The International Light Association (ILA) is a uniquely collaborative group of light and color therapy practitioners, health professionals, scientists, educators, product manufacturers, artists, architects, interior designers and philosophers who are passionate about learning and applying the latest theories, techniques and technologies regarding how light and color can promote health, enhance performance and learning and raise consciousness. Our mission is to share and disseminate information, educate, initiate and promote research, and create an open-hearted, broad-minded and integrative community in the field of Light.

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Call for Papers
This is the first issue of the Journal of Light and we are looking for articles on subjects of mutual interest. Please send suggestions, advertisements, personal experiences and well written articles to Sarah Cobb at eyeamsarah@hotmail.com in text format. The ILA wants your support!

Visit us on the web at: www.international-light-association.org
Dear Colleagues:

It is with great pleasure that I can address our membership in the inaugural issue of The Light Association Journal. As we approach our 8th annual international conference, the “Incredible Beingness of Light “, I am so happy and proud to be a part of this wonderful group. Our members comprise a wide and deep community of light workers which encompass color and photo-therapists, researchers, instrument inventors, authors, teachers, philosophers, and doctors from around the globe. We are creating, an incredible community that serves the world for education and a research source for those who seek information and inspiration in the field of color and light.

A goal which has been at the forefront of our efforts has been to create a formalized and certified education program for those who want a degree in the field of light. We have created a vast curriculum and hope to soon offer on line classes. Our website is the premier destination for interdisciplinary information for those seeking knowledge in light therapy and research.

The ILA Conferences have brought together the thought leaders in the field of phototherapy from all around the world. These conferences allow attendees to learn from many disciplines, both technique and philosophical approaches, that can best be learned by direct experience. These experiences are often life altering.

Our new Journal of Light, is under the leadership of our editor, Sarah Cobb. Sarah, the former Editor of The Journal of Optometric Photo-therapy, brings over 10 years experience and a great depth of knowledge about light to her job. This journal promises to enrich your knowledge and the value of your membership.

Love and Light,

*Larry B. Wallace, O.D., Ph.D.*
President of the International Light Association
I first met Francis on the last day of a syntonic meeting in Saint Louis in 2003. We were sitting across the isle from each other wearing opposite sides of the same reversible skirt. At the break I introduced myself. I invited her to my room before the banquet. We ended up telling old stories about our lives and were amazed when we realized that we both lived in the same small town in Texas.

In 2005 she became the first president of the International Light Association and achieved not-for-profit status for the ILA. A letter she wrote regarding her activities is included in The History of the ILA by R.M Eide posted on the website.

Also in 2005 she wrote an article for the Journal of Optometric Nervous System and Light entitled, “Autonomic Frequencies.” Her paper reported pilot study of the impact of red/orange and indigo stimulation on Galvanic Skin Responses, Heart light stimulation.

This article may be found at www.collegeofsyntonicoptometry.com. Click on Journals and refer to March 2005.

Last fall, Francis worked closely with Jay Dillon applying for a grant from a Santa Fe based organization to study the connections between phototherapy and type 2 Diabetes. Jay writes, “she, Jeff Anshel, O.D. and I wrote our paper titled “The Brain Computer Interface: A Dynamic Interaction” for the Third International Cognitive Technology conference, CT 1999. This paper represented an initial investigation into the impact of the technological work/play environment on perception and cognition via the brain computer interface. Frances and I applied last fall for a grant from a Santa Fe based organization to study the connections between phototherapy and type 2 diabetes. We had collected test data over 3-6 month intervals and were excited with our early findings. Her quiet way of listening and then offering advice and related thoughts are sorely missed. She was the embodiment of high ethical values, non judgment toward others and kindness to all.”

The International Light Association has dedicated a memorial lecture in her name to be delivered each year at the conference. Francis was passionate about the need for research and I feel she would like to encourage others to do research that would advance the field of light and color. It seems she got the ILA started, then graduated early. God Speed, Francis!
The Power of Magenta Light

Mary Bolles

began using magenta light in clinical practice in the late 1980’s. The discovery of the magenta frequency in the 1920’s was documented by Dinshah P. Ghadiali. Dinshah, a man from India, held numerous doctorate degrees, and developed a program called Spectro-Chrome, a ‘tonation system’ of delivering colored light to different areas of the body. He had been trained in medicine in India before coming to New York. Dinshah was inspired by The Principles of Light and Color, by Edwin Dwight Babbitt, published in 1878. Dinshah sought to more fully understand the healing arts and the mysteries of nature. Babbitt wrote of his “discovery of the form and constitution of atoms, and their working in connection with ethereal forces to produce effects of heat, cold, electricity, magnetism, chemical action, and many other effects,” on the human system. Babbitt wrote of his “discovery of the form and constitution of atoms, and their working in connection with ethereal forces to produce effects of heat, cold, electricity, magnetism, chemical action, and many other effects,” on the human system. Babbitt was the son of a Presbyterian minister and never had training as a physician or doctor of medicine. Yet Babbitt claimed to cure a variety of ailments by the therapeutic application on the body of sunlight passing through various colors of glass, associating each color to a particular element and mineral.

Dinshah believed healing should be elevated to a mathematically precise science and that it must work not only on the physical, but “on that in man which is beyond the physical.” Dinshah believed that Babbitt failed to descriptively deal with the chemical and therapeutic properties of the violet potency. Dinshah wrote his philosophy in 1934 in Spectro-Chrome Encyclopedia. Babbitt saw the primary colors to be red, yellow, and blue; while Dinshah believed the primary triad to be red, green, and violet (See Diagram of Colors). Dinshah examined the visible spectrum of sunlight from red to violet and noted the infra-red invisible rays below the red and the ultra violet invisible rays above the violet. Dinshah reasoned that heat and cold were the same energy. The infra-red injects energy and is able to burn like steam-scalding or fire-scorching. The ultra-violet extracts energy causing burns like frost-bite. Dinshah wrote: “The human body has to produce warmth to live; it also needs certain so-called electromagnetic potency to operate its motive and other functions through the nervous system. Hence, I reasoned that if I dropped my research at the red and violet, it would be incomplete. I had built out of the spectrum all the primary and secondary colors between the two points of the red and violet; yet, I needed certain others, which would have definite influence on the blood circulatory system to be of real service. Taking into consideration the “heat” and “cold” idea from the infra-red and the ultra-violet scales, . . . a slight study convinced me that I should not have to go far into those scales, enough to damage human tissues, but, should stay close to the visible spectrum itself. . . . I had a small unused piece of red beyond the actual red lines of Cadmium and Hydrogen and a similar piece beyond the strictly violet range. I junctioned these two by superimposing my red slide on the violet and produced an original potency having the defined precise functions on the blood circulatory system. The name for simplicity, I kept the same as in pigment- magenta; on its two sides, toward the red section, I placed scarlet, toward the violet section, I placed purple. These three colors were never thus produced or used for such purpose, by Babbitt or anyone else prior to my origination.”

Dinshah’s twelve colors, made with five slides, form a complete 360 degree circle with each color separated from its neighbor by 30 degrees. Magenta is composed of red and violet. Each of these two primary colors when superimposed on the other reduces the polarity by just one-half of that color. Dinshah saw his system producing oscillatory frequencies that were mathematically precise.

In 1815, a German optician and physicist named Joseph von Fraunhofer had measured the luminosity ratio of the various colors with yellow having the
highest intensity and violet having the lowest. The brightest color then opposes the least bright. They are complementary colors and Dinshah calls them affinity waves of color. There are five pairs which make up affinity waves for Dinshah. Looking at affinity waves from a chemical aspect, they have opposite qualities and seek one another to combine or neutralize. Dinshah is quick to point out that “…Green and magenta are not affinity waves; they are dual aspects of the same potency (See Affinity Wave Table). Magenta has the same oscillatory composition as the green, but its polarity rotation in esoteric chemistry is reverse, being in production a reversal of the rainbow….It has thus certain peculiarities which confer on it the most marvelous attributes of the attuned color wave that has on the physical plane, in physical manifestation, the potency to oscillate the fabric of the psychical vehicle.”

In Spectro-Chrome Metry Encyclopaedia, written in 1934, Dinshah says the magenta frequency is related to the planet Venus. Magenta, for Dinshah, is that part of our life that gives us the appreciation of love and beauty. “It is the power of this Venusian magenta that draws people together in love; I mean genuine human affection. It is through the aura, with reinforcement or interference of wave patterns, that Spectro-Chrome works. I evolved that elusive magenta and put it to use as the pure emotional wave by bending the rainbow as if it were backwards and combining the two ends of the spectrum – red and violet – by superimposition. It is the first instance of its kind where a physical, visible energy is made to act directly upon ‘the invisible in man’ which it does.”

Kate Baldwin, M.D. was a student of Dinshah and chief surgeon at a hospital in Philadelphia. In 1926, after using light in her practice for six years she wrote, “After nearly thirty-seven years of active hospital and private practice in medicine and surgery, I can produce quicker and more accurate results with colors than with any or all other methods combined, and with less strain on the patient . . . Sprains, bruises, and traumata of all sorts respond to color as to no other treatment. Septic conditions yield regardless of the specific organisms. Cardiac lesions, asthma, hay fever, pneumonia, and inflammatory conditions of the eyes, corneal ulcers, glaucoma, and cataracts are relieved by this treatment.” She further stated, “. . . Burns are caused by the destructive action of the red side of the spectrum, hydrogen predominating. Apply oxygen by the use of the blue side of the spectrum and much will be done to relieve the nervous strain. The healing processes are rapid, and the resulting tissue is soft and flexible.”
Dinshah and another medical doctor, Harry Riley Spitler, M.D., O.D., were both actively working with light in the 1920’s. Spitler developed a therapeutic system of delivering colored light, not to various areas of the body, but to the eyes to bring the whole autonomic nervous system into balance and in 1941 explained his method in The Syntonic Principle. Spitler based a lot of his work on constitutional body types. These were Pycnic, Syntonic, and Asthenic. The ideal Syntonic state is when tensions are equal between the sympathetic and parasympathetic nervous systems. Syntonics has a magenta filter called the “N” filter. The “N” stood for the name of a nervous state that was coined in 1869 - Neurasthenia or Nervous Exhaustion. Today, we probably know this state as Chronic Fatigue Syndrome - decreased parasympathetic activity and increased sympathetic activity.

In the early 1920’s Rudolf Steiner (1861-1925), an Austrian philosopher, who attempted to find a synthesis between science and mysticism, had many insights into the nature of color. Steiner said: “When we experience the life of colour, we step out of our skins and take part in cosmic life. Colour is the soul of nature and the whole cosmos, and by experiencing the life of colour we participate in this soul.” Steiner’s important colour was peaches-blossom. Steiner said, “Green you will find in nature; but peach-blossom... is found only in the healthy human being whose soul is present within his physical organism.” Steiner studied color in relation to art and appreciated art as a revelation of spiritual realities. In a lecture in 1923, he said, “A real artist, uses the object, say, to paint the sun shining on it, or to observe a particular colour reflex in his environment in order to catch the interplay of light and dark.” Steiner did not accept Newton’s scientific theory of color which had the three primitive colors being red, yellow, blue and making up all the colors. He said, “... Knowledgeable ones knew
very well that colour arose on a spiritual level.” After the First World War, Steiner worked in practical areas with educators, farmers, doctors and other professionals to develop Waldorf education, biodynamic agriculture, and anthroposophical medicine.

Theo Gimbel, a British man, who has devoted his life to exploring and teaching colour therapy, appreciated Steiner’s spiritual insights. In meeting a patient who requested healing, he tried to find a color that would have a positive effect. In 1996, he wrote in Positive Health magazine, relating to a particular case, that turquoise is the color which supports and strengthens the immune system. Gimbel describes magenta as, “the colour of the purest spiritual energy, that lets go all concerns and worries. The colour of release, it transcends maleness and femaleness.” Gimbel wrote in Form, Sound, Colour and Healing, that magenta, unlike the other colours, “does not focus on any physical gland, but is a very fine threadlike beam which opens up most beautifully and very delicately when puberty is completed.” In his later book, Healing With Colour, he relates magenta to the pineal gland and the crown chakra. He says this chakra is the center of spirituality and perfection, and magenta is the colour of that chakra which “connects you to an infinite intelligence.”

Gimbel had a concern for the “... incredible gap in our educational system of colours carefully applied. Children, before they read and write, have a very acute sense of orienting themselves with colour... It seems that the child finds much help when the inside of small places are of light blue. Softness goes with gentle pastel colours. The other most important area is the actual illumination. Children are very light sensitive and the off/on switching of [fluorescent] light not only causes an outer flickering of their eyelids, but also a shock which is relayed via the pituitary gland to the whole nervous system... the inventor of the fluorescent lamp, Dr. Hans Heitler, considered it to be a cheap light for emergency (wartime) use only, knowing that it could in long term use be a health hazard....It is in childhood where peace and deeper development for a fuller person is awakened. If we are to look forward to a better future then influences of both colour and illumination upon the human person have to be a decisive tool to bring out the positive potentials which lie latent in the child.” The ‘cool white fluorescent’ has excessive levels of yellow and orange and too little red or blue. Research has shown that hyperactivity in children and their levels of dental decay have been linked with poor classroom lighting and have improved with full-spectrum lighting.

Anxiety is high in children with sensory dysfunctions for they are often overwhelmed in typical environments. Since magenta was an ‘emotional equilibrator,’ I believed it could be a good ‘anchor color’ in my Sensory Learning Program. It was inspiring to hear the case studies at the Syntonic Conferences and to understand light’s wide spectrum of application in an allopathic model. I was looking for a visual stimulus to help children with developmental delays, learning and behavior problems, including those on the autism spectrum. I was interested in creating a safe, controlled educational experience that stimulates the visual, auditory and vestibular systems simultaneously which could hopefully allow the participant to learn or improve sensory skills.

‘Sensory Integration,’ the ability to internally organize sensory input from the three major sensory systems to be able to effectively interact with the environment is the goal. Hebb’s Law in physics says that if you fire sensory systems together they will wire together. Neurologists today advise parents who have a child with developmental delays, “to activate multiple areas of the brain at the same time in order to stimulate long range white-matter connections.”

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- Provides an integrated color for an engaging visual stimulus
Along with vestibular stimulation allows profound relaxation while exercising the extrinsic eye muscles

- Allows us to work on the red and violet ends of the spectrum and easily return to balance
- Allows the firing pattern of the hypothalamus to find a balanced state
- Contributes to the participant feeling safe and expressing affection

A therapist sees improvement when there is a state change in the child. Magenta seems to allow a state change to a more balanced state like Spitler’s Syntonic state. Parents of autistic children have been told by doctors that love is the only thing that can make a change in an autistic child. From what I have observed in working with magenta for over twenty years, Magenta may give us the highest power to work on the physical plane. I believe Dinshah was right a hundred years ago - magenta is the frequency of love.

Bibliography
Harry Riley Spitler, The Syntonic Principle, the College of Syntonic Optometry, 1941.
Rudolf Steiner, Colour, Rudolf Steiner Press, 1996.
Theo Gimbel, Healing With Colour, Gaia Books Limited, 1887.

Mary Bolles, B.A. is an expert on the effect of ocular light therapy on developmental delays in children with learning and behavior problems. She holds a B.A. degree from Bowling Green State University in Ohio and is an associate member of the College of Syntonic Optometry. She has specialized training in Whole Brain Accelerated Learning, Sensory Integration, Natural Vision Improvement, and Auditory Integration Training.

She is the founder of Sensory Learning Institute and Sensory learning Center International. She developed a therapeutic intervention with state-of-the-art computerized equipment which allows a multi-sensory experience to help further development in sensory skills involving the visual, auditory, and vestibular systems. She is currently in private practice in Boulder, Colorado. She has trained many allied health professionals to add the Sensory Learning Program to their practice in the United States and in four other countries.

www.SensoryLearning.com
Abstract
The first part of this article explores the theoretical and therapeutic aspects of optometric phototherapy (syntonics). Patient selection, testing, diagnosis, prescribing and syntonic case management are included. The second part presents an historical overview of the general area of phototherapy, and specifically syntonics. It then proceeds to an in-depth discussion of recent research on the effects of light on biological function that is the foundation of the emerging field of phototherapy. The authors propose that optometry has a unique opportunity to obtain a special position in the emerging field of phototherapy.

Key Words
brain injury, color therapy, circadian rhythms, energy medicine, learning disabilities, low level laser therapy, phototherapy, photobiology, pupil reflexes, seasonal affective disorder (SAD), strabismus, syntonics, visual fields, vision therapy

Introduction
Syntonic phototherapy can be a significant addition to the armamentarium of behavioral optometry. When used properly in conjunction with traditional behavioral optometric approaches, the efficiency, speed and success rates of vision therapy increase dramatically. Optometrists also use syntonics by itself for relieving ocular pain, headaches and photosensitivity that may not be treatable with standard procedures. This article presents an overview of syntonics and a summary of research findings about light’s impact on life processes.

Energy medicine, which also includes different forms of light therapy, is rapidly becoming a global phenomenon used by a variety of health professionals from medical physicians to chiropractors, acupuncturists, physical therapists and psychologists. In our view, there lies the future of medicine.

Syntonics
Syntonic therapy is non-invasive and can bring major improvements if patients are chosen carefully. The patients most likely to benefit have not just one or two but several visual deficits. Usually, they show deficits in ocular motilities, accommodation, visual discrimination, binocularity, visual information processing skills, and constricted visual fields.

A typical treatment plan requires 20-minute sessions on at least three consecutive days each week for a total of 20 sessions. Therapy devices use white light directed through colored absorption filters (one device uses narrow band interference filters) onto a frosted collimating lens.

The patient views a glowing circle of light 50mm in diameter from a distance of about 50cm in a darkened room. Specific filters are prescribed for particular ocular conditions. The rationale for determining the treatment frequencies is explained later in this article. Diagnosis is made on the basis of history, present symptoms and clinical measurements.

Success of treatment is judged by changes in symptoms, behavior (mood/attitude, coping ability, and social/verbal skills), performance (academic, athletic and expressive) and changes in optometric test results. The syntonic evaluation places special importance and considerations of pupillary reactions and visual fields.

Evaluation of the Pupil
Optometrists routinely evaluate the pupil, particularly in terms of differences in size, direct and consensual reflexes and Marcus-Gunn reactions. We propose that this should
be extended to include careful observation of excessive pupillary release. When a patient in a dimly room views a distant target binocularly, and a penlight held at three inches is beamed into the pupil of one eye, we expect the pupil to constrict and stay small for at least ten seconds. Pupillary release occurs when the pupil dilates within a few seconds. Pupillary release is not uncommon, especially in children who exhibit weakness in several areas of functional optometric testing or in emotionally stressed, toxic or traumatized patients. The severity of release frequently correlates with reduced visual fields and autonomic nervous system imbalance.

Functional Visual Field Evaluation

Fields are taken before treatment, after six to eight syntonic sessions to measure progress and to determine if a change in filters is necessary, at the end of treatment, and at follow-up evaluations three and six months later. Field constrictions readily improve with syntonic treatment and this increase in useful vision is credited with the often seen gains in patient comfort, efficiency, self-esteem, and functional/binocular vision. Constricted peripheral visual fields are considered classically to be caused by anatomical defects in the retina, visual pathway or cortex. However, they can also result from fatigue, emotional distress or swelling around the optic nerve. Field measures of patients with Tourette syndrome show unique, inconstant field defects. Functional field constrictions are not uncommon in children. Studies since 1927 report between 9-20% of unselected school children have fields of less than 15° in diameter. Some children lose all but the central 1° of vision. Generally, we have found that constricted visual fields are related to inadequate functional visual abilities and overall learning and performance deficits. Strabismics and amblyopes often have decreased fields in one or both eyes. We also propose that constricted fields can be related to binocular instability, since it is difficult to maintain fusion if the fields are only 2, 3 or even 10° in diameter. Sometimes blind spot plots are enlarged two or three times normal. Syntonic optometrists use campimeter (tangent screen-like) devices for plotting fields. They carefully measure the central 60° with a 1.5° white target on a black background. The target is moved from the periphery, non-seeing to seeing, while the patient fixates on a central point. The optometrist is in a position to monitor fixation and is in immediate communication with the patient.

Threshold or flashed methods of taking fields may not pick up functional field loss. A recent study comparing threshold and kinetic visual fields found that simple kinetic fields correlate better with clinical symptoms and are easier to use with children. The frequency doubling field plotter, a recently introduced automated field instrument designed to measure magnocellular nerve loss in glaucoma patients, strongly correlates with syntonic campimeter fields. Abnormal color fields can also improve with syntonic treatment. Color fields are measured by plotting the position at which a red, blue or green target moved in from the periphery changes from a faded, off color appearance to one with the same strong saturation the patient perceives when looking directly at the color. Blue fields are expected to be the larger than red, with green being the smallest. When this order is violated or when the fields are excessively small, a physiological or functional distress is suspected. Color field anomalies as reported by clinical researchers over the past 150 years represent a variety of systemic problems such as endogenous and exogenous toxemias, cardiovascular problems, or metabolic/endocrine imbalance. Syntonic practitioners may use color fields in diagnosis and filter selection, and most often as a measure to evaluate progress.

In view of the apparent prevalence of these types of field defects in children, optometrists who are involved with strabismus and learning problems in this population should seriously consider functional visual field testing.

Therapeutic Syntonics

Traditional syntonic therapy requires at least three consecutive days of treatment per week for a total of 20 sessions. Progress testing is done after six to eight treatments. Visual fields, binocularity, ocular motility, visual acuity and accommodation are tested and symptom changes are recorded. Constricted field diameters will often double in extent after six to eight treatments and will continue to expand to full by 20 sessions. Striking changes in quality of test results, symptom reductions, performance, behavior and mood occur as a result of syntonics, especially when used in conjunction with other optometric vision therapy. The traditional syntonics approach to prescribing filters uses case history, symptoms and clinical data to classify patients into syndromes called: “Acute;” “Chronic;” “Emotional Fatigue” and “A Lazy Eye.”

Acute Syndrome” individuals have a history or symptoms relating to recent onset problems including infection, injury, head trauma, anoxia, stroke, or high fevers. They often suffer from headaches, hypersensitivity or pain. This syndrome requires palliation to alleviate the symptoms. Blue/green filters are used to reduce cortical and retinal swelling, redness and fluid, and to decrease pain by sensory depression. Symptoms include: diplopia, binocular or monocular (368.2), headache (784.0), transient blurred vision (368.12), asthenopia (368.3), orbital pain (379.91), abnormal posture (781.9), vertigo (780.4), motion sickness (994.6). Diagnostic factors include: high exophoria (378.42), exotropia (387.00), convergence insufficiency (398.83), enlarged blind spot (368.42), constriction of the visual field (368.45), visual field defects (368.4), accommodative insufficiency (367.5), deficiency of smooth pursuit movements (379.58), pupil release (794.14) are not uncommon. Pathology factors include: Acute trauma, i.e., corneal abrasions (918.1), strokes and head trauma syndrome, conjunctivitis (372.30), iritis (364.3), cataract (senile) (366.9), corneal opacities, and wet macular degeneration (362.50).

The “Chronic Syndrome” includes individuals with chronic health
problems due to glandular, metabolic or organic imbalances, toxic conditions, or a past traumatic event. Yellow/green is used as a physiological stabilizer and detoxifier. Symptoms include: general fatigue (780.7), loss of vision system stamina and speed, reduced peripheral vision, asthenopia (368.13), headache (784.0), orbital pain (379.91), photophobia, and transient blur. Patients who awaken with morning headaches are suspects. Diagnostic factors include: constriction of the visual fields (368.45), pupil release, esophoria (378.41), low recoveries on ductions, especially abduction, esotropia (378.00), convergence excess (378.84), accommodative insufficiency (367.5), and excess (367.53), reduced ocular motor skills (794.14), reduced red/green fields, reduced blue field indicating liver involvement (toxemia), calcium deficiency. Yellow/green is often combined with indigo/red for 10 minutes of each in cases where emotional instability is also a symptom. The need for yellow/green increases with age.13 In the “Emotional Fatigue Syndrome,” individuals tend towards emotional exhaustion, mood swings, negative emotional affect, and poor coping ability. This syndrome is more frequently seen in children. Symptoms include: photophobia (368.13), transient blurred vision (368.120), asthenopia (368.13), abnormal fatigue (780.7), headache (784.0), dizziness (780.4), frustration, allergies, asthma, and fluid retention. Diagnostic factors include: pupil release, low breaks and recoveries in ductions, especially adductions (368.33), and fatigue exophoria (378.42). A combination of indigo and red filters is used for sympathetic/parasympathetic balance and to support the adrenals. Indigo/red can be used for 20 minutes alone but is usually combined with yellow/green for 10 minutes each.13 In the “Lazy Eye Syndrome,” red/orange light is used. According to Spitler, red/orange stimulates the sympathetic nervous system and increases cell membrane capacitance (build up of electrical charge before discharge) that increases nerve cell charge in order to break through synaptic resistance to overcome amblyopia.4

Findings include: ambylopia (368.00), esotropia (378.00), ambylopia (368.00), esophoria (378.41), suppression of binocular vision (368.31), field constrictions (368.45), abnormal retinal correspondence (368.34), or deficient vergence abilities (368.33). These patients are often parasympathetic dominant individuals exhibiting patterns of generalized muscle tightness (tight-fisted pencil grip, gritted jaws, inward turning feet).13 While the choice of the appropriate treatment color frequencies remains an art, clinical experience has provided the basic guidelines for the syndromes above. Recently several approaches to using color light in optometry have evolved.

Vasquez engages patients in therapeutic dialogue as he changes in the color or flash rate during sessions.14 Liberman also advocates dialogue to help patients gain deeper awareness of their resistance to individual colors thereby gaining greater receptivity and more comfort with those colors and with themselves in the world.15 Downing devised tests to determine a patient’s constitutional profile using different filter combinations for fast or slow types (blue and red respectively).16 Albalas combines the syntonic principle, Chinese medicine and applied kinesiology (selecting the filter giving greatest muscle strength) in determining treatment frequencies.17 Searfoss used a rainbow of selected narrow band interference filters viewed for one minute each. He then asked patients to select the most relaxing or healing color(s) to look at for the remainder of the 20 minute session.18 Three recent controlled studies by optometrists have attempted to measure syntonic phototherapy’s impact on children’s learning and vision. In 1983 Kaplan reported on the use of syntonic stimulation for the treatment of learning disabled children. 2 Three years later, Liberman published an article on syntonic therapy applied in an optometric office on its effects on children’s vision and cognition.3 Ingersol in 1998-1999 investigated syntonic effects when integrated into an elementary school curriculum and used in conjunction with vision therapy.1 These studies provide evidence that relatively short-term syntonic treatment can significantly improve visual skills, peripheral vision, memory, behavior, mood, general performance and academic achievement. They also confirm that children with learning problems have a reduction in the sensitivity of their peripheral vision. During and after phototherapy they demonstrated improvement of peripheral vision and visual skills. These three studies found profound improvements in the children who used syntonic phototherapy compared with subjects matched for age and academic success who did not. The controls either looked at white light,2 had optometric vision therapy 3 or had optometric vision therapy and academic tutoring. These students showed no or significantly less improvement in their peripheral vision, symptoms or performance than the groups treated with sytonics. And Ingersol found the experimental group receiving academic tutoring, vision therapy and sytonics had significantly superior outcomes than students given tutoring and vision therapy but no sytonics. Behavioral optometrists using sytonics successfully treat children and adults with learning, reading and attention disabilities, people suffering the effects of head trauma and stroke, retinal disabilities, strabismus, headaches and senility. Included here are brief descriptions of two such cases. A 78-year-old woman patient came for vision therapy because of double vision. Her eyes had suddenly crossed eight weeks earlier. In addition, she was mentally confused and emotionally distraught and had been since the death of her husband 10 months before. Examination by her neurologist was inconclusive. After twelve 20-minute treatments, her eyes straightened and she regained mental/ emotional balance and coherence. When asked what she thought had helped her get better, she said, “The green light. Every time I watched the green light I could feel waves and ripples inside my head. Finally during one light session I felt a kind of pop in my head and everything became clear.”
Another patient, a 6-year-old girl, was on the verge of being discharged from her public school because she could not learn and was disruptive. Diagnosed as autistic and retarded from an early age, she was so hyperactive that even objective optometric testing was impossible. Her history included her mother’s toxic pregnancy (pre-eclampsia), cord wrapped around her neck at birth, and her father was hit and killed in a crosswalk a few feet in front of her when she was two years old.

She started syntonic color therapy using yellow-green filters, the goal being to eliminate any toxemia that might have remained from the pregnancy. In five treatments, for the first time in her life she had become a calm, cooperative and communicative little girl who could learn and participate in her normal first grade class. Syntonics has some of its most profound effects in the treatment of traumatic brain injury. One informal study of 46 patients with head trauma revealed all 46 had visual field loss. Seventy percent responded with field expansion after treatment with syntonic phototherapy.

While it is true that not all patients respond as favorably as is indicated in the above examples, there is nevertheless an increasing body of evidence of the effectiveness of syntonics. One might question that since sunlight has every wavelength in the spectrum, why doesn’t exposure to it provide the benefits of syntonics? An answer is that our modern lifestyle limits natural light exposure and we have become victims of mal-illumination, a syndrome of behavioral and medical conditions described by John Ott, a pioneer in the field.

A recent California study showed that students in classrooms with predominately natural lighting scored as much as 25% higher on standardized tests than other artificially lit students in the same districts.

An Abbreviated History of Phototherapy and Syntonics

Throughout history there have been reports of using light to heal. Egyptians used precious gems, Greeks built solarium cities in high mountains to harness ultra-violet light for healing tuberculosis, and red light was used to quell the effects of smallpox virus. Practitioners from the late 19th and early 20th centuries such as Babbitt, Pleasanton, Pancoast and Dinshah clinically found that color, applied to the skin, could have a non-intrusive, curative effect on bodily ailments. Similarly, the use of green or blue light on the skin is the currently preferred medical treatment for neonatal jaundice. At the turn of this century, it first became known that light entering the eyes not only served vision, but also traveled to other important brain regions.

Clinical application of selected light frequencies in optometric practice began in the early 1920s. H. Riley Spitler theorized the role of the eyes in phototransduction and the roles of light and color in biological function and development. He developed the clinical science that he termed Syntonics — from “syntony,” to bring into balance. Spitler concluded that many bodily, mental/emotional and visual ailments were caused primarily by imbalances in the autonomic nervous and endocrine systems. He was the first to elaborate on this function of the retinal-hypothalamic pathways. Spitler proposed that applying certain frequencies of light through the eyes could restore balance within the body’s regulatory centers thereby directly correcting visual dysfunctions at their source. His model suggests that red (low energy, long wavelength) at one end of the visible spectrum stimulates the sympathetic nervous system, green (middle frequencies) yields physiological balance, and indigo (high energy, fast frequencies) activates the parasympathetic nervous system.

In 1933 Spitler established the College of Syntonic Optometry to research the therapeutic application of light to the visual system. In 1941 he published his thesis as The Syntonic Principle and included a survey of clinical results from syntonic practitioners: Syntonic Effectivity: A Statistical Compilation of Ocular Anomalies Handled by Applying the Syntonic Principle. This study showed that of 3067 individuals, 2791 (90.7%) taking syntonic treatment responded positively.

In the 1960s, Charles Butts, O.D. developed a diagnostic workup and treatment regimen which added a new dimension to vision therapy. Patients were diagnosed according to symptoms using a specific case history, the Optometric Extension Program’s 21 points, pupillary responses, central visual fields and other tests of eye teaming and motility.

Scientific Findings About Light’s Impact On Biology

Measuring light’s biological effects is a complex business. Outcomes are dependent on wavelength, intensity, duration, timing and number of repetitions. There are short-term effects, measured a few seconds or minutes after irradiation, and long-term effects, observed after hours or days. The effects also depend on the type of organism studied, its growth phase and the parameter being measured. For an interesting discussion about the difficulties encountered in doing light therapy research see: Tuner- Hode’s: Low Level Laser Therapy , Chapter 13 at: www.laser.ru/l3l/L3LT_critic_on_critics.htm.

Light Effects Via Blood

Light-sensitive blood constituents carry photic information and energy to affect various body functions. Blue light delivered on the skin behind the knees, for example, resulted in significant alterations in human circadian rhythms. Oren and Theraman postulate that the blood constituents hemoglobin and bilirubin in animals may be counterparts to chlorophyll and phytochrome, the light-sensitive pigments in plants. Hemoglobin is similar to chlorophyll in structure. Both are reversibly altered by light.

Other research has found that the heme oxygenases are reversibly altered by specific wavelengths of visual light. The heme oxygenases, HO-1 and HO-2, are enzymes controlling oxygen-carbon dioxide exchange and also regulate vasodilatation, neurotransmission, antioxidation, anti-inflammatory, anti-
viral, gene expression and other basic physiological functions.\textsuperscript{42} HO-1, like the sympathetic nervous system, acts to protect the organism from acute environmental stress while HO-2 acts more like the parasympathetic nervous system. Nitric Oxide (NO) is another important blood constituent that works to control bodily stress reactions. A well-known physiological effect of visible frequencies of light on blood is relaxation of blood vessel walls. Bound NO-hemoglobin can reversibly release free NO when irradiated with lasers.\textsuperscript{43}

**Light Directly Stimulating The Brain**

In the early 1900s, researchers found evidence that photoreceptors exist in animal brains. Until recently retinal and pineal opsins were detected in selected regions of lower vertebrate brains but not in mammals. Now, published data suggest the presence of cone-like, rod-like as well as non-visual types of photopigments in least two kinds of photoreceptor cells in mammal brains, in cells lining the ventricles and in classical neurosecretory neurons in preoptic centers. These photoreceptors have been implicated in the regulation of circadian and reproductive responses to light in all species examined.\textsuperscript{44}

Until 1999, mammalian opsins were thought to be specifically expressed only in the retina and the pineal gland. But now scientists at NIH have discovered what appears to be the first opsin, called encephalopsin, expressed specifically in the mammalian brain. At this time encephalopsin function remains a mystery but because opsins have always been involved in light detection, we must consider the possibility that encephalopsin participates in this process.\textsuperscript{45}

Recent work suggests that light excites mammalian brain tissue directly. Slices of rat cortex stimulated with low levels of visible light released more GABA (gamma-aminobutyric acid), a neurotransmitter implicated in sex drive, anxiety, aging, inflammation and epilepsy. Higher light intensity stimulation suppressed this increased release. The effective light level was the same as that which penetrates through the skull to reach a rat’s brain at the intensities of sunlight.\textsuperscript{46}

Russian data indicate that low-energy infrared laser irradiation has certain neuroprotective activity in oxidative stress. Infrared laser irradiation lowered the increased levels of hydroperoxides and malonic dialdehyde and elevated oxidase dismutase activity in the brain during ischemia, reperfusion, and acute edema of the brain.\textsuperscript{47} These findings have vast implications for the fields of immunology and rehabilitative medicine and suggest that light has biological impact on the brain by a means not considered in modern times.

**Biophotons**

It is now well established that all living systems emit a weak but permanent photon flux in the visible and ultraviolet range. This biophoton emission is correlated with many, if not all, biological and physiological functions. Biophotons may trigger chemical reactivity in cells, growth control, differentiation and intercellular communication, i.e., biological rhythms. Biophotonic communication may prove electromagnetic fields are more primary to biology than chemistry.\textsuperscript{48}

**New Information on Circadian Control Systems**

Syntonic color therapy might work by altering the timing of circadian rhythms. These oscillations in biochemical, physiological, and behavioral functions of organisms occur with a periodicity of approximately 24 hours. They are generated by molecular clocks that are synchronized with the solar day by environmental light. The various clocks oscillate in complex phase relationships. They can go out of phase with each other and when they do, health suffers along with mood. If poor health is a result of a rhythm disorder, fix the rhythm, not the symptom.\textsuperscript{49} Individual cells undergo daily cycles of activity and rest just like whole organisms do. Daily oscillations of enzyme and hormone levels modify the timing of cell physiology, division, and growth. Body temperature, immune responses, digestion, susceptibility to anesthesia, and dental pain threshold (the best time to go to a dentist is in the afternoon) all undergo cyclic changes peaking at fixed times during the day. Visual and mental acuity fluctuate during the day. Malfunctions in circadian timing are responsible for chronic sleep disorders in the elderly, manic-depression, gastrointestinal disorders, and seasonal depression.\textsuperscript{30} Psychiatric research shows that light therapy through the eyes is the most effective and accepted treatment for seasonal affective disorder (SAD).\textsuperscript{51,52} Psychiatrists are now investigating light therapy for other disorders such as subsyndromal SAD, nonseasonal depression, premenstrual depression, circadian sleep phase disorders, sleep-maintenance insomnia, jet lag, and problems resulting from shift work.\textsuperscript{53-55}

One psychiatrist, Kripke, has carried out a systematic comparison of light and antidepressant drug studies in nonseasonal major depression. He argues that we should routinely prescribe light for nonseasonal depression, at least as a supplement to medication.\textsuperscript{55} Light is the major cue leading to realignment of the endogenous rhythms and the external entraining conditions. For example, depending on when during the night a short pulse of light is administered, circadian timing can be phase-delayed or phase-advanced. By controlling the time of a phototherapy treatment, recovery from jet lag or shift work is accelerated.\textsuperscript{50} The quality of human health and performance depends on the synchronization of the major 24-hour rhythm (core body temperature, REM sleep and plasma cortisol) with the 90-minute rest-activity or sleep-wake rhythm (slow-wave sleep, skin temperature, plasma growth hormone). These two major cycles go in and out of phase due to external (light-dark, hot-cold) and behavioral/social (meal time, work day/week) cues. Some individuals maintain a healthy, stable coordination between these cycles. Other people’s rhythms modulate quickly through
Clocks are being discovered everywhere in the body. Evidence suggests that flies have biological clocks in their heart, lung, liver, kidney, and testes and that light sets each clock individually to follow a schedule independent of the brain’s master clock.\textsuperscript{51, 52} In mammals a subset of retinal ganglion cells has direct projections to the master circadian clock in the suprachiasmatic nucleus (SCN) via the retinohypothalamic tract (RHT). Different cellular clocks in the SCN have differing resynchronization rates as do peripheral clocks in the various tissues.\textsuperscript{53} The nature of the photosensory molecules that detect the light signal is not established. Because severing the optic nerve abolishes the ability for light entrainment in mammals, it is generally accepted that the eye contains the photopigments for both visual (imaging) and circadian systems. Animals with severed optic nerves lose light synchronization, however, in mice with a retinal degeneration syndrome in which all of the rod photoreceptor cells and virtually all of the cone photoreceptors are destroyed, light entrainment of the circadian rhythm is normal. Similarly, many blind persons with no conscious perception of light exhibit normal circadian rhythms. Other blind people do not entrain to light.\textsuperscript{59}

In human beings, melanopsin is expressed only in the eye and is restricted to cells within the ganglion and amacrine cell layers of primates. Notably, expression is not observed in retinal photoreceptor cells, the opsins-containing cells of the outer retina that initiate vision. The unique inner retinal localization of melanopsin suggests that it is not involved in image formation but rather may mediate nonvisual photoreceptive tasks, such as the regulation of circadian rhythms and the acute suppression of pineal melatonin.

The anatomical distribution of melanopsin-positive retinal cells is similar to the pattern of cells known to project from the retina to the suprachiasmatic nuclei of the hypothalamus, a primary circadian pacemaker.\textsuperscript{60} Different wavelengths have varying entrainment abilities relative to hormone output regulating such vital functions as reproduction, growth, body temperature, blood pressure, motor activity, sleep, and immune function and in such conditions as diabetes, osteoporosis, heart disease, cancer, Parkisons, Alzheimers, and aging in general.\textsuperscript{61} Green light was found to be most effective in suppressing melatonin in humans. This may be different from resetting circadian clocks; the exact mechanism is still unknown.\textsuperscript{62} Two blue-light photoreceptor genes, cryptochrome 1 and 2 (CRY1 and CRY2), were recently identified in humans. Known to be active in modifying plant rhythms, evidence suggests that these pigments may also function as photoreceptors for setting the circadian clock in humans and other mammals. Studies have shown that light penetrates into and propagates in sufficient quantities through the human brain and other internal organs. This is a different light perception and a different time scale than in vision. Hence, it is plausible that light can reach the SCN directly to excite CRY1 in addition to the ready excitation of CRY1 and CRY2 in the retina.\textsuperscript{63} What unique physiologic function such excitation may elicit remains to be elucidated. Some researchers propose that rather than a master clock in the brain being solely responsible for coordinating all body rhythms, the true master switch for these many other clocks is just environmental light.\textsuperscript{64} Not only does light intensity and day length change through the year but daylight color changes radically from dawn to sunset and modulates with the seasons.

**Conclusions**

Clock mechanisms have been identified in the brain as well as peripherally in organs, tissues and cells throughout the body. The peripheral clocks normally synchronized by master clocks in the brain maintain their rhythm and are light responsive even when cut off from the brain. Light may (1) directly trigger photoreceptors in cells in skin or deeper in the body, (2) may stimulate photosensitive elements in the blood by passing through the skin or through the eye into the vast retinal vascular beds to deliver photic information everywhere by way of the blood stream. (3) Finally, light may stimulate clock and other photoreceptive areas in the brain via the retina through the optic nerve. This may take place via rod and cone pigments, by non-visual retinal pigments or perhaps via direct fiber-optic-like pathways running from the retina through the optic nerve.

These examples of research included demonstrate the broad array of light pathways being investigated today. Applications in healing can be found in optometry, medicine, psychiatry, psychotherapy, color acupuncture (now termed colorpuncture), rehabilitative medicine, and a vast assortment of body centered therapies. Syntonic phototherapy is at the core of a rapidly growing interest in and shift towards energy medicine in our quantum age. At this time energy medicine is not a final or unified model. There is a dynamic rhythmic matrix of energies including mechanical, electric, magnetic, gravitational, thermal, acoustic, and photonic. Different therapeutic approaches focus on one or more phenomena. Our living matrix can extract information needed to pilot our biological systems. There is not one but many pathways through which this may occur. In Syntonic it may be the retinal-hypo-thalamic-pituitary-pineal axis, the retinal vasculature, several acupuncture meridians, or by a yet undiscovered means. These applications are the future of medicine and healing. Syntonic is a time honored and clinically proven modality of treatment. Optometry is in a unique position to further these applications and retain its special position in the light therapies of this new millennium.
References


31. Karu TI. http://www.spie.org/web/abstracts/2700/ 2728.html (especially for cancer)


Larry B. Wallace O.D., Ph.D., is a behavioral optometrist who has practiced for over 34 years in Ithaca, NY. He currently serves as President of the International Light Association and is the former President and current Education Director for the College of Syntonic Optometry, an organization dedicated to education and research in the field of light and color therapy. He has invented and patented the first micro-current device to treat eye disease. He has published numerous articles and research on phototherapy. Dr Wallace has lectured and taught workshops around the world. He is also a certified low vision specialist in New York, and has worked extensively in the field of vision

Ray Gottlieb, O.D., Ph.D. has been Dean of the College of Syntonic Optometry for more than 25 years. He has written numerous articles and has lectured about phototherapy at CSO, ILA, WALT, SPIE and at other optometric and medical conventions. His optometric specialties include training to improve myopia, presbyopia, visual attention/learning disorders, brain injury recovery and pianists’ music learning skills. He has written a book: Attention and Memory Training and a presbyopia DVD program: The Read Without Glasses Method

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Sarah Cobb / Aculight Vision Enhancement / eyeamsarah@hotmail.com
LIGHT ON SHINGLES

Denise Hadden

Many years ago, after an awakening experience with an American Indian healer, I was told that whenever danger approached me, a white feather would appear as an indication that the ancestors were guiding and watching over me. Following her message, I had come upon white feathers in the strangest places and initially been terrified at what to expect. Each time I survived the trauma that predictively ensued, I learned to be present to what was to follow. The white feather that I had picked up the week prior to my sudden illness, lay quietly forgotten on my desk.

Shingles attacks suddenly. I had experienced it before as a rash on my body and was unaware of any warning symptoms that may have alerted me to its onset. This attack was to my head, yet the day before it sliced through my right eye and skull, my right leg had collapsed, and I was certain that some nerve damage had suddenly worsened.

I had begun a meditation to send energy to my leg, when the field around the right side of my head suddenly expanded. I moved my hand to the edge of the strange sensation and realised I was at least a foot away from my skull. I knew then that I was becoming ill, but I seemed powerless to do anything.

The pain began in my right eye, as a shooting, searing, flash of lightning. It was so intense that I thought some spiky insect had taken a sky dive into the corner of my eye. The frequency of pain increased and spread to my right ear and all over the right side of my head. Within hours I had phoned the ophthalmologist, having self-diagnosed it as shingles.

Over the next 9 days, I saw the GP, an ophthalmologist and neurologist twice, and I spoke with my GP who has known me for 15yrs. I was told, despite my pleas to 'look at the faint rash that has appeared on my skin', that I definitely did not have Shingles. I was given three different diagnoses - a flu/virus, Temporal Arteritis and Trigeminal Neuralgia. They all eliminated Shingles.

The GP thought it was Temporal Arteritis and put me on to a massive dose of cortisone, 120mgs daily - 24 tabs a day. I spent the weekend surfing the net and found that with or without the cortisone, this disease would make me go blind soon or have a stroke. The blindness they say - comes like a shadow - like a thief in the night.

I think logically about this, I cry, I begin to decide what I want to see before I go blind. I touch things with my eyes. Then I have terrible pain in my chest and I know I am going to die, that the stroke will take me first. I am relieved. Better that than blind. I weep again and write a last letter to my son. I say goodbye to the world wondering if when I wake, I will open my eyes and not see.

After blood tests and a brain scan eliminate all the death sentence diagnoses the neurologist realises it is Shingles. The anti-virals for Shingles work only if given within 3 days of onset and this is now 9 days later, but it is worth a try - as there is nothing else in the medical armamentarium that will fix it. My pristine system that hardly swallows an aspirin is now overflowing with drugs and my tears have washed the last vestiges of emotional stability away.

The next ophthalmologist finds the reason for my eye pain. I have conjunctivitis, keratitis, iritis and my eye pressures are increasing. He checks me daily. My pressure goes from 13-17-23. I am still in severe pain all over my head and feeling very ill.

I speak with Sarah Cobb and Charlie Butts and remember that I have the power to treat myself. Whatever made me forget that? Do I really believe that light will work? Charlie and Sarah are giant pillars of support in their utter belief and their knowledge of light.

I do a colour visual field. It is tiny, oval and heartbroken. Then I start with light. I do violet and indigo for the pain. I do it 2-3 times a day. I sleep in between and all through the night as well. I am soothed and my field increases - but I am showing anger. Did you know that cortisone and violet light produce the same emotional release of deep rage? I see this anger in my field. I choose to be love, because I know that my anger will draw my field in again.

The pain disappears rapidly. Within a week it is a whisper on the surface of my face and head. I am astounded at the speed at which it works. Even the
range of painkillers they gave me did not remove the nerve pain. I do blue/green 2 times a day and have a day's break after about 10 days. Intermittently I add violet and indigo for the traces of pain. All the inflammation subsides, my pressure drops to a normal 12, and I am left with a mild iritis that will require a little longer to dispel completely. I am still using blue/green and my fields have increased and become a more even shape. I have used indigo around my eye to soothe the intermittent orbital pain that signals the grumbling iritis.

I am fortunate. Shingles can have a devastating effect on the eye, and especially when treatment begins so late after onset. I was off work for 21 days. I began light treatment on day 10 and was free of pain 7 days later. My eye pressure dropped within a few days and all the external inflammation disappeared. I have heard of Shingles pain continuing for 6-12 months after onset and many people describe sensations that never leave them following an attack on the head.

Returning to work, I discover the white feather on my desk. Once more I have survived.

This experience held a profound lesson for me. In the depths of my pain and anguish, in the darkness that I thought was going to engulf me forever, I lost sight of the power of light.

According to the Ancient Ones:

‘Only in total darkness can we learn to see’

Denise Hadden

For more than 30yrs Denise has explored and questioned the standard beliefs and practices of how to treat vision. Her journey in understanding how we see, led her to study Chinese Medicine and Counseling and to use vision exercises and coloured light as tools in the process of discovering a new way of seeing. Her current area of interest and research is in her pioneering work in the understanding and analysis of our fields of awareness. Denise has expanded her studies to Coaching and has found that the profound awareness’s often experienced during coaching processes correlate strongly with our ability to see peripherally.

Denise obtained a BSc Hons, Optics in 1973 from Manchester University, UK. She was certified as a Fellow of the British Optical Association and as a Fellow of the Spectacle Makers Company in 1976. She then moved to Cape Town, South Africa. In 1995 Denise completed a course in Chinese Medicine, integrating this knowledge into her vision treatments. In 1999 Jacob Liberman introduced Denise to Syntonic Phototherapy. In 2002 Denise developed a new method of analyzing colour visual fields and was invited to present her work at the 2003 College of Syntonic Optometry conference in Virginia Beach. Denise has since developed a unique Model on Visual Coaching, utilizing this process to explore visual awareness. She expanded her research into the subtle fields of consciousness and presented this latest work at ISSSEEM in Colorado, June 2011. Denise's book, New Light on Fields, was published in 2010 and describes her diagnostic method of analyzing colour visual fields.

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Book Review:

In Syntony

by Sarah Cobb

In Syntony, by Stefan Collier, is an outstanding mini guide in Syntonic Phototherapy. Its the first book written about syntonics in many years as is a very impressive effort. This book clearly explains what syntonics is all about and provides a depth of knowledge for both the optometrist and the light practitioner who is interested in expanding and deepening their knowledge. Because syntonics is an old proven medical standard, based on thousands of cases, it offers all light workers a solid basis for the therapeutic use of light for healing.

For optometrists, Stefan is offering some new, well informed, information on syntonic syndromes and protocols to use in treating the underlying cause of vision problems. It offers much needed explanations of visual field interpretation which is the benchmark for measuring success of light therapy.

Stefan has been teaching syntonics around Europe and the U.S. This book will be a useful tool for optometrists in promoting the use of light in treating vision problems but it will also serve as inspiration for reaching a wider audience of lightworkers. He is to be congratulated for his contribution and expertise.

Biophoton Detection and Low-Intensity Light Therapy: A Potential Clinical Partnership

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Abstract
Low-intensity light therapy (LILT) is showing promise in the treatment of a wide variety of medical conditions. Concurrently, our knowledge of LILT mechanisms continues to expand. We are now aware of LILT’s potential to induce cellular effects through, for example, accelerated ATP production and the mitigation of oxidative stress. In clinical use, however, it is often difficult to predict patient response to LILT. It appears that cellular reduction-oxidation (redox) state may play a central role in determining sensitivity to LILT and may help explain variability in patient responsiveness. In LILT, conditions associated with elevated reactive oxygen species (ROS) production, e.g. diabetic hyperglycemia, demonstrate increased sensitivity to LILT. Consequently, assessment of tissue redox conditions in vivo may prove helpful in identifying responsive tissues. A noninvasive redox measure may be useful in advancing investigation in LILT and may one day be helpful in better identifying responsive patients. The detection of biophotons, the production of which is associated with cellular redox state and the generation of ROS, represents just such an opportunity. In this review, we will present the case for pursuing further investigation into the potential clinical partnership between biophoton detection and LILT.

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Dangers of Exposure to "White Light"

“White” light suppresses the body’s production of melatonin more than orange light. Exposure to the light of white LED bulbs, it turns out, suppresses melatonin 5 times more than exposure to the light of High Pressure Sodium bulbs that give off an orange-yellow light. “Just as there are regulations and standards for ‘classic’ pollutants, there should also be regulations and rules for the pollution from artificial light at night,” says Prof. Abraham Haim of the University of Haifa.

“White” light bulbs that emit light at shorter wavelengths are greater suppressors of the body’s production of melatonin than bulbs emitting orange-yellow light, a new international study has revealed. Melatonin is a compound that adjusts our biological clock and is known for its anti-oxidant and anti-cancerous properties. The study investigated the influence of different types of bulbs on “light pollution” and the suppression of melatonin, with the researchers recommending several steps that should be taken to balance the need to save energy and protecting public health. “Just as there are regulations and standards for ‘classic’ pollutants, there should also be regulations and rules for pollution stemming from artificial light at night,” says Prof. Abraham Haim, head of the Center for Interdisciplinary Chronobiological Research at the University of Haifa and the Israeli partner in the research.

The study, titled "Limiting the impact of light pollution on human health, environment and stellar visibility" by Fabio Falchi, Pierantonio Cinzano, Christopher D. Elvidge, David M. Keith and Abraham Haim, was recently published in the Journal of Environmental Management. The fact that “white” artificial light (which is actually blue light on the spectrum, emitted at wavelengths of between 440-500 nanometers) suppresses the production of melatonin in the brain’s pineal gland is already known. Also known is the fact that suppressing the production of melatonin, which is responsible, among other things, for the regulation of our biological clock, causes behavior disruptions and health problems.

In this study, conducted by astronomers, physicists and biologists from ISTIL- Light Pollution Science and Technology Institute in Italy, the National Geophysical Data Center in Boulder, Colorado, and the University of Haifa, researchers for the first time examined the differences in melatonin suppression in a various types of light bulbs, primarily those used for outdoor illumination, such as streetlights, road lighting, mall lighting and the like. In the first, analytical part of the study, the researchers, relying on various data, calculated the wavelength and energy output of bulbs that are generally used for outdoor lighting. Next, they compared that information with existing research regarding melatonin suppression to determine the melatonin suppression level of each bulb type.

Taking into account the necessity for artificial lighting in cities, as well as the importance of energy-saving bulbs, the research team took as a reference point the level of melatonin suppression by a high-pressure sodium (HPS) bulb, a bulb that gives off orange-yellow light and is often used for street and road lighting, and compared the data from the other bulbs to that one. From this comparison it emerged that the metal halide bulb, which gives off a white light and is used for stadium lighting, among other uses, suppresses melatonin at a rate more than 3 times greater than the HPS bulb, while the light-emitting diode (LED) bulb, which also gives off a white light, suppresses melatonin at a rate more than 5 times higher than the HPS bulb.

“The current migration from the now widely used sodium lamps to white lamps will increase melatonin suppression in humans and animals,” the researchers say. The researchers make some concrete suggestions that could alter the situation without throwing our world into total darkness, but first and foremost, they assert that it is necessary to understand that artificial light creates “light pollution” that ought to be addressed in the realms of regulation and legislation.
Bodywork is fascinating. A mix of science and intuition, touch, and understanding. Done well, it is a dance of duality, both knowing exactly what you are doing, and allowing space for something beyond to also happen.

These two principles are reflected in two laws: the law of gravity, and the law of grace. Gravity governs the physical, the anatomy that we study, the body we touch. This is Job's Body, with its density and suffering. It is a body we can learn about, treat in predictable ways and achieve predictable results.

The law of Grace is more mysterious. Grace is the client's answer to the treatment that we offer; it is the healing response. Grace prefers invitation, since it is not something we do, but rather something that arrives. In practice, we see that the law of grace is also the law of creation, the science of light.

To be clear, grace, here, is not a religious concept. It is not something that descends from above. It is the healing force that arises from within each person, according to a set of scientific principles. We fix bodies according to the laws of gravity. What actually happens is grace.

In my schooling, I was taught a lot about gravity. This subject is something anyone can teach, everyone can learn, and has many practical applications. However, a practice based on gravity by itself is not complete, and barely effective. That is because we are seldom dealing with just a body. We are working with people, and with people there is an intimate and complex weave of emotions, thoughts, energy, and light all intertwining together. The physical segment of this intertwining is only one part. The other parts are equally significant, if not more so.

Just as the skin is only the surface cover for many layers of muscle, bone, nerves, fascia, fat, and blood, the entire physical body is the outer covering, the skin, of interwoven energy networks. The energetic components are much less dense than the physical body, but are vibrantly powerful. If you look deep enough, you see that there is a core to all the energy systems. This core system is light.

The way light operates is the law of grace.

Learning to work with the light system, learning to make it my ally has been an immense gift to my practice. Acknowledging this system, working with it, has made many things possible that were simply not possible before. The light body carries enormous healing potentials, as you will learn. Further, when we contact the light system in people, we also contact the deepest layers of intelligence. We awaken forces in people which have been unrecognized, or like sleeping beauty, asleep.

In my own practice I quickly learned that there are many worlds inside a person, many things besides the muscles of anatomy and the weight of gravity. Emotions as well as lymph lives in the tissues. There are intimate relationships between organs, energy, and feelings. The way a person thinks has a lot to do with the way his body works, and the way his body works has a lot to do with how he thinks. There are also very strong forces which are counter to gravity. Something is determined to rise.

Working with grace, the light that rises brought many results which were hard to imagine at first. Change of perception, opening of the heart, clarity of mind, understanding of feelings, new
appreciation of relationship, and others. I couldn't say, I "did" these things. They happened.

At first, this happening was purely by chance, like the way rain comes to a farmer's fields. Later, I understood that there are places in the body where there is resonance, a natural openness. Working with that natural openness energizes the whole system. I learned to shift my attention from fixing problems to supporting the resonant areas. This is like the horse whisperer...calling to the healthy parts to assert themselves again. It is inviting a person's innate intelligence -- their own healing forces -- to join us.

In the process I learned much about grace.

There is a lift inside each person which is more than counter to the laws of gravity. When we align with our gravity we are solidly connected to the ground. When we align with grace, we ride on a "free" energy that is practically boundless.

A lot of my early success with curing back pains came as I learned to balance the flow of gravity down the spine. By stimulating the energy movement up the spine, I created a cushion of space between the vertebrae, as well as increased flexibility. Pain does not live in a field of space and flexibility. It thrives in compression and immobility. When the back is lengthening upwards, and the head is floating on top of the spine, there is no place for pain. The system is too open, too flexible.

Soon, this notion of grace expanded to include more than the head and spine. I discovered that in any area of the body, pain depends on contraction. These contracted areas are additional gravity centers within the body. They pull everything down and in.

Physically massaging such an area is touchy business. Often massage gives a temporary relief, with a rebound in pain levels soon after. In my experience, these causes --the inner gravity -- are not fundamentally physical, and seldom submit to purely physical treatment. Rather they are a weave of mental, emotional, energetic, and functional factors which need to be treated in their own terms.

To a simple bodywork therapist, such a realization can be intimidating. It was for me. I knew my bodywork, but I didn't know how to approach all the inner complexities. One day, the answer appeared: "You don't have to fix everything yourself. That is not your job...Let the body that presents itself, also heal itself. Your job is to be its friend. Invite the healing forces, and it heals itself."

Just as there are individual areas of gravity, there is also grace. There is a force inside us which is ready to get well, to be healed, to live vitally. When we make that force an ally, it brings an expanding light from within. In that expanding light, anything can happen.

Let me emphasize again, this is not faith healing, not relying on a religious experience. This is a science, a science of the light systems in each person. At first I only intuited that light comes from...
I now can both analyze structure perspective to working with people. This understanding brings a new intelligence in the light system. There is incredible wisdom and desirable. We adapt, often in ways that are not cloudy, the cells within that field a vibrant field. When the fields are in the DNA. You get vibrant cells in body/mind according the blueprint healthy, they re-create our mind develop. When the fields are of light guide the way our body and further, the electromagnetic fields into our lives. Darker kinds of people coming our experience is dark. We find ourselves and fix the world around us; we lose sight of the beauty that most people are completely enmeshed in the tangle of these experiences. We have forgotten that there is a natural beauty inside, and how to contact it. So much time and energy are spent trying to fix ourselves and fix the world around us; we lose sight of the beauty that is already here. For many people grace is further away than Mars.

In my practice, I have seen that most people are completely enmeshed in the tangle of these experiences. We have forgotten that there is a natural beauty inside, and how to contact it. So much time and energy are spent trying to fix ourselves and fix the world around us; we lose sight of the beauty that is already here. For many people grace is further away than Mars.

When grace does become a reality -an experienced state of being -- then healing accelerates exponentially. The key to recovering grace is to clear the energy fields, and to nourish the light system within. For both I use colored light applied with a color light torch.

Clearing the fields is exceptionally simple: 1) find the area which is shut down (or shut off), 2) make contact with it, and 3) shine the appropriate color of light. Clear forms of light and color always re-organize the darker, less cohesive color fields. When we shine a clear light on a cloudy field, eventually (and this is not very long), the clear colors dominate. The colors from the torch resonate right down to the cells. Soon, the body and the light synchronize with each other. The fields change automatically.

When the fields are clear, then we can easily nourish the light system inside. This is like tuning our internal orchestra. The cells in our body have receptor sites for each individual color. When we give colors that the body needs, the cells receive this color and take it back to the DNA. There is some evidence that the DNA can then re-program itself according to the more resonant light.

Whatever the mechanics, our light systems get stronger when they are offered clear colors. This has an enormous benefit for the whole person. This is not therapy. It is clearing the way for the natural healing powers to work.

Here is an example.

When Carl came for sessions because of a lower back problem, I could see that he was fighting gravity. There was displacement and tension in the diaphragm, neck, sacro-iliac, and back of the knees. After 25 minutes of deep bodywork, most of these tensions had released. Carl was 80% pain free. He enjoyed standing on his legs and feeling the support of the ground underneath him. I then stroked a red light up and down his spine for three minutes, followed by a blue light on the base of the occiput. Carl reported feeling very relaxed.
and open. When I asked about the pain, he said, "Minimal."

When he came for the next session, I began with orange light on the lower belly, at the same level as the compressed vertebra in the back. Putting orange on the lower belly deeply enhances movement integration, especially in the lower body. It is a very strong boost to the whole immune system as well. I asked him to tell me when he noticed the color inside his belly changing. After three minutes he said the colors inside were lighter, and I moved the light up to his solar plexus, and shifted the color to yellow. Yellow on the solar plexus area relaxes the diaphragm, and supports a positive outlook on ourselves and the world around.

I asked Carl how he felt with the yellow light in his belly. Carl said he didn't feel so tired, and in fact, was feeling "pretty darn good." His pain was negligible.

Carl's healing process balanced gravity and grace.

Physically we relieved the main stressors. With the lights we cleared his fields and energized his light network. Not only is he out of pain, but his eyes are more open. He will live life in a different way.

Our body is a feedback mechanism. Low energy places are where we get sick or injured. This calls attention to the deficiency, hopefully to start a chain of resolving the problem. If we can appreciate the body as a feedback system, then we can also appreciate the need to look into what the body is saying. Physical symptoms will be a reflection of energetic phenomena, and these in turn are subject to the state of the color electromagnetic fields. These fields are the physical representation of the consciousness in a person.

In my practice, it has been very useful to understand these basic energy dynamics. Learning to work from the inside out as well as from the outside in has saved a lot of time and effort, and raised the cost/benefit ratio for my clients.

While there are many ways to clear, or at least modify, the body and its energy systems, there are not many ways to touch the light system inside. Fortunately, once you recognize that this system exists, you can contact it with colored lights. For this I use a light pen which easily brings color to acupuncture points, chakras, or energy zones on the body.

Since light is already a natural language inside the body, people respond readily.

When color hits the skin, the skin "reads" this as information. This information starts a complex series of reactions throughout the body/mind. Blue makes us cooler, while red gets us moving. Further, light sends a chain of photons moving along the acupuncture meridians. These photons will travel the meridians and nourish areas that are photon deficient. Putting green light on the foot point LV 3 will send a green message to the liver. This will relax a stressed liver, and has chilled out many a headache.

If an area of the body needs stimulation, we use red or orange. If we are looking for relaxation, or healing, then we use green, or blue. If a person suffers from mental stress, then yellow or violet is appropriate.

When we move our color light a few inches off the body, then we touch the aura. This is our atmosphere. The aura is the expression of the light fields inside. It shows what is going on energetically and with our consciousness. Further, it is where the memories of our experiences live. It is our record keeper, even more than the physical brain. Shining colored light on places in the aura clears very deep levels of emotions. We can bring light to traumatic experiences without the need for doing extensive therapy. Rough emotions show up as irritating colors in the aura. Shining a harmonizing color on the irritating color will change it. When the color changes, so does the emotion. The new color re-writes the old color programming. We don't disappear emotions; we purify them, and learn from them. Simple. I've done a lot of therapy in my time, and I'm always impressed how immediate the effects are with light.
Whenever there is an area of chronic physical stress in the body, you will find a cloudy field of energies around it. These cloudy energies will contain unclear emotions and dysfunctional thoughts. It is to everyone's benefit to clear these cloudy energies as an integral part of working with the physical body. When the cloudy fields inside and outside the body become clearer, then the natural grace comes through. This is as natural as when the clouds lift, the sun shines.

After the clearing, shining colors on the chakras can be enormously energizing. Chakras are energy control centers in the body. They are also places of intelligence. Toning the chakras is like tuning up the instruments in an orchestra. The external light penetrates to the internal light. The internal light resonates with the external light. In this play, the chakras regain their natural expression. The physical body regains energy and people recover the breadth of their intelligence. Sessions go into a new dimension, a dimension far beyond problem solving or pain control.

For each therapist, this particular stage of the work will have its own unique quality. Each one of us has our own gift to unfold. For me, it is a journey of being with people as we re-connect with our original, intrinsic nature.

Standing in gravity, living in grace.

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Stress is the state of tension induced from an actual or perceived threat. In either case the hypothalamus signals the adrenal glands to release adrenaline and cortisone which prepares the body for “fight or flight”. If the energy of this hormonal response is not utilized, then stress can affect mental function, emotional responses, physical systems, and have behavioral consequences. Prolonged stress causes chronic disease.

Humans are really beings of “Light”. As such, frequencies of light introduced through the eyes or topically to the skin can stimulate the body’s innate capacity to balance stressors and return to a healthy energy flow.

You do not need to stay stuck being stressed. Harness the energy of light to help transform your stress into supportive new thinking.

LightStream is a custom lighting device designed to address stress relief through personalized visual programs.

Please see our Web site: www.lightenupstress.com

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Visit our website: www.international-light-association.com
Virtual Scanning is a world-leading cognitive technology. It was developed by a team of laser researchers and mathematicians led by Dr. Grakov at the University of Novosibirsk in the mid 1980’s. It is a technology with diagnostic and therapeutic capabilities and a product of over 20 years research.

The Virtual Scanning concept is relatively simple.

- The brain receives light. The nature and intensity of this light conveys information which is compared with established memories. The outcome of this process determines or influences our subsequent behaviour, speed of motion, etc.

- The unique energetics of light activates specific biochemical processes throughout the body – which are essential to maintain the body’s physiological stability.

- Most proteins absorb and emit light. The spectrum of light absorbed and emitted varies according to the nature of the prevailing biochemistries and pathologies. This serves as a mechanism to determine the onset of pathologies from their presymptomatic origins.

- The brain is also a biochemical entity. It’s function is influenced by any biochemical influence i.e. by genotype or phenotype. This means that the function of the visceral organs influences brain function and vice versa. It also means that visceral influences alter our behaviour.

- The function of the brain is not clearly understood. The current understanding of ‘executive functions’ which are regulated by the prefrontal cortex is not able to clearly define the nature and significance of these ‘executive functions’. It may make more sense to redefine the role of the prefrontal cortex and the executive functions to be instead the regulation of the physiological systems and hence of the body’s physiological stability. This appears to be entirely consistent with observed phenomenae and prevailing research.

- An understanding of the nature and structure of physiological systems serves as a means to predict the precise organs which could be influenced by systemic instability.

- The structure of the body’s function is not yet clearly understood. It is recognised that the organs work in clearly defined organ networks however this is a hugely under-researched area. The nature and significance of these systems is now established.

- Memories are stored as unique electrochemical signals within the neurons, axons and synapses. The brain stores its memory of internal and external events. It uses EEG frequencies to store and access memories of different physiological significance, and to regulate the stability of the physiological systems. If physiological stability cannot be maintained e.g. due to exposure to environmental stressors, it looks for the best-fit solution. This influences the function of the somato-sensory organs i.e the ears (hearing), nose (smell), mouth(taste), skin (touch), vocal chords (speech) and eyes (vision).

- There is a flow of information to and from the brain/between the brain and sense/visceral organs. This explains how in rare cases a patient has been diagnosed with little brain and yet they function normally.

- Finally, our unique genetic profile pre-determines the balance of psychoemotional factors in our personality. The emergence of pathologies influence our psychoemotional balance and ultimately our behaviour.
There is no single part of the brain which determines its function. Furthermore the neural matrix is dependent upon the visceral organ matrices to maintain its physiological stability. All aspects of the brain and body’s function is solely biochemical. Of greatest significance is that this technique is able to differentiate between the levels of biomarkers and the rate at which such biomarkers subsequently react. This is hugely significant in the assessment of protein coiling where it is increasingly appreciated that a range of medical conditions e.g. diabetes, alzheimer’s disease, cystic fibrosis, etc; occur because protein conformation is distorted and the subsequent build-up of plaques and/or tangles. This can only occur because of changes to the levels of proteins or the prevailing reaction conditions in which proteins operate.

Virtual Scanning can be demonstrated. The diagnostic principle appears to be more advanced than the contemporary methods involving biomarkers and scanning technologies. The technique has been successfully used to diagnose and treat a diverse range of ailments. Such technology explains the significance of many complementary health techniques, mid-brain stimulation (by surgically implanted electrodes), the significance and nature of the EEG brain waves, etc.

The current healthcare paradigm is based upon the development of new pharmacologically active entities. We must bear in mind the limitations of such techniques. (i) Each single biochemistry is only one single component in the regulation of cell, organ system function. Such an approach treats only the symptoms of disease. (ii) Alterations to molecular biochemistry occur at the end of the neural cascade which indicates the dynamic nature of the dialogue which occurs between the brain and body. (iii) The understanding that there are physiological systems leads to an emergent understanding of the significance of EEG frequencies and of the (person specific) characteristics required in biofeedback-type systems which could re-establish the body’s stability in cases of physiological instability (pre-degradation).

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Smart, but harmful!
Can flat screens harm the eyes?

Why do people who spend their working days sitting at a computer often feel exhausted? And why do ever more people suffer from eye problems? One cause may be the light emitted by flat TV and computer screens. Early studies point to hitherto unknown connections.

By Reinhard Gerl, 82418 Murnau // Germany.

In modern working life TFT flat screens have become ever more prevalent. These modern flat computer monitors and LCD TV screens use background lighting based on mercury. These are active light sources which many professional people have to face for long hours every day. Thus our eyes are subjected for longer and more frequently to the so-called mercury light (cf also the article called “Sick Light” in this edition).

The light spectrum of the screen - like that of energy-saving lamps - contains an unnaturally high proportion of blue light.

Early scientific research*, deserving serious consideration, suggests that a light spectrum with a high proportion of blue light may result in damage to the back wall of the eye, the macula. The sudden leap in age-related macular degeneration (AMD) could be the result of increasing stress due to blue light. Macular degeneration is caused by damage to the point of sharpest vision and can result in blindness. The macula, the back wall of the eye, is especially sensitive to blue light. Currently, approx. 6 million people in Germany suffer from age-related macular degeneration.

Many people working at flat screen computers complain of headaches, impaired concentration, tiredness, sleep interference and strain. Burning, weepy and red eyes, stabbing pain, blurred vision, twitching eyelids, periodic short-sightedness, double vision and changed color perception are frequent and typical problems resulting from working on computers.

However, people who for professional reasons have to spend many hours in front of TFT flat computer screens can protect themselves to a certain degree from blue light by wearing spectacle lenses with a special filter. Yellow or orange-yellow lenses can filter out a large proportion of the harmful blue light. Computer safety glasses are now available which are specifically designed to provide optical protection from blue light. Further information regarding these special protective glasses may be obtained from Ehlers publishing.


Abb. 1: The colored strips depict the spectrum of a TFT screen which has cathode ray tubes as a background (photographed through a pocket spectroscopy). It represents the spectrum already familiar from energy-saving lamps and other mercury containing light sources. As a comparison the spectral distribution curve of an energy-saving lamp with 6500 K correlated color temperature is represented in grey. The high blue portion as well as the sharp peak at 436 nm are clearly identifiable.

Abb. 2: PRISMA® Computer Glasses CLASSIC office Blue light protection 66 optima

Abb. 3: PRISMA® Computer Glasses CLASSIC office Blue light protection 74 good
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