax: (615) 936-1540. Dr. Donahue has no direct financial interest in any of the products mentioned in this article, nor is he a paid consultant for any companies mentioned.

Dr. Wallace:

I am honored that you wish to reprint an excerpt of my article from *The Sun,* January 1998; please feel free to do so. Please see that credit is also given to *The Family Therapy Networker,* where the article originally appeared.

-Fred Wistow, 75 Rockefeller Plaza, New York, New York 10019 *Thanks.*

And then, only last year—one of the few periods in my life when I wasn't looking for therapy—at the suggestion of a friend who knew what a therapy junkie I was, I tried something called Stroboscopic Light Therapy. The preposterousness of it all was what intrigued me: Each day, for three weeks, I would have a thirty-minute telephone appointment with a therapist hundreds of miles away, during which I would sit at home in the dark, in front of a pulsating light machine, talking to the therapist on the speakerphone. When told to do so, I'd adjust the rate of flicker, insert one of fifteen colored lenses, and then, at the therapeutically correct moment, change to another lens, all the while dredging up memories and associations, pinpointing their locations in my body, and minutely describing my feelings and my perceptions of the ever-altering light. It was the absurdity of the total package that captured me, including the guarantee that a "cure" would occur by the end of three weeks—as if regularity and diligence, coupled with a device no more complicated to operate than a Thigh Master, could produce change, right there in my own home. Nothing more to buy. Easy, safe, convenient. It was ultimately so stupid that I had faith. I was hooked most of all by the guarantee that it would not be open-ended.

The cockamamie theory seemed simple enough: Being exposed to the colored lights (each somehow associated with a particular issue—orange, for example, with self-esteem) would facilitate a shift in my subjective relationship to the "truths" of my experiences and my memories of them. The strobe would work to "entrain" or "disentrain" the brain-wave activity, the audible click-click-click of the machine serving to reinforce the effect. The continual focus on where in the body the feelings are lodged would help to clarify them. The visceral feelings and beliefs to which I am attached would be released, or at least become less binding.

Yeah, sure.

And what did I discover? Like the huddled apes in 2001 staring at the moon, I found myself gazing into the light, seeking illumination, insight, sensation, excitement, something. And—with the help of my steadfast and sisterly, caring and nonjudgmental shrink—many, many times it came.

First, there was the sheer joy of discovering that, even though I had grown tired of endlessly retelling the story of my life and had (mistakenly) thought that the past had somehow lost some of its powerful grip, there were, sleeping inside me, all these memories—painful, fearful, glorious memories—that the light seemed to awaken, archaeological treasures that kept floating to the surface. As I stared into the light, I also saw that the word "memory" seemed to demand quotation marks—the memories were so distant (or so fictitious), it was as if I were both discovering and inventing them at the same time. In a way, it didn't really matter whether they were real, because they produced such powerful feelings in my body:

I am achy and nauseous after a week cooped up at home from seventh grade, taking that first woozy stroll outside, down quiet afternoon streets, sunny and devoid of kids, the world, bleached free of color and noise, fanning out limitlessly before me; I am utterly crushed when my brother, playing with Robby the Robot, my spectacular reward for having my wisdom teeth pulled, manages to break the toy only minutes after it is taken out of its box; I am ecstatically cheering during the second game of a Sunday double-header at Yankee Stadium: Mickey Mantle has just hit a home run into the late-afternoon streets, my father beside me smiles contentedly; I am laughing uncontrollably as I pass notes back and forth to a friend in sixth grade, to another in my high-school physics class; I am tongue-tied and unable to swallow when, on the staircase of her apartment building, I pass Susan, the unattainable object of my prepubescent crush; I am giddy and anxious, wanting time never to end the six-hour Monopoly game with my brother; I am straining to quench the thirst of a hot summer's day while my mother, fearful of disease, repeatedly pulls me back by the collar of my shirt, preventing me from ever getting a truly satisfying mouthful of cold water from the kitchen faucet; I am bursting with longing to have all the jumbled anxieties and conflicts of my family jell into a harmonious whole as I set the special dishes for Passover dinner, the only meal of the year the four of us eat together; I am trembling with awe in the corner of Grand Avenue and 181st Street in the Bronx as massive, low-lying clouds, almost black, race across the sky, missing the darkened apartment buildings, it seems, by inches.

The lights made it clear somehow that all these memories are part of my biochemical makeup, still existing in the parts of the body where I first felt them— the stomach, the chest, the arms, the head. These memories not only seemed to have dictated my life, they seemed to have taken on such iconic significance that subsequent events were but telflonic footnotes, without resonance or weight, compared to what had come before.

One particular moment stands out:

Transfixed by the light, I see the block where my parents' grocery store had been; it's all gone now, the victim of urban decay. Some guy in a dark room somewhere in Manhattan, looking back over time, shouting out my memories into a speakerphone, I well up. That kid who grew up on that block is gone; the people are gone; the crepe-paper window display for the Miss Rheingold contest is gone, along with the commercial jingle: "My beer is Rheingold, the dry beer / It's not bitter, not sweet / It's the extra-dry treat / Join the millions who buy Rheingold beer." It's all gone, those sweet, bitter days of my youth, scattered by forces that seem to pull everything apart. But, miraculously, I see, it's also all still here, astonishingly alive, stored in the very organs of my body. The details of my story are suddenly no longer textbook dry and tiresomely familiar. but rich with texture and nuance. Everything that happened or failed to happen is no longer a source of grudges and resentments, but a radiant source of feeling to be treasured simply for its having been.

Then, too, the therapy cast a pitiless spotlight on the deadness and hopelessness that I'd doggedly carried around since I was . . . God knows. Ten? Two? and that prior therapeutic experiences had failed to eradicate. A hopeless stance toward life based on a few irrefutable "givers": that it is a grim undertaking, a kind of Old Testament curse I am doomed to live out pleasurelessly; that I don't deserve to exist, except to serve others (bobbing and weaving all the time to protect and entertain them so they will never catch on to how terrible, how absolutely frightened, inadequate, and not a real man I am, and always with the gut-wrenching fear that I'm just at the point of being taken to task for failing even at that); that only other people are entitled to experience pleasure, my needs and desires are irrelevant; that intimacy always seems to come up short, the one last little step to love seems never to be taken; that there is a gap between myself and others that I can never fully traverse—only in separation do "I" truly exist; in relationship, I serve.

The flashing light illuminated all these crippling beliefs. At various points in the therapy, my shrink asked me to come up with a mantra to express the particular despair-filled assumption the color was then shedding light on. (As I strained on these occasions to get the words exactly right, I felt ashamed for trying to be so pedantically precise about my whining.)

When I did finally settle on the wording, I was supposed to repeat it,

over and over, each time giving it a varied dramatic reading. The more I tried to express exactly what was making me nuts (for example, "I feel unsafe with people because I don't trust them to understand me and treat me properly"), the more I found myself unable actually to hold on to it. Then, without warning, one of those magical therapy moments would occur, the fog would lift, and despair would he transformed into hope. By the tenth repetition, I would laugh embarassedly: "I *don't* believe this," I'd proclaim, climbing out of the pit. "I feel good. That life stance is stupid." As I basked in the glow of the feeling and the color, the prospect of approaching life with uninhibited delight would bring a sense of fullness to my chest.

At times like that—the moment-to-moment attention to the color and to my body's reaction to it: a catch in the throat, an itchiness around the eyes, a hollowness in the stomach, an agreeable lightness in my arms, a rush of saliva, the heating of my heart—life suddenly seemed less constrictive, as if to say, *Hey, surprise, I'm not dead yet. Something new and gratifying can still be found.* The apathetic certainty had somehow vanished. I was tickled.

As the end of my three weeks approached and I became more aware that feelings are located in specific parts of my body, I seemed to inhabit my body differently, and I saw how much of my misery was due to not recognizing—sometimes even denying—the biological reality of me. For example, some part of me felt as if I were a boy who had never grown out of a boy's body. But after looking at blue-green (the color of "wholeness") for a couple of days and watching it become purer, less distorted, I started to grow into the body of an adult. Amazingly enough, I was not a little boy, but a man over six feet tall. Feeling a new sense of pride at my manly bulk, I started to walk slower, with less of a bounce, more grounded, impressed by having the musculature of a (dare I say it?) man. When the three weeks ended, I turned off the stroboscope and embarked on a period in which I consistently felt more physically alive and less frightened by life than I ever had before.

Dear Mr. and Mrs. D:

Please thank Mrs. FW, R.N. for referring your son Philip for a developmental visual/perceptual evaluation which was done on 12/15/97. The following is an abstract of my findings.

From the history as reported by the parents during our initial discussions Philip has been having major problems in learning at school.

The visual/perceptual dysfunction has been of long standing since the second grade (St. Joseph's Parochial School, Collingdale). He was removed from this school and placed in the Harris Elementary School where he remained until the 5th grade. He was then placed into the Christian Academy. He was then transferred in the 5th grade to the Ashland Elementary School where he has remained to the present time.

He was given ritalin to solve his problems beginning in March, 1995. The ritalin obviously did not help since Philip still exhibited the same learning/behavior problems. Ritalin was discontinued in November of 1997.

He had been examined by Dr. David Pleasure, Neurologist with a recommendation for ritalin. That was the extent of the visit to Dr. Pleasure. He has not been seen by this physician since.

He was seen by a local optometrist, Dr. Marvin Fuchs on 12/9/97. The main complaint was that Philip could not see the blackboard at school and therefore was not able to complete his work.

The results of this examination did not identify the problem. The unfortunate fact is no person, professsional, educator or teacher at this time realizes the relationship between vision, perception, learning and behavior.

This young man has a very serious dysfunction. His problem can be described as a vision disorder, called an early adaptive disorder.

The following syndrome of symptoms are as described below. Philip manifests each symptom listed:

Reduced visual acuity at both distance and near: 20/80, each eye and both together,

Diplopia especially at near at the midline.

Generalized contraction of the visual fields (tunneled): the motion fields as well as the form fields measure approximately between 20′ and 30′. This contraction causes double vision.

There is a scotoma of the optic cup approximately 30° each. There is an increase of cerebral spinal fluid during time of stress. If the stress remains it will continue to desensitize the retinal cones and rods. This scotoma is quite large and must be alleviated if any change in vision and behavior is to be affected.

Mydriasis (not due to any mydriatics) descibes a chronically enlarged pupil size. The pupils do not hold their contracted size but tend to be larger than expected. This reaction is due to the continual stress Philip encounters each and every day especially at school.

Philip demonstrates a rather moderate sensitivity in ordinary light which is called photophobia. This sensitivity is related to the reduced field size (retinal overload).

Stereopsis defect (inconsistent appreciation of distance: as well depth perception).

Accommodative infacility: Philip has lost the ability to focus for clarity. The ritalin has a side affect of reducing the focusing mechanism function. The continual stress has also caused this dysfunction. Keep in

mind the focusing ability allows one to identify what you are looking at. His world has been very blurry most of his life.

Eye-movement status: both pursuit and saccadic movements were performed. The behavioral quality was far below the expected.

Monocular movements were jerky, blurry, pupils tended to dilate and generally overshot the target. The movements were full amplitude and gaze.

Binocular movements were very stressful with constant doubting of the target. The ability to maintain any teaming was "non-existent."

Philip was not able to demonstrate an adequate degree of Stereopsis. This 3-D function is an indicator of the quality of sensory binocular fusion (the mental combining of the two visual images into a single precept).

Perceptual status: a screening was performed that evaluated several areas of the visual/perceptual and visual cognitive functioning which have been shown to be important prerequisites to academic functioning within the school room and at home.

1) Near point retinoscopy. Philip was not able to demonstrate a consistent cognitive focusing level. Doubling and blurring was constantly reported. This examiner using instruments was also able to confirm this vision problem.

A second near point retinoscopic test was performed but this time therapeutic lenses were worn by Philip. The doubling was reduced with some signs of cognitive focusing. Therapeutic lenses were obviously indicated for reducing the near point stress and allowing Philip to begin to team his eyes.

2) Keystone visual skills – responses indicated an "inwardization" and compression of the environmental space was very actively taking place. He was not able to demonstrate any expected responses during this screening of his visual functioning.

3) Bender Gestalt test – Philip's responses and figures clearly demonstrated a developmental lag in terms of spatial, temporal and form ability.

The scoping showed 11 distortions which certainly has affected his learning and behavior. Copies are available I would suggest the school teachers, psychologists and others dealing with Philip obtain copies.

4) Gesell – Visual III test – even though the entire test was performed with blurry vision, Philip was able to score very high in the area of visual recall. It was interesting to note how he remembered the figures. Philip formed relationships to "real things and places" rather than using abstract concepts. This style confirms Philip will have difficulty in forming abstract thinking. Reading for example deals with symbols and abstract concepts.

Philip will prefer reality, action-oriented styles to problem solve.

5) Hand-eye tracings – Philip was not able to direct his eyes to stay on the lines. The test reveals how much visual directing is taking place. Both left eye and hand as well as right hand and eye were evaluated. It was very obvious visual directing was not taking place.

He was not capable of any degree of binocular teaming at this time. He was not able to use his peripheral vision to align his eyes (reduced visual fields).

If the school will request any of these test responses I will be very happy to forward them to you.

Diagnosis: very significant visual input, and output (perceptual) dysfunction. Has affected his learning as well as behavior. Emotional overlays and inappropriate behavior appear to be secondary and are not the cause of his problems.

Recommendations:

1) Therapeutic lenses +75 sph

2) Office vision therapy on a weekly basis

3) Phototherapy

Prognosis: Philip has had 2 office visits for therapy. The therapeutic lenses have improved his acuity to adequate levels. There is much less reporting of doubling. He is beginning to function much better doing near point tasks.

Perhaps a meeting with the parents, teachers, guidance counselor and myself would help resolve this most difficult problem. I would appreciate an early reply to my suggestion. Please call my office at your earliest convenience.

Sincerely yours,
E.S. Edelman, O.D., F.S.C.O.

Patient: **P.D.**

Diagnosis:

Generalized contraction of visual fields	368.45	Scotoma of blind spot areas	368.42
Hippus	379.49	Mydriasis (not due to mydriatics)	379.43
Photophobia (moderate)	368.43	Intermittent suppression	368.31
Adductive Fatigue	368.33	Headaches per history	784.00
Stereopsis defect (inconsistent 3-D)	368.33	Accommodate infacility	367.50

CASE REPORT:

The management of an "early adaptive syndrome" utilizing phototherapy, therapeutic lenses and in-office vision therapy.

A pair of +0.75 spheres O.U. were prescribed for constant use phototherapy using alpha-omega, 8 minutes, alpha delta 8 minute and mu-delta for ten minutes for 25 sessions was recommended.

Office therapy stressing the use of peripheral processing to enlarge the fields for visual alignment, orientation and balance was initiated.

Keep in mind there was no obvious refractive error but small power plus lenses allow the individual to "make a move" and encourage a view away from self. They are a stress reducing mechanism which usually works very quickly. (20/20)

The choice of filters to bring about a balance had a very positive affect from the very beginning of therapy. The fields began to open after 12 sessions to twice the original size. The optic cup began to reduce in size also.

The antagonistic behavior also changed to less anti-social responses. He has been removed from the school and it was suggested he be given home schooling to bring him up to the expected 8th grade levels.

He has not been sent to a special school for emotionally disturbed children only because of my meeting with the school authorities. I strongly recommended the program discussed previously.

Enclosed please find diagnostic codes and report sent to the principal and others.

This case dramatically demonstrates how syntonics, lenses and office therapy can remediate a long-standing visual/ learning/behavioral problem once identified can successfully be remediated.

E.S. Edelman, O.D., FSCO

REVERSING MACULAR DEGENERATION

by Sarah Cobb

INTRODUCTION

A few years ago I would have passed up an article on macular degeneration. Today, however, after my 92 year-old father and a best friend were visited by it, my interest has soared. I did not plan for this to be a paper about optometric phototherapy (syntonics), acupuncture, electrical stimulation and nutritional therapy. It started simply as a paper about macular degeneration, which I thought to be incurable and irreversible.

What happened as I began my inquiry, was that I discovered doctors who, using many different methods, have been successfully treating and yes, *reversing* this disease. Their success stories provide hope for a population that is greatly under served.

Dr. Sam Bern, an optometrist in Santa Fe, New Mexico, contributed a complete treatment regimen for age-related macular degeneration which will be included in its entirety because it was so well done (see appendix).

Drs. Alan Gaby and Johnathan Wright, two M.D.'s practicinq in Kent, Washington, have reversed macular degeneration by using nutritional supplementation applied through an I.V. solution.

Dr. Larry Wallace, an optometrist in Ithaca, New York, is reversing macular degeneration with electrical stimulation, phototherapy (syntonics), and nutrition. Recently, he gave a lecture on the elderly at the 65th Annual Conference on Light and Vision that is well worth listening to. He has a thriving therapy practice including many who happen to be elderly.

In an interview with Dr. Charles Butts, a retired optometrist, I learned that functional field restriction is common to macular degeneration and that phototherapy is effective in both opening up the visual field and reducing the size of the blind spot.

My own father had surprising results from acupuncture treatments, which not only transformed his kidney-shaped, black spot into a blurry area able to detect light, color and form, but also improved the acuity in his good eye.

In this paper, I plan to share the specifics of their work, present some ground-breaking research, delve into the specter of visual field restriction, and finally tell the story of

my father's battle with the disease.

What is macular degeneration?

Macular degeneration occurs when the cells in the macula break down, causing blur, distortion and gradual loss of sight in the central point of the light-sensing retina. It is a slow, painless condition that often affects one eye, then the other. Although the cause and normal progression of the disease is not yet known, there seems to be several clear risk factors.

- AGE – It is estimated that 15 percent of those over 60 and up to 37 percent over 75 have some form of macular degeneration, affecting over 13 million people in the United States alone.
- DIET AND NUTRITION – Research has shown that people with low dietary intake of antioxidants, the nutrients that fight the damaging effects of free radicals, may have increased risk. Alcohol as well as smoking rob the body of antioxidants. Also, high levels of saturated fats and cholesterol harm blood vessels that feed the retina.
- HEART DISEASE – High blood pressure may increase the risk because of its effect on blood circulation to the eyes.
- SUNLIGHT – Prolonged exposure to ultraviolet light can damage the pigment epithelial cells of the macula.
- HEREDITY – Some studies suggest that macular degeneration, like heart disease may be inherited.
- GENDER AND PIGMENTATION – Low levels of estrogen in postmenopausal women may increase the risk of the disease since women over 75 are twice as likely as men to develop macular degeneration. Also, whites are much more likely than African-Americans to succumb.

Wet verses dry

The two most common types of age-related macular degeneration are "dry"(atrophic) and "wet" (exudative) It would seem that much more common is the dry type, encompassing 90 percent of all cases.

But, as noted by Dr. Benjamin Lane, the estimate of "dry type" is inflated by including patients with "soft drusen" who really characterize a "pre-wet" population that has not yet begun to leak, but is at much higher risk to leak than those presenting only with "hard drusen."(1)

Degeneration occurs when yellowish deposits (drusen) accumulate behind the sensory retina. These deposits are breakdown products of atrophying pigment epithelial cells of the retina. According to conventional wisdom, the accumulations of drusen often lead to the wet, more severe form of the disease. According to Dr. Lane's work at the Nutritional optometry Institute in New Jersey, the risk factors for the wet type are totally different. His evidence is that it is the presence of soft drusen that forebodes "progression" to wet AMD. "Wet" macular degeneration occurs when new blood vessels leak fluid (edema), blood, and fats (exudates) into the retina, causing the macula to swell. This condition is conventionally treated with laser therapy to destroy the neovascular networks and stop the leaks, thus enabling the exuded fluid to be absorbed.

Signs and symptoms

The American Optometric Association lists the signs and symptoms of macular degeneration as follows:

1. A gradual loss of ability to see objects clearly
2. Distorted vision. Objects appear to be the wrong size or shape – straight lines appear wavy or crooked.
3. A gradual loss of clear color vision with a dark or empty area appearing in the center of vision.

The AOA pamphlet claims that there is no way to restore central vision and that low vision aids can help. The committee authored pamphlet stresses early detection and provides an Ameler grid to be used as a self test (see appendix).

NUTRITION

Vitamin and mineral therapy

Although many people believe that macular degeneration is a natural consequence of the aging process, others would differ. Researchers at the University of Illinois found that people who fail to get enough of the carotenoids in their diets are twice as likely to develop macular degeneration.

It is hard to ignore the growing body of research that suggests that it may be possible to retard cellular aging through appropriate dietary modification along with nutritional supplementation. Preliminary clinical evidence suggests that progressive visual loss can, in fact, be prevented and, in some cases, even reversed (2).

The etiology of age-related macular degeneration (AMD) is not fully understood. However, the dry atrophic form of AMD appears to involve accumulation of lipofuscin within retinal cells as a result of ultraviolet light – or oxygen-induced free-radical damage to cell membranes (3). So by providing antioxidant nutrients, along with zinc and taurine, which have important metabolic functions in retinal tissue, it might be possible to prevent further damage and enhance the function of the healthy cells in the retina.

ZINC

The concentration of zinc in the eye is higher than in most other tissues (4). Zinc is a cofactor for enzymes involved in normal visual function (5). This trace mineral also has antioxidant activity and stabilizes cell membranes (6). The concentration of zinc in human retinal pigment epithelium also appears to decline with age (7) and this decline may play a roll in retinal degeneration.

In 1984, Lane (8) reported the association of zinc deficiency with AMD. Newsome (9) made headlines in 1988 with his report of retardation of AMD in a clinical trial employing zinc and antioxidant supplantation.

Researchers from Louisiana State University constructed a double-blind trial giving 80mg of zinc or placebo for two years to 151 patients with macular degeneration. By the end of the study, the zinc supplemented group's maculae had deteriorated 42% less than the group not taking zinc.

Note: *A very little, and an extremely variable, amount of zinc is absorbed when taken with food, as substances in many foods bind zinc and prevent its absorption; thus perhaps only 10% or even less of the zinc administered was actually absorbed. This suggests that even more dramatic results could be obtained if zinc wore administrated in an effective manner and in a higher delivered dose. (10)*

Zinc, however, must be taken with caution because it is known to reduce protective levels of the good HDL cholesterol (which can be monitored). Also high doses of zinc may lead to a copper deficiency.

TAURINE

High levels of taurine are found in the retina, much of it localized to the photoreceptor cell layer (11). Although the function of taurine is not completely understood, it is known to stabilize membranes and to control ion flux (12). These actions may account for taurine's apparent role as a cellular buffer, wherein it protects cells from harmful effects of ultraviolet light, osmotic changes, and toxic substances (13).

ANTIOXIDANTS

Antioxidants unite with oxygen, protecting the cells and other body constituents like enzymes from being destroyed or altered by oxidation. Antioxidant mechanisms are selective, acting against undesirable oxygen reactions but not with desirable oxygen activity. Anti-oxidants scavenge free radicals, neutralize their damage and render them harmless. A poor diet, inadequate exercise, illness and emotional stress result in a reduction of the body's system antioxidants (14).

Ascorbic acid (AA) is present in relatively large concentrations in ocular tissues and is considered, along with glutathione, one of the most important antioxidants in the eye. It is attributed to strengthening the retinal vessels at the head of the optic nerve.

Rats fed with a vitamin E deficient diet developed retinal degeneration (15). Over 90% of a group of more than 20 patients improved following treatment with vitamin E and the replacement of table salt with mineral rich sea salt. 4 patients whose vision had deterioration to mere hand movements improved sufficiently to read a newspaper (20/50). Only 1 patient had deteriorated of vision while under treatment, but a few deteriorated after stopping, only to improve again when supplementation was resumed. Improvement may be very slow, taking up to 12 months. (16). Selenium, found in relatively large amounts in the human eye, is a cofactor for the enzyme glutathione peroxidase, which regenerates reduced glutathione, a key component of the antioxidant defense system of the eye.

Vitamin A deficiency causes retinal degeneration in trout (17). Retinas of monkeys made deficient in vitamin A showed disruption of photoreceptors (18). A riboflavin deficient diet results in electroretinographic abnormalities (19).

Data from the First National Health and Nutrition Examination Survey demonstrated a significant inverse association between age related macular degeneration and the consumption of fruits and vegetables rich in beta-carotene (20) and subsequently recognized as related to total carotenoid content. N-Acetyl-Cysteine is a stable derivative of the amino acid cysteine with antioxidant activity.

Ginkgo Biloba improves arterial blood flow (21) and enhances cellular metabolism (16) and clinical trials have shown it to be of value in the treatment of macular degeneration (22). Many flavonoids enhance retinal tissue by improving capillary integrity.

Although the pigmented epithelium is a copper-rich tissue, excessive copper may be toxic to the retina (23).

Recently, scientists have been suggesting that the nutrient lutein, a carotenoid and antioxidant, may be effective in fighting macular degeneration. In the 1980's Drs. Bone and Landrum found that the macula consists largely of lutein which is concentrated in the macula's pigment, and zeaxanthin, a closely related carotenoid. It is the pigment that blocks blue light, thus preventing free radicals from damaging the eye's photoreceptor cells.

In the retinas from 22 cadavera who had been diagnosed with macular degeneration, Boon and Landrum found 30-40 per cent less lutein than in the 15 they examined without AMD. After the finding, Boon and Landrum, along with some others, took a 30-milligram lutein supplement for 140 days. At the end of this admittedly small trial, the scientist's lutein levels had increased by 20-40 percent. More research is ongoing.

A Harvard study discovered that the highest dietary intake of lutein and zeaxanthin (a combined total of 5.8 mg. per day) was linked to a 57 percent lower risk of macular degeneration.

Further evidence for lutein's role comes from five clinical centers nationwide that found that people with the highest blood carotenoid levels had a 50 percent lower risk of age related macular degeneration while those with medium levels had a 30 percent lower risk. Foods high in lutein are spinach, kale and collard greens. Caution: The safe upper limit for lutein supplementation has not been established.

Note: Both lutein and zeaxanthin are fat soluble and should be taken with meals or with a little olive oil. Either will increase bile secretion and should improve absorption.

According Alan Gaby, MD and Jonathan Wright, MD, *There is a large body of evidence suggesting that nutrient supplementation, particularly with antioxidants, may retard the aging process. With advancing age, nutritional status*

tends to decline because of reduced gastrointestinal absorption and impaired cellular uptake of nutrients. The special sensory organs involved in vision, hearing, smell, and taste appear to be especially vulnerable to the effects of nutritional deficiency (24).

Much of this nutritional information came from the Gaby and Wright article. They tell an interesting story of a 61 year-old woman with rapidly progressing macular degeneration who was treated intravenously by Dr. Johnathan Wright at the Tacoma Clinic in Kent, Washington. Although she had been taking selenium, vitamin E and zinc in adequate quantities for several years, she was known to be hypochlorhydric, allergic and malabsorptive, so zinc and selenium were given intravenously.

During the first treatment she shouted for the nurse, reporting that she could see to read the print on a poster across the room that had been blurred before the I.V. started.

Her dosage schedule, that they say should be tailored to individual circumstances, was as follows:

I.V.

a) Selenium 400 *micrograms* and zinc 10 mg in 150^3 of 0.5 saline *or* Ringer's lactate infused over 30 minutes twice weekly. Monitor cholesterol/HDL, FBC.
b) After eight weeks one can usually change selenium to 800 micrograms and zinc to 20 mg once weekly, and then taper off slowly if possible.

ORALLY

a) Selenium 200-300 mcg daily (selenomethionine, selenous acid liquid).
b) Zinc 60 mg daily total (zinc picolinate, citrate. Not zinc sulphate which is poorly absorbed and causes many side-effects. Gluconate form marginal).
c) Vitamin E 800 IU daily.
Taurine lg. twice daily, no protein/amino acids for approximately 1 hr. before or after.

There was another case study from the Tacoma Clinic where an 81 year-old man with corrected acuity of 20/80 OU. After intravenous treatments he noted immediate improvement and in two months was corrected to 20/30. After 8 weeks most patients were able to stop the injections and rely on oral supplementation.

The article stopped short in identifying what kind of macular degeneration it was. Accordingly, each type can lead to different therapeutic outcomes. Also, although the reported results are remarkable, one should not generalize from one case and propose this regimen for all AMD cases.

In the field of optometry, Dr. Benjamin Lane, has been in the forefront of nutrition and vision for a number of years. In 1991, he spoke to the Invitational Skeffington Symposium on the topic of Environmental Risk Factors for Age Related Macular Degeneration. Regarding "wet" macular degeneration, he said that there is evidence that too much protein in type diet and especially too much well-cooked protein was one of the risk factors which contributes to the breakdown of the blood-retina barrier in the macula of the eye. (See his handout in the appendix)

The New England Journal of Medicine reported on the correlation between heavy aspirin consumption and macular degeneration. Aspirin, they said, causes breaks in the blood vessels of the retina. Some doctors are recommending bromelain as a mild blood thinner to replace aspirin without adverse retinal effects. This needs to be verified in a clinical trial.

NATUROPATHY

Naturopathy is the fastest growing of all alternative healing disciplines, specializing in non-invasive, gentle lifestyle therapy. Its strongest successes are in the treatment of chronic and degenerative disease, an area in which traditional western medicine has a poor track record.

With the goal to identify and treat the *cause* of the problem rather than just suppress the symptoms, naturopaths use such tools as homeopathy, acupuncture, herbal tonics, dietary supplements and suggestions of lifestyle changes. They believe that the body has considerable power to heal itself if given the proper environment.

Dr. Linda Rector Page, author of a most impressive book called *Healthy Healing,* received her Ph.D. in Naturopathy in 1988 and a Ph.D. in Nutritional Therapy in 1989. Inscribed on the title page of her book is *"Neither drugs nor herbs nor vitamins are the cure for anything. The body heals itself. The body is incredibly intelligent. It usually responds to intelligent therapies."*

Included in the book is a single page, devoted to cataracts and macular degeneration, which appears in the appendix of this article. Besides her recommendations for diet, supplements and life support therapy for these diseases, she suggests important herbs which are closely associated in the treatment of macular degeneration – *bilberry, aloe vera juice, ginkgo biloba and chamomile.*

The herb most attributed to fighting the breakdown of capillary walls is BILBERRY. A small shrub native to Northern Europe, Bilberry contains anthocyanins which have been implicated in vitamin P (flavonoids) activity. According to a study published by Dr. H. Pourrat in the Journal, *Chim. Therapy,* the extract is more effective than vitamin P in stimulating the production of rhodopsin, a photopigment present in the rods.

Known as one of the green super foods, ALOE VERA has long been used as an effective healing agent for cuts and wounds. It is a natural oxygenator, increasing the body's uptake of oxygen.

Besides being a powerful antioxidant, GINKGO BILOBA increases both peripheral and cerebral circulation through vasodilation (dilatation of the blood vessels). It increases acetylcholine levels, allowing for more efficient transmission of the body's 15 electrical impulses. Also, it helps return

elasticity to cholesterol-hardened blood vessels. Caution: If used in excess and with aspirin, it may contribute to hemorrhaging.

CHAMOMILE, known as a herb that calms the digestive system, is also an effective agent that reduces pain and swelling resulting from injury.

Clinical studies have also demonstrated that *Vaccinium myrtillus,* BLUEBERRY EXTRACT along with GINKGO BILOBA are capable of halting progressive visual loss (25). The anthocyanosides in blueberry extract reinforces the collagen structures of the retina and prevent free radical damage.

In general, nutritional intervention provides a solid basis for both stopping the progression and reversing the damage of the disease, but it may not be enough. Regarding vision problems in general, Linda Rector Page writes, *The mind/ body connection plays a big role in good vision. Emotional harmony is critical because it has an impact on the willingness to see.*

Not only are our bodies very complicated, but each one is unique. Although the doctor can stimulate the body to heal by suggesting wise treatments, ultimately we must take responsibility ourselves.

OPTOMETRIC PHOTOTHERAPY

To quote Dr. Steve Cool: *"I don't have any doubt in the world, in my gut, that colored light therapy can have a major impact on every biological system that's in the body – through the connections through the hypothalamus – into the whole psycho-neuroimmunological system."*

In the early 1920's Dr. Harry Spitler, an optometrist with four doctorate degrees including one in medicine, began studying the effects of colored lights on rabbits. By using different colored light filters in front of the rabbits' cages, he kept all other variables such as food, constant. Within eighteen months the rabbits began to develop loss of fur, sterility, cataracts and other toxic symptoms.

Recognizing that these imbalances were caused simply by colored lights, Spitler concluded that the portions of the brain that controlled the autonomic nervous system and the endocrine system were connected to the eyes by highly organized nerve pathways which could be greatly affected by colored light. That this application of light had profound affects on behavior and physiological response.

Having both optometric and medical degrees, he recognized that light therapy by way of the eyes could augment the major control centers in the brain that regulate all body functions. Since the functioning of the eyes was directly dependent upon and mediated through the nervous system, this form of treatment could directly affect visual function (26).

His approach was based on the premise that each person utilizes light in a different way and therefore, treatments should be designed according to each individual's physical and emotional make up. Not only was the color of the light significant but also the power factor of the frequency transmitted by a particular filter. After treating more than three thousand cases, he developed 31 filter combinations of which only 20 are commonly used today.

In Dr. Harry Rilely Spitler's ground breaking work, *The Syntonic Principal,* he theorized that bodily ailments, which included visual ailments were primarily caused by imbalances in the nervous and endocrine systems. He concluded that certain light frequencies, when applied to the eyes could restore balance within the body's regulatory centers, *affecting the source* of visual dysfunctions.

To understand the application of color, photo therapists use the analogy of a balance board placing red, with its long wavelength (affecting the sympathetic nervous system) at one end and violet – a high energy, short wavelength (affecting the parasympathetic) at the other. The balancing fulcrum is green. Historically, blue-green light is often, but not always, used to treat macular degeneration).

Efficient timing and interaction of both the transient and sustained magnocellular systems appear crucial for efficient visual processing. Color has been shown to have an immediate and powerful affect on the timing relationships of these dual pathways (27). This explains why practitioners report changes in their patients' neuromotor and perceptual skills after simply treating with light. Often, optometrists use phototherapy to jump start a vision training case and then follow with more traditional (and understood) treatment regimens.

Phototherapy's strongest suit seems to be in reducing stresses, be they trauma, accommodative, emotional or physiological, which constrict fields, cause aberrant phobias, tropias, verticals, and disrupt the functioning of the transient pad sustained visual pathways. Colored light has been proven to be a powerful tool, able to change the chemical, hormonal, pad neuronal levels of the body. It is a science that has not been put into use widely due to a lack of understanding.

Dr. Larry Wallace of Ithaca, New York, uses a combination of therapies to treat macular degeneration which he feels increases the effectiveness of treatment. Besides nutritional assistance, he uses optometric phototherapy along with electrical stimulation. He developed a device that sends direct current from the cornea through the eye to the back of the head, three to four times a week for ten minutes per eye.

Actually, he is not the first optometrist to treat eye disease with electricity. In the 1920's Dr. Harry Spitler, founder of syntonics, found that 0.08-0.1 micro-amp through the eye was necessary for the eye to transmit energy. His theory was that if direct current was put into a system that was lacking, signal processing from the retina to the brain was amplified. This stimulation allowed direct access to the retinal vasculature and since 50 percent of the blood passes through

the eyes every 40 minutes, there was tremendous opportunity with light or electricity to directly affect the blood supply of the entire body.

Low direct current has been proven to increase healing time by three and a half times. According to Dr. Wallace, cells grow toward the cathode (+) away from the anode (-) and is the basis of stimulation of the macula with current through the eye. The positive pole corresponds to blue light as applied in syntonics, with the following results of treatment:

* Attracts oxygen
* Vasoconstriction with some arterial dilation
* Prevents neovascularization
* Decreases hemorrhaging
* Sedative effect
* Increases tissue toxicity
* Breaks up scar tissue – increased hydrochloric acid scavenges free electrons, breaks down hydrogenated fats and lipofuscin
* At the atomic level: changes spin and reconstitutes to a more healthy level.
* Facilitates information transfer in bioelectric fields which govern cellular function.

The results of 65 patients with macular degeneration and other retinal diseases treated with phototherapy, electrical stimulation and nutritional assistance, 54 percent improved 1-4 lines on the Snellen Chart, while 31 percent improved 2-4 lines.

Not only was acuity affected by this combination of treatments but the visual fields were affected as follows: Threshold (Humphrey 30-2) fields were less affected, while kinetic (visual) and color fields were more profoundly changed. Most patients treated by Dr. Wallace had constricted kinetic fields and enlarged blind spots which improved as well. The reasons for these changes are not known as yet (28).

Dr. Samuel Berne of Santa Fe, New Mexico is another optometrist who is using phototherapy, nutritional support, and optometric vision therapy to treat patients with macular degeneration. He was kind enough to share his "Protocol for Optometrists and Vision Therapists on the treatment of Age-Related Macular Degeneration" with me after a brief phone conversation. It was so impressive that it has been included in its entirety (see appendix).

In closing, it is fitting to quote Einstein, *"No one knows what light is and it is foolish to believe they do."*

ACUPUNCTURE

Body balance is central to the belief in traditional Chinese medicine which uses acupuncture along with herbal remedies to facilitate healing. Viewing the body as an integrated whole, acupuncturists use hair-thin needles and/or electrodes to unblock or rechannel energy (chi) so it can flow freely through the bioelectric and chemical pathways (called meridians) that connect the interior of the body with the exterior. They believe healing cannot occur until the electrical meridians throughout the body are in balance, flowing freely.

Researchers in the Necker Hospital in Paris injected a harmless radioactive substance called technetium into acupuncture points in patient's arms and legs. Using a special camera, they were able to trace its flow along the meridians the Chinese discovered 3,000 years ago. When these acupuncture points were stimulated on one side of the body, not only did it speed up the flow, but effects were observed on the opposite side of the body.

When the substance injected elsewhere in the body, it formed little blobs and did not flow.

Although Western medicine still doesn't fully understand how and why it works, Dr. Joseph Helms, the director of physician training in acupuncture at UCLA medical school, affirms that it is effective treatment for 60 to 70 percent of all medical problems.

A CASE STUDY

Besides a light stroke suffered 20 years ago and several small ones that affected his balance, D.M, a 91 year-old male, is in excellent health except for high blood pressure. He wears 12 base out and three base up, O.S. to correct for the vertical imbalance he suffered from his first stroke.

In 1978, after his stroke, each eye was corrected to 20/30, 20/25 O.U. with +1.25 O.D. and piano -75 165 O.S. In the years between 1978 and 1995, he had two cataract operations. When the cataract from the right eye was removed, a large spot of macular degeneration was discovered. He reported a black, kidney-shaped spot in the center of his field of vision, destroying visual acuity. Besides, the best correction that could be obtained in his good eye at that time was 20/40.

In 1997, at the age of 91, D.M. started taking acupuncture treatments to improve his balance from a Dr. Yiming Yang in Dallas, Texas. The treatments, first administered twice a week for several months, then once a week, improved his balance greatly. After taking a total of about 15 treatments, the doctor inserted needles around his eyes in an effort to treat his macular degeneration.

Much to his surprise, on the following day, he reported that the black spot had disappeared and he could see color, light and form through the macula of his right eye.

During the eye exam one month later, he could read a letter the size of the big "E" if it was four feet from him with the right eye, but more astounding, his left was corrected to 20/25 (admittedly a slow and labored 20/25), with O.U. reading 20/25.

D.M. happens to be my father. After such an improvement in acuity, he continued to complain bitterly that he still couldn't see. At first I didn't understand. After all, my teacher

and mentor, Dr. Eleanor Reckrey, was not binocular, centrally. If macular degeneration is defined simply as loss of acuity due to degeneration of the macula, then one might think that since he still had one good eye then, he would function as normally as one could without stereopsis.

What was such a surprise for me after having him in my home for 6 months, is that he acted as though he is totally disabled visually, exhibiting a kind of "sighted blindness". What has been most perplexing is that my years of writing about vision, my years of study, my years of work with patients did not prepare me to understand or deal with my father's condition. It took months for me to begin to understand.

What follows is a list of the symptoms I observed in this healthy electrical engineer, corrected to 20/25, who surfs the internet and has mastered the art of desktop publishing.

1. Misses large items located near the central field. For example, not seeing the salad at dinner.
2. Misses large objects in outer peripheral field. For example, riding by a school in a car and not seeing a marching band of fifty or more on the lawn.
3. Complains about not being able to see.
4. Poor balance.
5. Unsure when walking and fears falling.
6. Looks at fee when walking.
7. Restricts head movement.
8. Not able to process two things visually at the same time. For example, doesn't notice a new person entering a room while talking to someone else.
9. Rubs eyes.
10. Once an avid reader and now does not read.

These are not symptoms of macular degeneration, or are they? Does loss of the field centrally mean more than just lack of stereopsis?

For the answers to these questions, I turned to Dr. Charles Butts. Dr. Butts, responsible for rewriting Spitler's work and creating the course that became the basis for today's optometric phototherapy, developed a diagnostic work up which added a new dimension to vision therapy. He diagnosed patients combining the 21 points with visual field testing in free space, case history, pen light and brock string.

The preferred method for measuring fields, according to Dr. Butts and those practicing phototherapy (syntonics), is to test in free space. It is accomplished manually, with red, blue and green wands. Referred to as a *functional field,* it reflects the sensitivity of the visual system in gathering, processing and sending out information, as *revealed by performance.*

In a phone conversation, I spoke with Dr. Butts about my father's symptoms. Besides macular degeneration, the doctor explained that he had *restricted visual fields.* Restricted fields he said, were common to macular degeneration as well as strabismus, amblyopia and some types of learning disabilities (especially reading).

The findings of Brombach and Eames (29) revealed that visual field restriction is frequently associated with an enlargement of the "blind spot." They believed the condition to be functional in origin, possibly brought on by stress, and not related to disease. Later, the findings of Mark Anderson, Ph.D. and Jean Williams, Ph.D., confirmed the stress factor to be true (30).

Dr. Jacob Liberman, in his book *Light, Medicine of the Future* writes about the importance of the visual field: *A person's field of vision is his or her ability to simultaneously perceive things peripherally while looking straight ahead. The expanse of this global visual area – left, right, up, down and straight ahead – is known as the field of vision. Traditionally, the peripheral field of vision functions to perceive movement rather than detail and to dynamically predict how much the eyes will have to move to perceive the next object of interest while they are looking at the present object of regard.*

Not only do our fields of vision represent how much of the world our brains are perceiving visually, but more specifically, to me, they represent how much of the brain is actually functioning. The field of vision acts like the root system on a tree. Just as the extent of a tree's roots are directly related to the tree's stability, so the expanses of our fields of vision also act to support our postural, emotional, and physiological stability in the world. If a tree's roots are gradually trimmed closer and closer to its base, its physical stability would gradually be reduced and it would eventually fall over. As our visual fields gradually contract due to physical or emotional stress, we perceive less and less and eventually look at the world through a "hole," rather than perceiving it as a "whole."

The phenomenon is not new by any means. It's been called tunnel vision, malingered, hysterical and many more. Dr. John Searfross describes it well. "Some investigators believe focal infections and leaking pockets of pus are the causes of restricted fields. Some psychologists and psychiatrists believe they are the result of emotional factors. There are educators who think it has something to do with a "scotopic syndrome." Some ophthalmologists report it as a result of trauma or hysteria. Some optometrists believe non-pathologically constricted fields are only associated with a "Stress syndrome." Each group is finding what they are looking for and they may all be correct. They seem to be finding a reduced performance output of the individual as measured by the sensitivity of the visual field (31).

Now that I knew my father's diagnosis, I set out to find out how to treat it. According to Dr. Butts, who has treated thousands of patients with phototherapy, claims that prescribed color light frequencies, administered directly into the eye by means of a syntonizer, lumatron, or color receptivity trainer is an effective means to normalize the visual field and reduce the size of the blind spot (research

bears this out).

Not only are visual fields expanded with phototherapy, but it cures or reduces training time on a list of other anomalies as well. Besides significantly altering (normalizing) phorias, proponents say it shortens amblyopia and strabismus training cases (sometimes even cures them).

I asked Dr. Butts to comment on the roll of phototherapy in treating strabismus and amblyopia (I know it's off the subject, but I couldn't help myself)., According to the doctor, visual fields are extensively warped in such circumstances. *"All young squints have a constricted visual field slightly smaller than the angle of deviation. By correcting the fields, they straighten out as if by magic* if the field is not corrected, the case will not hold."

In one controlled study (32) on the effects of phototherapy on visual field size, memory, and speed and accuracy of eye movements, school children with academic difficulties were divided into two groups. The experimental group looked at prescribed frequencies of light for 20 minute periods, four times a week for six weeks while the control group did not receive any colored light treatment.

At the end of the six week period, both groups were retested with the following results: The visual field increase for the experimental group was 208 times greater than for the control group. Improvements were also seen in visual attention span, visual memory and auditory memory.

TESTING AND TREATMENT

In my search to find effective treatment for my father's condition, I asked Dr. Butts for help. He agreed to test him, loan me the instrumentation and prescribe treatment.

To map my father's visual field and measure the size of the blind spot, Dr. Butts used a stereocampimeter. It was the first time I'd ever seen the test administered. He measured my father's sighted eye (left) in an instrument resembling a stereoscope without the septum. Using tiny colored wands of white, red, blue and green to map four separate fields, he overlaid each color on a grid while the patient fixated on a cue mark.

The size of my father's green field was smaller than a dime. His blue field was the size of a nickel. The red field was about the size of a fifty-cent piece. These three colored fields were all considerably smaller than his blind spot, which was twice normal size. The largest field is the white one – his was kidney-shaped (see appendix). At that time the testing, the right eye (AMD) could not produce conclusive results that anything could be seen in the periphery.

After almost twenty years as a vision therapist and writer, I understood that all visual problems occur in context to the body. But what I hadn't recognized was the importance of the *size and shape* of the field on the overall performance (input/output). If reduced size and warped shape of the visual field affects phorias, and tropias, and reading performance, I wondered why hadn't I seen this test before? How had I missed this concept? Why hadn't we been giving it to all patients entering our vision therapy program?

After about a month of treatments with MU-UPSILON, which my father administered to himself using a hand-held device, Dr. Butts retested him.

With his left eye, the green field, which had started out smaller than a dime, grew to the size of an orange. The red and blue fields were several inches larger than the green and the white, kidney-shaped field became spherical. His blind spot shrunk to near-normal size. Besides that, in his(AMD) right eye, a full and complete periphery could be measured.

As I write this paper, exactly a month has passed since my father took his last syntonic treatment. For the last several years he has had someone read to him. Last week, he finished reading a three hundred page book. Although his balance is still poor and he continues to worry about falling, he notices things around him, even details. He started writing again and will soon have his own page on the internet.

Although the acuity is still about the same, life's not bad for this 92 year-old.

In closing, I would like to share some suggestions for examining the elderly. This is based on taking my father to numerous optometrist sand ophthalmologists during the past ten years and "eating" at least 5 pair of glasses.

1. Talk slowly and distinctly.
2. Examine with lights on in free space.
3. Put the RX in a trial frame and allow the patient to try it out in free space. For astigmatism, suggest that s/he twist the axis to obtain the clearest image, then compare with your findings.
4. Really listen when you ask them about their hobbies. For a computer enthusiast a normal trifocal just doesn't work. For a computer enthusiast, suggest a single vision pair, put the RX in a trial frame and let the patient try it out on your computer.
5. During the exam, when you ask "which is better?", go slowly, be patient. (Elderly and visually impaired patients often process slowly and don't communicate well.)
6. Be aware that high blood pressure affects astigmatism. According to Dr. Charles Butts, as blood pressure fluctuates, so does the pressure in the eyes. One m/m of corneal change can cause a 3 diopter change in power of the lenses needed to correct it. Also, elevated ocular pressure can cause false astigmatism. So take the pressure and ask about medications.
7. Finally, if they suffer from macular degeneration, offer them hope to better their condition and then *either refer or provide treatment yourself.*

FOOTNOTES

1. Lane, BC., Ascorbic Acid, Copper, Zinc, Superoxide

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STUDENT RESEARCH GRANTS

offered by the

COLLEGE OF SYNTONIC OPTOMETRY

The CSO is offering small grants for student research in the field of syntonic optometry. Grants will be awarded to students doing basic research on the effects of colored light on living systems as well as clinical studies on the efficacy of phototherapy on binocular, visual-sensory, visual-motor and visually-related attention/learning/reading problems, ocular pathology, brain trauma syndromes and visually-related symptoms such as headache and astyhenopia.

Research on functional visual fields in children, color visual fields, pupil motility, electrophysiology, eye movement, refraction, convergence, accommodation or other diagnostic procedures used in conjunction with syntonic color therapy will be considered.

Research grants of up to $1500 per project are available. Students must work in conjunction with a faculty research advisor and with input from the research committee of the CSO. Grants will be given on the basis of feasibility, scientific soundness and relatedness to syntonic practice or theory.

The College of Syntonic Optometry was chartered in the 1930's to promote the therapeutic use of limited light frequency bands in clinical practice through post-graduate education and research. To this end the *Journal of Optometric phototherapy,* the annual CSO Conference on Light and Vision and regional courses are offered to an international membership of several hundred optometrists and related professionals. Four different therapeutic devices exist for delivering syntonic therapy. A variety of special clinical tests as well as traditional optometric tests are used to diagnose, guide and evaluate progress and outcome. Syntonic practitioners feel that vision therapy is greatly enhanced by light therapy and *vise versa,* and they have had positive results in reducing pathology not available using mainstream approaches. Advances in scientific research and technology have uncovered the beginnings of a new understanding of the intimate interrelationship between matter and light energy. This is already changing the biological and clinical paradigm and is beginning to validate the scientific underpinnings of phototherapy. The CSO hopes to encourage research in the optometric community.

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THE IMPORTANCE OF INSTRUMENTATION IN SYNTONICS

by Charles B. Butts, O.D., Ph.D.

Since it has been sometime since I have sat to write something for the Syntonagram, instead of going into cases and therapy, I'm going into what makes these cases successful. Without proper voltage, light source, filters, collamating lens, and information to the patient, we lose our ability to be successful.

1. *Light Source and Voltage*

a. In the older College Instrument we used a 50 watt vibrant bulb 105v at voltage 125v, a boost of 20v alternating current. According to G.E. this newer system is much more efficient than the older system. Using an ordinary bulb does not work!! Both instruments had a flash timer.

b. The new 12v direct current bulb is very good in projected a wide frequency band. Jacob and John could probably write an article on their light source. All light sources aim is projecting a wide range of frequencies.

2. *Filters*

The old and new syntonizers use glass. They used glass because they couldn't control plastic lenses because of the heat generated by the instruments. Example – Dinsha in some of his instruments used up to 1500w lights, plastic would have burnt up or warped. Spitler's instrument would have warped them also, therefore they were impractical for the time. Dinsha used this high watts to penetrate the body. Spitler as you know goes through the eye for physiological balance.

Were made of different combinations of minerals to accomplish certain biological effects. All filters were a certain thickness. All this information is available from the college.

3. *Cleaning Filters (Important)*

We use 180 proof alcohol. This cleans and leaves no residue on glass with cotton (works well). Plastic lenses should be cleaned if not sealed. Clean filters every day. Change bulbs once a week.

4. *Collamating Lens*

Is a +5.00 lens that has been sand blasted to make a rough surface causing the frequency's coming thru to be dispersed in all directions. You can't focus on it. Clean also as filters.

5. *T.L.C. – Tender Loving Care*

Patient control – as they are looking in instrument tell them to move their eyes around. Don't focus at one point. Example: move your eyes slowly around, up, down, etc. We need also to give a patient a touch, smile, and a positive attitude. Dr. L. Becraft had all children sign in each V.T. session. The handwriting improved as their fields expanded. The parent couldn't believe this improvement.

We know without results you will not continue therapy, so do everything you can to make it a success. This is an important step.

You have to charge enough for your time and expertise. I scheduled them 2 to 3 at a time. This raises your income per hour. Run fields regularly and charge for this service and it helps you understand the visual processing that takes place.

Remember—NOT ALL CASES are successful. Don't take the impossible cases, the success rate is very low. Consult with other doctors and ask advice.

I hope this will help the beginner to improve his instrumentation. Keep an Aid in the V.T. Room at all times (important).

Syntonically Yours,
Charlie

SELECTION OF COLOR FREQUENCIES FOR BETTER VISUAL PERFORMANCE

Moses Albalas, OD, Ph.D.

Abstract Principles of Chinese medicine and kinesiology are combined to determine the desired frequencies to be used in phototherapy.

Key Words Chinese medicine, behavioral optometry, *yin & yang,* kinesiology, phototherapy, Syntonic Principle

Over a period of three to five thousand years, Chinese medicine has come to view the human body as an integrated whole. Everything is defined by its vital energy, called *chi,* which circulates invisibly throughout the body, connecting the interior of the body with the exterior. This is the basis of acupuncture.

Yin and *yang* represent the polarity in all things and are always in relation. This is similar to the Syntonic Principle, which advocates balance between the sympathetic and parasympathetic nervous systems. The following illustrate some characteristics associated with *yin* and *yang*

Yin	*Yang*
Parasympathetic	Sympathetic
Negative	Positive
Intake	Output
Dark	Bright
Female	Male
Blue	Red
Myopia	Hyperopia
Eso	Exo
Focal	Ambient
Minus	Plus
Base down	Base up.

There are four possibilities in which the balance between *yin* and *yang* may vary and which, by association with the optometric terms above, may influence the prescribing of phototherapeutic frequencies:

- Too much *yin* = parasympathetic dominant.
- Too much *yang* = sympathetic dominant.
- Too little *yin* with normal *yang* looks like *yang* excess.
- Too little *yang* with normal *yin* looks like *yin* excess.

Additionally, there are five elements in Chinese medicine which have certain associated characteristics:

- Wood, associated with:
  *Liver and gall bladder
  *Negative emotions of anger and depression
  *The color green.
- Fire, associated with:
  *Heart and small intestine
  *Excitement and overjoy
  *Red.
- Earth, associated with:
  *Spleen and stomach
  *Obsessive behavior, worry and self-doubt
  *Yellow
- Metal, associated with:
  *Lungs and large intestine
  *Sadness and grief
  *White.
- Water, Associated with:
  *Kidneys and urinary bladder
  *Fear
  *Blue.

An illustration of how these relate to phototherapy can be seen in Seasonal Affective Disorder (SAD). More women are diagnosed with SAD than men. In the comparative chart above, under the *yin* colurun, are female, dark and parasympathetic; among the elements, metal is associated with the emotions sadness and grief, and with the color white. As we know, full-spectrum (white) light is the preferred treatment for SAD.

Selection of Color Frequencies

The best way to determine which phototherapy frequency to give is to *ask the patient.* This may be done by taking advantage of energy direction through *yin* and *yang*, kinesiology and selected color frequencies as follows:

- The palm of the hand projects energy (*yang*).
- The back of the hand takes in energy (*yin*).
- With the patient's palm facing the patient's eye, a weak response with kinesiology usually indicates a system with too much energy (e.g., after brain injury) requiring parasympathetic stimulation (blue end).
- With the back of the hand facing the eye, a weak response usually indicates a weak system (e.g., low energy) in need of sympathetic stimulation (red end).
- Most importantly, the patient can be tested while viewing various frequencies in the light instrument – with the back or front of the hand facing one eye and a weak response with kinesiology, the frequency which makes the patient strong is the indicated frequency.

Chinese medicine, behavioral optometry and phototherapy are similar in that they attempt to treat functional problems *before* structural changes occur.

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FELLOWSHIP IN THE COLLEGE OF SYNTONIC OPTOMETRY

Q: What is required from an optometrist who seeks fellowship status in the College of Syntonic Optometry?

A: Providing the O.D. has been a CSO member in good standing for at least two years, the basic requirement is a written and personal presentation to the Board (or a designated body) of at least three clinical cases which have been satisfactorily addressed by the application of syntonic treatment alone. In practice, supplementary procedures are often introduced during or after a phototherapy program. In these special fellowship presentation cases, however, additional strategies should be employed only after serving the matter at hand, i.e., subsequent to a clear demonstration of the applicant's appreciation of the Syntonic Principle, its application and its effects.

Q: What is the procedure required to have cases considered?

A: A copy of the data relevant to each case should be sent to the Fellowship Chair and to each member of the Fellowship Committee of the CSO at least two months prior to the annual meeting/conference of the CSO.

Q: When do I present my cases to the Board or designated body?

A: Traditionally, during a Board meeting which is convened immediately prior to the annual CSO conference.

Q: May I have help in conducting my cases?

A: It is desirable that an optometrist have been using Syntonics on a routine basis prior to seeking a fellowship. All novices" are encouraged to consult with experienced practitioners until they feel efficient and comfortable with the use of Syntonics in practice. It is common practice for O.D.'s established in the use of phototherapy to consult with one another on cases. An applicant should review fellowship cases with a mentor if only to avoid omissions or gaps which might be questioned during the presentation interview.

Requirements and guidelines for fellowship presentations, as adopted by the Board in 1990, are as follows:

Good optometric practice requires that a record be kept of the patient complaints, history, visual assessment, diagnosis, rationale, treatment procedure and outcome. Optometric practice, when vision therapy or syntonics procedures are involved, is different only in the addition of extra data and monitoring during and after treatment.

HISTORY: medications, early history, relevant occurrences, i.e., fever, trauma (physical or emotional) and diseases.

COMPLAINTS: might include visual discomfort and difficulty, performance deficits, onset and frequency of symptoms, definition of patient desires, expectations or requirements.

VISUAL ASSESSMENT: should include observations and findings pertaining to the complaints, e.g., acuity, motility, refractive status, binocularity, accommodative status (a routine "21-point exam" for OEP practitioners); particulars, when appropriate, about fusion, angle of strabismus, suppression, amblyopia etc.; visual field, blind spot and aw-pupil measurements.

DIAGNOSIS: should include recognition of abnormal findings and possible relationships to the presenting problems; definition of the condition(s).

TREATMENT PLAN: should include a rationale to explain a) why syntonics is the treatment of choice and b) selection of frequency to be used; prognosis, e.g., the predicted period of treatment and number of sessions, expected period of monitoring or reassessments and expected outcome.

TREATMENT PROCEDURE: should record each treatment session—the frequency and time it is used; if changes in frequency are made, provide a rationale.

PROGRESS EVALUATIONS: should include repetition of tests which indicated abnormal function during the initial examination (in particular field charts), i.e., comparative findings, dates of reassessments and patient responses or comments related to treatment or performance outcome. A final assessment at the conclusion of the treatment period should be recorded.

POST-TREATMENT EVALUATIONS: should be done at intervals following treatment, e.g., one, three and six months. These should include tests pertinent to the original diagnosis and objective and subjective assessments of performance.

OUTCOME: conclusion; discussion if appropriate.

The Fellowship Committee of the College of Syntonic Optometry for 1998 is:

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TREATMENT PROTOCOLS FOR AMBLYOPIA AAND SSTRABISMUS
Compiled by Larry Wallace, O.D. from the works of Dale Fast, O.D.

Type	Treatments	Prognosis	Differential Diagnosis
I. Organic			
1. Nutritional	Diet/Supplements	Good	Hair/Diet analtsis
2. Toxic			
A. Exogenous	8 ***uwD*** / 12 ***mu***	Fair/Good	Dostorted form fields Interlaced color fields Central scotoma
B. Endogenous	***uw*** : Hert Invol. ***md*** : Green Constic. (focal infection) ***md*** : Red Constric. (systemic)	Good	Slight constriction of form field, marked color field loss No central scotoma
3. Tobacco-Alcohol	8 ***uwD*** / 12 ***mu***	Good	Required abstinence
4. Congenital	10 ***ad*** / 10 ***md***	Poor	Absolute central scotoma
II. Functional			
1. Hysterical	20 ***aw***	Good	
2. Streff-Syndrome	10 ***aw*** / 10 ***md*** 8 ***uwd*** / 12 ***mu***	Good	Reduced acuity, poor recoveries, general consriction of vis. fields etc.
3. Light Deprivation Ptosis Cataracts	10 ***u*** / 10 ***mu*** 5 sessions then alternate 15 ***md***	Poor	Opthalmoscopy
4. Refractive Isometropia Anisometropia	10 ***ad*** / 10 ***dt*** T.B.I.	Good	Best if error same magnitude and V.A. >20/60 or 1 diopter if unilateral

Type	Treatments	Prognosis	Differential Diagnosis
5. Trauma Fevers Ear Infections	20 ***mu*** if mild 10 ***uw*** / 10 ***mu*** if severe or with headaches	Good	Carefull history
6. Endocrine Imbalance	20 ***aw*** 20 ***dd*** 20 ***md*** 20 ***au***		aw pupil/adrenal fatigue hypothyroid hypopituitary menapause
7. Srabismic Exo surgury, treat	20 ***mu***, plus cobalt filters with fusion targets	70% of constant 90% if non	If history of as previous type
Eso	10 ***ad*** / 10 ***md*** T.B.I.	66% if constant 90% if non	If trauma or fever present within 6 months treat as in **#5**
Verticle	20 ***w*** use cobalt filters		

Letter Codes

a = alpha ***d = delta*** ***m = mu***
D with uw = depresent ***u = upsilon***
t = theta ***w = omega***

T.B.I. = Transbinocular Lid Interacter

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