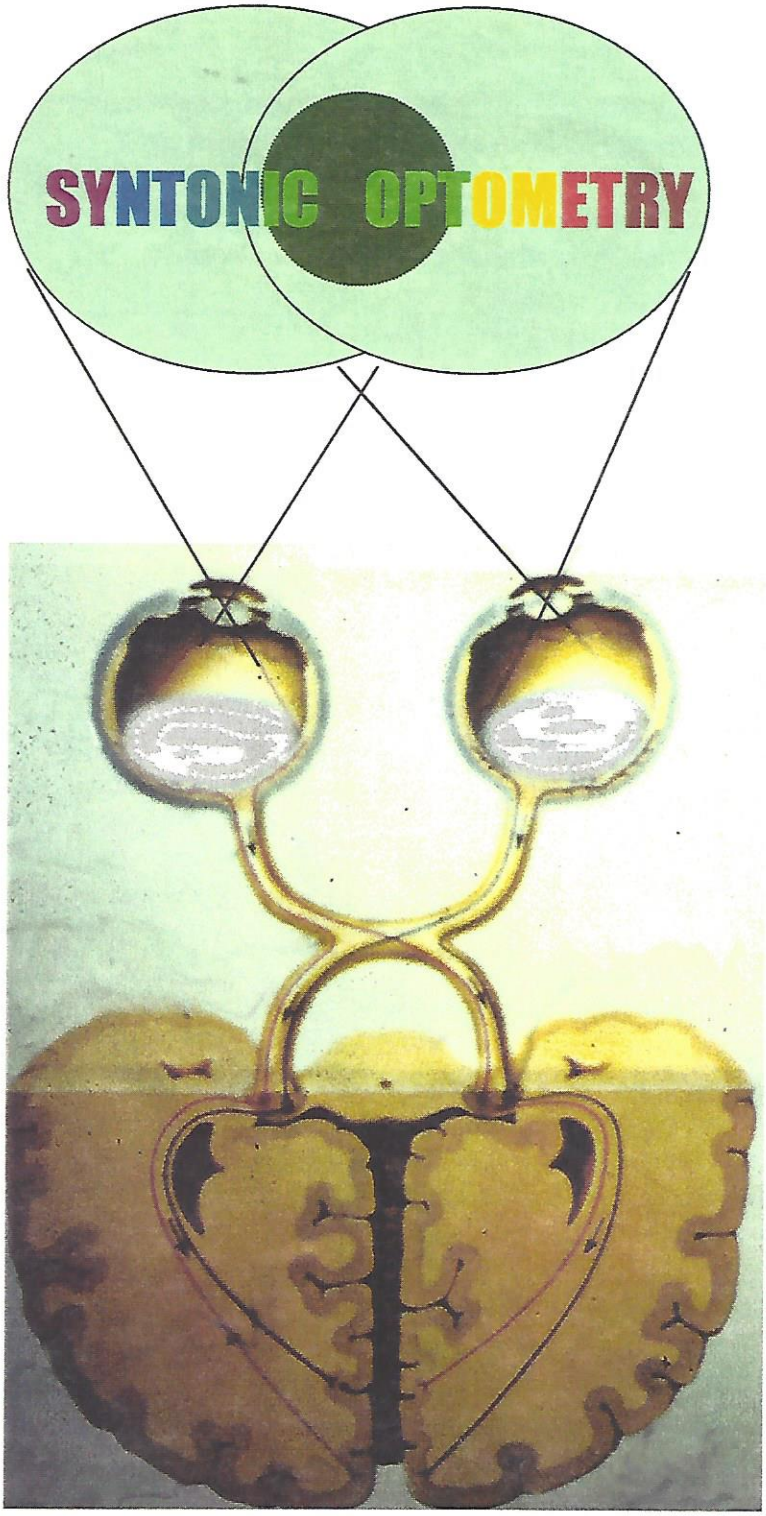
Journal of Optometric Phototherapy



Scientific Findings
about
Light's Impact
on
Biology

Functional Visual Fields
and
Dural Torque

Sight Recovery
for
Retinal Disorders
Employing
Integrated Therapies

April 2000

PRESIDENT'S LETTER

Dear Colleagues,

I am happy to be writing you in our new journal format. Last year we announced that future issues would only be on the web, but there still is no replacement for a hard copy in your hands.

As the profession continues to embrace the medical model, vision therapy in general and syntonics in particular feels increasing pressure to abdicate these unique services. OEP, COVD, and the AOA, are seeking strategies to counter vision therapy's marginalization, attacks by opthalmology, and managed care's elimination of coverage. It is our job to stay the course and continue to help our patients in ways that only we can. I think due to these political realities, COVD and NERF were unable to add syntonics to their educational programs as we had envisioned last year.

Ray Gottlieb did teach a basic and advanced syntonics course to our colleagues in Australia this past September. We will welcome the Australian CSO president, Simon Grbevski to our conference in St.Louis. This June Drs Ray Gottlieb, John Searfoss, myself, and Sarah Cobb will do presentations at the international, Light and Sound 2000 conference in Chicago. Syntonics will be represented along with many other forms of light and color therapy being practiced around the world.

Although there were fewer syntonic presentations this year Ray Gottlieb and I wrote a major article covering the field of syntonics for the AOA journal to be published this spring. I also contributed to OEP's clinical journal with a paper on syntonic treatment for amblyopia and strabismus. In addition, I recently had published a chapter in the Clinicians' Complete Reference to Complementary & Alternative Medicine on light therapy where syntonics was prominently covered. This text is published by Mosby and edited by Donald Novey, M.D.

This year's conference continues the tradition of presenting basic and advanced courses. The role of light therapy in energy medicine is the theme of this conference with presentations by world-renowned authorities Dr Beverly Rubik and Dr James Oschman. The integration of syntonics and music therapy will be explored by Dr. Barbara Anan Kogan. We also will have the opportunity to attend a pre-conference seminar with Dr. Jacob Liberman on his latest techniques in color receptivity. This promises to be an outstanding experience as well as a special opportunity to share with our your colleagues and welcome new practitioners to his exciting field.

Sincerely Yours,

Larry Wallace, O.D., FCSO
President, CSO

Journal of Optometric Phototherapy

Dr. Ray Gottlieb is the dean of the College of Syntonic Optometry .
He lectures internationally, writes, and practices in Rochester, New York.

Dr. Dale Fast is the past librarian of the college.
He practices in Sacremento, California.

Dr. Wayne Pharr, Director of OIC Systems, develops automated vision therapy protocols. He lectures nationally and internationally.

Dr. Geoff Shayler is the first UK optometrist to practice syntonic phototherapy .

Dr. Fausto Paganamenta is a Swiss pediatrician
who practices colorpuncture on children and their families.

Dr. John Searfoss holds patents on phototherapy
devices, and practices in Moberly, MO.

Dr. Grace Halloran is a published author and Director
of the Integrated Visual Healing Program in San Leandro, Ca.

Sarah Cobb, Editor of the *Journal of Optometric Phototherapy*,
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The College of Syntonic Optometry is a nonprofit corporation dedicated to research in photoretinology - the theraputic application of light to the visual system.

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SCIENTIFIC FINDINGS ABOUT LIGHT'S IMPACT ON BIOLOGY

By Ray Gottlieb, O.D., Ph.D., Dean CSO

Only recently have scientists begun to pay attention to light's impact on biology. The quantity of articles and quality of basic and clinical research is booming. Measuring light's biological effects is a complex business because outcomes are dependent on wavelength, intensity, time, timing and number of repetitions. There are short-term effects, measured a few seconds or minutes after irradiation, as well as long-term effects observed after hours, days and weeks. The effects also depend on the type of organism studied, its growth phase and the parameter being measured.

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 theraputic 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.

LIGHT ON THE SKIN

Healing work with lasers started with Endre Mester in Budapest, Hungry in 1966 as an investigation to determine whether ruby lasers could help cancer victims. He found that these lasers increased the growth of monocellular organisms and of fur on a shaved rat. At a certain range of dose intensities, the hair grew faster. At doses below and just above, the laser had no effect; but at even higher intensities fur growth was inhibited. The next experiment, rates of wound healing, had similar results - only at a certain level did the light increase wound healing. Too much light reversed the effect. The finding was published in Hungarian in 1967. Since then nearly 2000 articles have been published about the effects of Low Level Laser Therapy (LLLT).[1]

Until recently most LLLT research has taken place in the former Soviet Union and Eastern Block countries. For twenty years Russian biophysicist Tiina Karu and her group at the Laser Technology Research Center in Troitzk, Russia, has been conducting a systematic study of LLLT. Their research shows that laser light is not required for healing to take place. Non laser (incoherent) light was as effective in healing peptic ulcers as coherent laser light of the same wavelength. Karu says that lasers are used only because lasers are easier to control. Her data proves that comparatively low doses (102 -103 J/M2) and short periods (10 - 100 s) of irradiation stimulate lasting changes in cellular respiration chains as well as in RNA and DNA synthesis. Even seven days after stimulation, the number of cells, cell size, and respiratory activity were increasing more than in unirradiated tissue. Research on various organisms and cell types consistently showed light alters cell metabolism, causing synthetic cell processes to dominate catabolic ones.[2] In a recent paper Karu described it this way: "The primary changes induced by light are followed by a cascade of biochemical reactions in the cell that do not need further light activation. These dark reactions are connected with changes in cellular homeostatis parameters due to an alternation of the cellular redox state" [3]

Which wavelengths of the spectrum stimulate these changes? She finds maximum effectiveness in almost every visible-light band. Cells stimulated first with red light, then with blue showed much greater increases than with just red or blue alone. Red followed by wide-band (white) visible light stimulated no acceleration of growth.[2]

Karu's research gives another phototherapy hint. How does light find the right places to work to heal the body? Normal tissue is much less effected by light than out-of-balance tissue. Starving cells are more sensitive than well-fed ones. Cells already reproducing at an exponential rate are least changed by light stimulation. In stagnant colonies, on the other hand, light triggered huge increases in rates of

reproduction or cell mass growth. Wounded, chronically inflamed, and ischemic cells are characterized by their acidic, hypoxic and inhibited state. Light increases the pH and drives them toward oxidation, balance, vitality and healing. [2]

Karu's papers and books provide undeniable proof that light stimulates biological transformation and healing. Her work has encouraged clinicians worldwide to use low-intensity laser light therapy for healing a variety of human ailments. For an impressive experience of her research and influence visit her web site at: http://www.isan.troitsk.ru/dls/karu.htm and books: "Scientifics of Low-Power Laser-Therarpy," Dec. 1998, ISBN, 9056991086 and "Photobiology of Low-Power Laser Therapy Laser Science and Technology," Vol 8 , Paperback (October 1989) Harwood Academic Pub; ISBN: 3718649705 visit amazon.com for a review.

Other Russian researchers are using red and far-red lasers to reduce eye strain in workers. In a controlled study of myopia and accommodation, myopic children stimulated for 12 minutes per day with a 2mm spot of red or far-red light on the limbal sclera. Children measured one month after just ten consecutive days of light treatment had great increases in accommodation and three years after the light therapy had one-sixth the myopic increase of matched controls.[4]

This approach to light and color therapy has been successfully applied in laboratory experiments and in clinics for relieving pain, resolving inflammation, enhancing tissue repair mechanisms, stimulating immune function, defeating infection, and improving damaged neurological tissue. Laser therapy has also been used for preventing dental caries and stress-related heart and cerebrovascular disease and for healing cancer, asthma, herpes simplex, rheumatoid arthritis, intractable wounds (ulcers), damaged nerves, tendons, muscles and bones, and for reducing infection, inflammation, and tennitis.

A growing number of Western clinicians have gotten on the beam. One organization, the North American Laser Therapy Association (NALTA), held The First NALTA Conference near Washington DC, in October, 1999. The meeting was convened collaboratively with the FDA to clarify regulations concerning laser photostimulation and laser acupuncture and to educate leaders of government organizations about clinical application of low-level laser therapy.

For a more complete list and details see these web sites: http://www.laser.nu/lllt/therapylink.htm and, especially for cancer, http://www.spie.org/web/abstracts/2700/2728.html

LIGHT EFFECTS VIA BLOOD

Other research indicates that light-sensitive blood constituents carry light information and energy to affect far-off places in the body. Blue light delivered to an area behind the knees, for example, resulted in significant alterations in human circadian rhythms.[5] Oren and Therman 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.[6]

Other research has found that the heme oxygenases are reversibly altered by specific wavelengths of visual light.[7] The heme oxygenases, HO-1 and HO-2, are enzymes controlling oxygen-carbon dioxide exchange and also regulate vasodilatation, neurotransmission, anti-oxidation, anti-inflammatory, anti-viral, gene expression and other basic physiological functions.[8] 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. Russian researchers confirmed that low-power He-Cd (441.6 nm) and He-Ne (632.8 nm) lasers NO-hemoglobin can reversibly dissociate and release free NO. Relaxation of blood vessel walls due to NO is one of the physiological effects induced by visible radiation. [9]

LIGHT DIRECTLY STIMULATING THE BRAIN

In another study, low levels of visible light directed onto slices of rat cerebral cortical tissue enhanced release of the neurotransmitter gamma-aminobutyric acid (GABA) from these brain slices. At higher light intensity this was suppressed. The effective amount of light for neurotransmitter release is approximately equal to the amount of light that can penetrate the head and reach the brain at the intensities of sunlight. This points to pathways of light transduction not considered in modern times. [10]

Since the beginning of this century evidence has accumulated demonstrating that nonmammalian vertebrates possess photoreceptors situated deep within the brain. These photoreceptors have been implicated in several different areas of physiology that play a critical role in the regulation of circadian and reproductive responses to light in all species examined. Published data raise the possibility of several types of encephalic photoreceptor photopigments (cone-like, rod-like or different from both) and, depending on species, at least two types of photoreceptor cells: CSF-contacting neurons (larval lamprey, reptiles and birds) and classical neurosecretory neurons within the nucleus magnocellularis preopticus (fish and amphibians). [11]

Can this also exist in mammals? Until 1999 mammalian opsins have been described as specifically expressed only in the retina and the pineal. But now scientists at NIH have discovered what appears to be the first opsin, called encephalopsin, expressed specifically in the mammalian brain. Because the major function of opsins involves light detection, these scientists are invesigating the possibility that encephalopsin does too. [12]

Other data suggest that low-energy

infrared laser irradiation has certain neuroprotective activity in various types of oxidative stress such as ischemia, reperfusion, and acute edema of the brain. Infrared laser irradiation lowered the increased levels of hydroperoxides and malonic dialdehyde and elevated superoxide dismutase activity in the brain during ischemia, reperfusion, and acute edema of the brain. [13] These findings have vast implications for the fields of immunology and rehabilitative medicine and also suggest scientific support for syntonic therapy for brain injury.

BIOPHOTONS

Other research has established a hitherto-overlooked information channel within living systems. All emit leak levels of visible and ultraviolet light. This biophoton emission has been correlated with many biological functions. Biophotons may trigger chemical reactivity in cells, growth control, differentiation and intercellular communication. Biophotonic communication may prove electromagnetic fields are more primary to biology than is chemistry.[14]

NEW INFORMATION ON CIRCADIAN CONTROL SYSTEMS

For billions of years, a dependable aspect of living on Earth has been the daily light-dark cycle. The circadian rhythmicity in organisms may have arisen directly as a response. Indeed, in free living cells and in tissues of multicellular organisms, there is a correlation between photoresponsiveness and circadian rhythmicity. Even nonphotoreceptive tissues such as the mammalian suprachiasmatic nucleus have close connections to photoreceptors in the eye.[15]

"Circadian rhythms and the cellular oscillators that underlie them are ubiquitous--and for good reason. For most organisms, dawn means food, predation, and changes in all the geophysical variables that accompany the sun--warmth, winds, and so on. It's a big deal when the sun comes up, and most living things time their days with an internal clock that is synchronized by external cues. Given this common and ancient evolutionary pressure, circadian clocks probably evolved early, and common elements are present up and down the evolutionary tree. Circadian systems will almost certainly be made up of more than one interconnected feedback loop. Of these, one may be dominant and take the lead in determining phase (the time of day indicated by the clock) and others may be more like slaves. This interconnected ensemble will ultimately determine all the exact characteristics of classical circadian properties--period length, temperature compensation, and resetting by light or temperature..."(Jay Dunlap, Dartmouth Medical School) [16]

"In mammals the retina contains photoactive molecules responsible for both vision and circadian photoresponse systems. Opsins, which are located in rods and cones, are the pigments for vision, but it is not known whether they play a role in circadian regulation. A subset of retinal ganglion cells with direct projections to the suprachiasmatic nucleus (SCN) are at the origin of the retinohypothalamic tract that transmits the light signal to the master circadian clock in the SCN.[17] The SCN responds to light/dark neural signals, which are converted in the pineal gland to hormonal secretions. Different wavelengths have varying entrainment abilities relative to hormone output. The pineal also responds to the earth's electromagnetic fields. Pineal secretions (primarily melatonin) regulate reproduction functions, growth, body temperature, blood pressure, motor activity, sleep, and immune function. Hormonal interactions with the pineal suggest it is the master gland. Pineal regulation plays a role in such conditions as diabetes, osteoporosis, heart disease, cancer, Parkinson's, Alzheimer's , and aging in general. [18] What latent abilities does the pineal possess that can be promoted by light activation?

Circadian clocks exist throughout the body. To understand the tissue clocks, chronobiologists will need to figure out how they sense light. For the brain clock, this job is performed by the retina, although not by the light-sensitive cells responsible for vision. The optic nerve then transmits the information to the brain. But cells outside the retina lack the photosensitive pigments found in the eye. Instead, there are hints that these tissues may use recently discovered proteins that are sensitive to visible light. Human photoreceptor flavin molecules are not limited to the retina but are virtually in all tissues.[19]

Research suggests that multiple biological clocks may exist throughout the body in the form of photosensitive proteins. Genetic research has already mapped sites expressing the potential for biological clocks in the heart, lung, liver, kidney, and testes. Each clock may be set individually by light and follow a schedule independent of the brain's master clock. Individual cells may undergo daily cycles of activity and rest just like whole organisms do. These cycles may be sensitive to direct light reception, to blood elements altered by specific frequency bands of visible light entering the eye, or to light stimulation directly at the retina.

CONCLUSION

These examples of research demonstrate the broad array of light pathways being investigated today. Applications in healing can be found in optometry, medicine, psychiatry, psychotherapy, color acupunture (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 toward energy medicine in our quantum age. In syntonics it may be the retinal-hypothalmic-pituitary-pineal axis, the retinal vasculature, several accupunture meridians, or by a yet undiscovered means. These applications are the future of medicine and healing. Syntonics is a time honored and clinically proven modality of treatment and is in a unique position to provide the leadership in light therapy.

References

1. Zeischegg, P, Laser: The Alladin's Lamp of the 20th Century? http://www.DrZ.org/laser.htm#5
2. Karu, T.I., Photobiological Fundamentals of Low-Power Laser Therapy; IEEE Journal of Quantum Electronics, Vol QE-23, No. 10, Oct 1987 p. 1703
3. Karu, T. I., Mechanisms of Interaction of Monochromatic Visible Light with Cells, Effects of Low-Power Light on Biological Systems, SPIE Proceedings Vol 2630, pp. 2-9, 1996
4. Avetinsov, E.S., et .al., Moscow Helmholtz Res Inst of Eye Dis., Laser Physics, Vol 5, No. 4, 1995, pp 917-921
5. Campbell, S. S. & Murphy, P. J., Extraocular Circadian Phototransduction in Humans Science, 1998 Jan 16, 279:396-399
6. Oren, D. A. & Terman M., Tweaking the Human Circadian Clock with Light Science 1998 Jan 16, 279: 333-334
7. Noguchi, M., et. al., Photo-Reversal by Monochromatic Light of the Carbon Monoxide-Inhibited Heme Degredation Catalyzed by the Reconstituted Heme Oxygenase System, J Biochem (Tokyo) 1981 Dec; 90(6):1671-1675
8. Maines, M.D,. The Heme Oxygenase System, Annu. Rev. Pharmacol. Toxicol, 1997. 37:517-554.
9. Borisenko, G. G., et.al., Photochemical Reactions of Nitrosyl Hemoglobin during Exposure to Low-Power Laser Irradiation, (1997) Biochemistry (Moscow), 62(6), 661/774
10. Wade, P.D., et. al., Mammalian cerebral cortical tissue responds to low-intensity visible light. Proc Natl Acad Sci U S A 1988 Dec; 85 (23):9322-6
11. Foster R.G., et. al., Identification of Vertebrate Deep Brain Photoreceptors; Neurosci Biobehav Rev 1994 Winter;18(4):541-6
12. Jaffrey, S.R., & Snyder, S. Encephalopsin: A Novel Mammalian Extraretinal Opsin Discretely Localized in the Brain; Journal of Neuroscience, May 15, 1999, 19(10):3681-3690
13. Karageuzyan, K. G., Phospholipid Pool, Lipid Peroxidation, and Superoxide Dismutase Activity under Various Types of Oxidative Stress of the Brain and the Effect of Low-Energy Infrared Laser Irradiation; (1998) Biochemistry (Moscow), 63(10), 1226/1439
14. Chang, J., Fisch J., & Popp F-A. (Editors), Biophotons, Hardcover (July 1998) Kluwer Academic Publishers; ISBN: 0792350820
15. Susan K., Neurospora wc-1 and wc-2: Transcription, Photoresponses, and the Origins of Circadian Rhythmicity; Science 1997 May 2; 276: 763-769.
16. Dunlap, J., Circadian Rhythms: An End in the Beginning; Science 1998 June 5; 280: 1548-1549
17. Robert J. Lucas, R. J., et. al. Regulation of the Mammalian Pineal by Non-rod, Non-cone, Ocular Photoreceptors, Science 1999 April 16; 284: 505-507
18. Swarthout, G., "The Pineal Gland and Aging," Complimentary Medicine, Nov/ Dec , 1986
19. O. Bergold, M.D., " The Effects of Light and Color on Human Physiology," " Raum & Zeit, Vol 1, No. 4, 1989, pp 33-39.

Congratulations to

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FUNCTIONAL VISUAL FIELDS AND DURAL TORQUE

By Dale A. Fast, O.D., F.C.S.O.

Geoff Shayler, B.Sc., F.B.C.O.

Wayne Pharr, O.D., F.C.S.O., F.C.O.V.D.

Abstract:

This article discusses the measurement of a functional visual field, signs and symptoms of restricted fields, the physiological blind spot and the re-positioning found with some individuals who have had a closed head injury. Dural torque is a condition that occurs when the plotted physiological blind spot is shifted from the normal expected position. Signs and symptoms of dural torque are also discussed.

Key words:

threshold field, functional visual field, physiological blind spot, dural torque, edema, visual processing

What is meant by a functional visual field?

The functional visual field is a measure of the usable area that an individual can process fixating a central target, while a mobile (or kinetic) target is moved in from the periphery from invisible to visible.

The threshold field is a measure of the ability of the eyes to react to a light flashed in the periphery. These fields relate to the absolute threshold of the eyes' ability to see and is therefore useful in determining pathology such as glaucoma, tumors, cerebral vascular accidents, etc.

Just as there are different types of visual fields, there are different ways to determine the functional visual fields.

Ways to determine the functional visual field are as follows:

1. Campimetry measures the functional visual field as the patient fixates a central target, through plus lenses for a working distance of eight inches, and reports when the 5mm white target first appears to be white in the eight principal meridians. This is the size of the patient's functional visual field.
2. Frequency doubling technology [FDT] is a new technique that has been designed for rapid and effective detection of visual field loss. The results of FDT closely mirrors the results found by campimetry as reported by Dr. Larry Wallace and Dr John Searfoss at the 1999 Conference of Syntonic Optometry.
3. Tangent screen testing at a one or two-meter testing distance measures the functional visual fields similar to the campimeter, except that the results are transposed onto a recording sheet.
4. Arc-perimeter as recommended by Dr. Charles MacQuarrie. Similar to the campimeter, except that there is an arc with a 18 inch fixation distance, and form targets are brought in from the periphery until they can be correctly identified in the eight principal meridians. This form field corresponds closely to the functional fields found by campimetry.
5. Other instruments one could use to evaluate the functional visual fields are: the B&L autoplot and the Goldman perimeter.
6. Confrontation testing: comparing the field of the patient with that of the practitioner using a pencil or 'finger" as a target. This is a quick inexpensive technique ideal for screening children for functional field restrictions. Also accomplished by waving your whole hand in from the side to determine the patient's form field, then holding up a certain number of fingers and coming in until the patient can correctly identify the correct number of fingers being held up. This is the size of the patient's functional

reading field.

7. Suppression field: Using a Brock string to determine the eye movement field in which binocular vision is present. This appears to approximate the same area as the confrontation field. This test also indicates the near point to which binocular vision is present. The greater the distance from the nose, the more restricted the field.
8. Simple clipboard chart in white or black with opposite colored target. Quick inexpensive technique ideal for screening children for functional field restrictions.
9. Alpha Omega Pupil: The quicker the return to dilation following constriction when a light is shone on and maintained on the pupil, the greater the likelihood of smaller fields (sympathetic nervous system overload adrenal exhaustion). A lack of constriction can indicate a blind eye or one with an extremely small field, less than three degrees.
10. Form field testing: Using MacDonald's or a similar form field chart, measures the amount of information that the patient can process simultaneously.
11. Color fields (blue, red, green): A dynamic field measuring technique that gives more information on the brain's abilities to process visual information. Can relate to health and functional problems.
12. Observation of parent: To get an idea of how a restricted field affects an individual, ask the parent to stand about 10 feet away. Ask the child to look at the parent's nose and observe how much of their parent they can observe, e.g., can you see all of the head, neck, shoulders, waist, etc.
13. Automated Campimetry by OIC Systems is currently in a beta development. This will yield a percentage of function of each of the three types of visual field processing and the amount of enlargement of the blind spot.

Because these tests measure different aspects of vision, they will give different results. However an understanding of these different methods gives the practitioner useful information on how visual information is being processed.

In this study, an instrument called the campimeter was used to evaluate the functional use of the peripheral visual fields and the physiological normal blind spots.

It is recommended that a 5mm white target with a solid black ring surrounding the white circle be used as the target for the following three levels. The target is brought in from the periphery from invisible to visible.

The first level of testing is the AVAILABLE level of visual processing. This is the amount of potential information that can be processed from the retina to the brain. Available visual processing is like a neurological hookup or the number of connections to the brain. Just because the retina is "wired up" a person cannot necessarily utilize, process or understand information that is seen.

The second level of processing is the AWARENESS level. This is the awareness of the black ring around the white dot. The test measures the amount of visual information a person normally uses day to day for non-demanding tasks. (This is the space around you that you use while walking.)

The third level of testing is the ACTIVATION level. This measures the ability to see the complete solid black ring around the whole white target. This is the degree to which the patient is processing absolute information and understanding that information. This is the demand level that reading, comprehension and detailed understanding is using.

SIGNS AND SYMPTOMS OF RESTRICTED FUNCTIONAL FIELDS

1. Reduced or variable VA's (20/25 to 20/40)
2. Large pupil
3. "Vacant appearance"
4. Poor constriction of pupil at near
5. Intelligent person not achieving to potential for no apparent reason
6. Normal light response of pupil but cannot maintain constriction while light still on eye (Alpha Omega Pupil)
7. Variable refraction particularly low minus (even + 1.00 fog balance technique may be variable)
8. VA can improve briefly by "relaxation breathing" – can sometimes improve 2 or 3 lines
9. Accommodation can be very low which can improve dramatically with 2 base down yoked prism
10. Symptoms can be vague - difficulty seeing, no particular distance, it can be distance, near or intermediate
11. Reading near letter chart difficult down to 20/30 or 20/40 and patient not aware that this is a problem. Reading aids do not make much difference. However, low plus or yoked prism can make a substantial improvement
12. Poor accommodative facility; an use of flippers may not do anything to improve the situation
13. Pursuit tracking may prove difficult without exhibiting head and/or body movements, jerky eye movements and loss of fixation
14. Saccadic eye movement assessment with Wolff wands may prove difficult
15. Convergence can be low
16. Confrontation testing using a hand and fingers reveals a very small field
17. Emotional stress may be a major factor; shutting the world out to protect oneself
18. Two holes in space surrounded by a dark field can be demonstrated by holding a one and one half inch diameter tube of about five inches in length in front of each eye. This happens frequently when the functional visual fields are 20 degrees in diameter or less.
19. Difficulty identifying the numbers of the Ishihara Color tests when fields are very small

Some studies show that up to 40% of the individuals

diagnosed with some sort of specific learning difficulty exhibited restricted functional fields.

Brombach, as far back as the 30's was finding that 9% of the general school age population had a constriction of the visual field, of which 87% were failing one or more subjects.

How can we remedy the effects of functional field loss?
1. Low plus and/or yoked prisms
2. Vision therapy
3. Syntonic phototherapy
4. The use of chiropractic, osteopathy or kinesiology to expand fields and to normalize the physiological blind spots

The Physiological Normal Blind Spot and Dural Torque:
To measure the physiological normal blind spot, a 1 mm white target was used to plot from visible to invisible, then plot the blind spot from invisible to visible. The resulting blind spot tells us if we have a normal blind spot, dural torque, enlarged blind spot, or a constricted blind spot.

Dural torque is a condition where the plotted blind spot is shifted from the normal expected position, either nasally, temporally, superiorally or inferiorally. The outer covering of the spinal column, brain stem, brain and optic nerve is referred to as the dura mater. Dural torque is normally associated with the pulling of the dura mater. This change is represented by an actual shift of the physical position of the blind spot. This position should be anatomically stable in the eye. Under circumstances of trauma, there is often a misalignment of the skull, atlas, and axis junction plus misalignment of cranial bones junctions, which is often associated with a malposition of the spine, which in turn causes a pulling on the dura mater. This results in a shifting of the plotted blind spot. Another explanation is the finding of muscles from the wings of the atlas vertebra and attaching to the dura mater above the atlas. An appropriate referral is in order to a chiropractor or osteopath who has received advanced postgraduate work in the field of National Upper Cervical Chiropractic Association (NUCCA) or craniopathy. The plotting of the anatomical position of the blind spot will indicate when the appropriate adjustments and proper cranial functions are again in balance.

The authors, who have been involved for many years using syntonic phototherapy and having measured functional visual fields as described above on many patients, became aware that there appeared to be a misplacement of the physiological blind spot in a number of cases. Association with chiropractors with NUCCA and crainopathy training indicated that the problem was due to dural torque and could be rectified with NUCCA adjustments and/or cranial manipulations.

Some common signs of possible dural torque or the skull, atlas, and axis being out of alignment are:
1. Unequal pupil size
2. Unequal palbrebal fissure size
3. One eye looks higher than the other
4. Unequal shoulder height
5. Unequal hip height
6. Leg length unequal
7. High breathing center

Note 1. *An enlarged blind spot is often found in individuals with learning problems, and it has been suggested that this is due to edema in the optic nerve head. During syntonic phototherapy, as this edema reduces, the blind spot reverts to normal.*

Note 2. *Some individuals may have functional fields so small that blind spot evaluation is not possible until some therapy has been experienced. Frequently both constricted fields and dural torque are found in the same individual.*

Reduced visual fields and Dural Torque are a major source of difficulties with individuals with learning difficulties and/ or head trauma, or scoliosis of the spine.

Some types of Chiropractic care or craniopathies that may be benefical in remediating the dural torque are:

- NUCCA is the National Upper Cervical Chiropractic Association. To locate a NUCCA practitioner, contact: NUCCA, 217 West Second Street, Monroe,Michigan 48161 or
  121 W. Locust St., Suite 208,
  Davenport, Iowa 52803, phone 319-322-7486
- Toftness as developed by Dr. I.N. Toftness
  To locate a Toftness practitioner, contact:
  Toftness Post-Graduate School of
  Chiropractic, Inc at
  1-715-268-7500.
- SOT = Sacral Occipital Technique.
- NCR = Neuro-Cranial Restructuring as refined by Dr.
- Dean Howell of Everett, Washington. 1-800-670-6380.
- NOT = Neural Organization Technique developed by chiropractor, Dr. Carl Ferreri.
- CST = Cranial Sacral Therapy developed by Dr. William Sutherland; Dr. John Upledger is the leading authority on CST.
- Chiropractic Biophysics Practitioners Referral List
  1-256-721-0703.

Sample campimetry chartings of patients with dural torque:

Patient 1. See fig. 1. Charting of a 20-year-old female who had received a whiplash when her car was rear-ended by another car. Figure 2 is a charting one week after NUCCA therapy. This patient had received 20 sessions of neuro-optometric rehabilitation therapy, including syntonics, before the NUCCA therapy.

Patient 2. See fig. 3. A charting of a constant left esotropia. Figure 4 is after two cervical-sacral and cranial adjustments. This patient now showed 50% binocularity with OIC Systems Binocularity test. This patient had not had any vision therapy but is starting vision therapy as the chiropractic adjustments seem to hold better and last longer when vision therapy with syntonics is administered before or during the chiropractic care.

One final note. We are indebted to Dr. Wayne Pharr for his consulting advice on how to help solve these types of visual problems. It truly has been a rewarding experience in helping patients find help when we hadn't been able to resolve all of their visual problems before.

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e-mail: wpharr@vision.cc

References:

1. Personal consultation with Dr. Wayne Pharr of Okeechobee, Florida, since May 1995. We first heard of DURAL TORQUE from Dr. Pharr. He has guided us toward qualified practioneers for properly treating dural torque.
2. CRANIOSACRAL THERAPY AND THE VISUAL SYSTEM by Kenneth I. Frey, P.T.; Jr of Behavioral Optometry, Vol. 10, #2, p 31 - 35.
3. VISUAL FIELDS by Dr. T.A. Brombach, 38th AOA congress, 1935.
4. VISUAL FIELDS by Dr. T.A. Brombach, dEC. 1936 Oregon annual Sem.
5. VISUAL FIELDS by Dr. Hugh F. Webb, OEP Papers, Oct. 1940 - Sept. 1943.
6. PRACTICAL GUIDE FOR CHARTING AND INTERPRETING THE VISUAL COLOR FIELDS, by Dr. Wm Arthur Mendelsom, 1928, 45 pages, College of Syntonic Optometry Library.
7. RESOLVING STRABISMUS THROUGH CRANIOMANDIBULAR MANIPULATION, by Gil Weiner, D.C., The Jr of Craniomandibular Practice, July 1990, Vol. 8, #3, p 279 - 285.
8. SYNTONICS PROCEDURES INDICATED BY CHROMOGRAPHY by Donald J. Mayer, O.D., F.C.S.O., College of Syntonic Optometry, Sept. 1940, Vol. 7, #9, 7 pages.
9. THE ENLARGEMENT OF NORMAL BLIND SPOTS OF MARIOTTE AND THEIR REACTION UNDER SYNTONICS, by Dr. H. Spencer Hamnis, College of Syntonic Optometry, 1937, 6 pages.
10. BLIND SPOT CONSTRICTIONS by Dr. Ingwold Davidson, The Optometric Weekly, Aug. 4, 1949, p 1191 - 1197.
11. THE SYNTONIC PRINCIPLE by Dr. Harry Riley Spitler, book available from College of Syntonic Optometry Library, Dr. Betsy J. Hancock, 1-570-784-2131.
12. FUNCTIONAL VISUAL FIELDS THEIR IMPORTANCE IN THE ASSESSMENT OF CHILDREN WITH LEARNING PROBLEMS, by Dr. Geoff Shayler an unplublished paper.
13. CLOSED HEAD INJURY/TRAUMATIC BRAIN INJURY/CERVICAL TRAUMA/WHIPLASH/HYPEREXTENSION - HYPERFLEXION, by Dr. John A. Thomas, 40 pages. A seminar paper.
14. INTEREXAMINER RELIABILITY OF THE TOFTNESS RADIATION DETECTOR FOR DETERMINING THE PRESENCE OF UPPER CERVICAL SUBLUXATION, by Hugh Gemmell, D.C., M.S.; Bruce J. Heng, D.C. andBerl H. Jacobson, Ed D., Chiropractic Technique, Vol. 2, #1, Feb. 1990, p 10 - 12.
15. NEURAL ORGANIZATION TECHNIQUE, a 2 page pamphlet
16. NUCCA pamphlet
17. THE TEMPORAL-MANDIBULAR JOINT. THE T.M.J. THE JAW JOINT,2 page pamphlet.
18. VISUAL FIELDS AND CRANIAL MANIPULATION, by Dr. Wayne Pharr.Paper presented at the 1997 Conference on Syntonic Optometry.
19. Functional Fields-New Data, New Equipment by Dr. Larry Wallace and Dr. John Searfoss. Paper presented at the 1999 Conference on Syntonic Optometry.
20. Gilman, Greg, O.D. and Bergstrand, John, D.C.; VISUAL RECOVERY FOLLOWING CHIROPRACTIC INTERVENTION. Journal of Behavioral Optometry, Volume 1/1990/Number3/page 73.
21. Hack, Gary D., DDS; Koritzer, Richard T., DDS, PhD; Robinson, Walker L., M.D.; Hallgren, Richard C., PhD; Greenman, Philip E., DO, FAAO; ANATOMIC RELATION BETWEEN THE RECTUS CAPITIS POSTERIOR MINOR MUSCLE AND THE DURA MATER, Spine, Vol 20, No 23, pp 2484 - 2486.

FIGURE 1 PATIENT 1 LEFT EYE

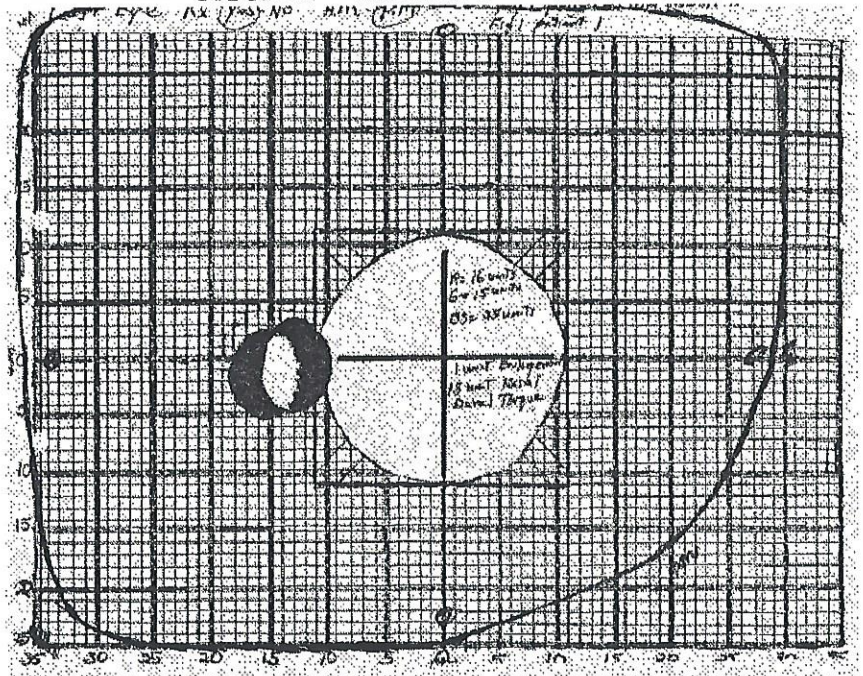


FIGURE 2 PATIENT 1 LEFT EYE

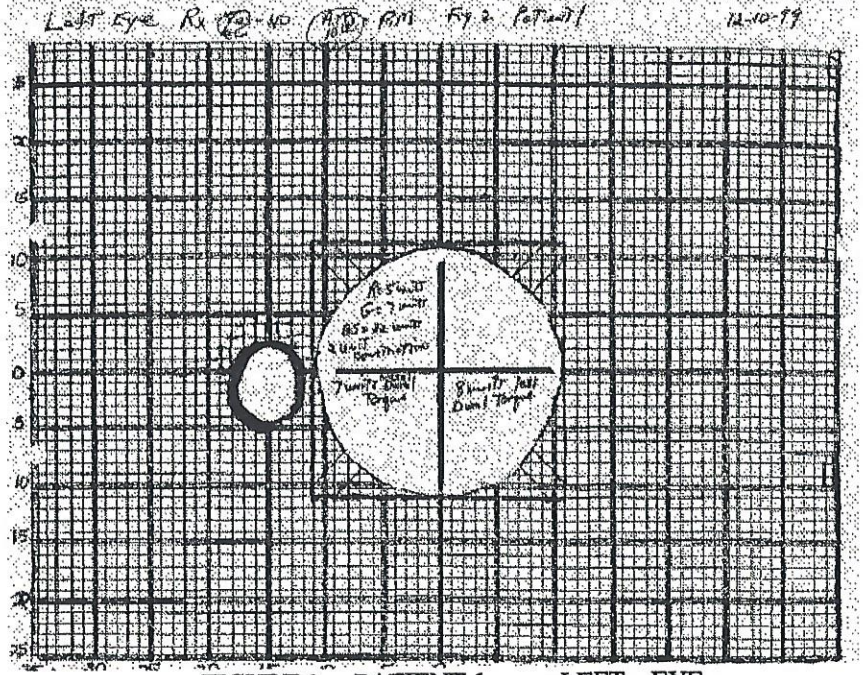


FIGURE 1 PATIENT 1 RIGHT EYE

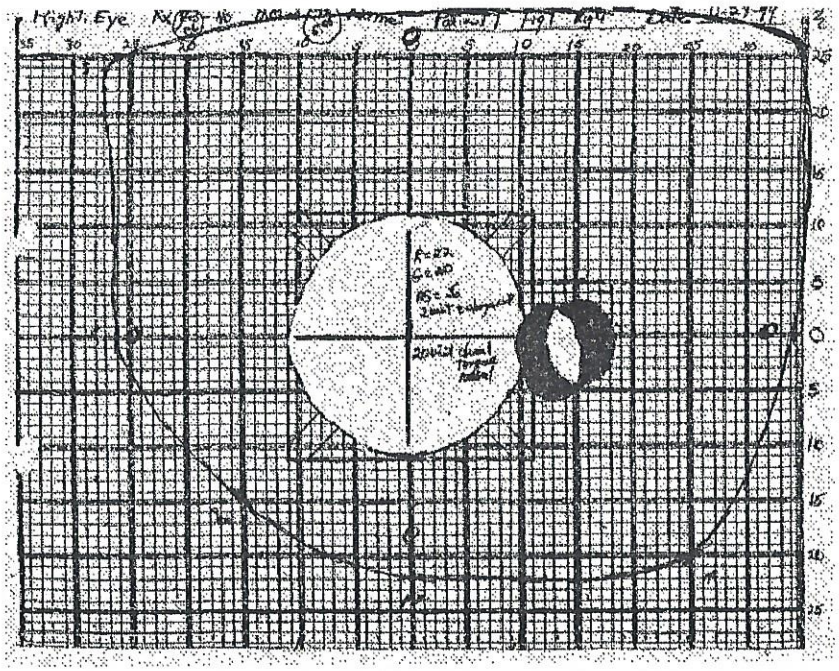


FIGURE 2 PATIENT 1 RIGHT EYE

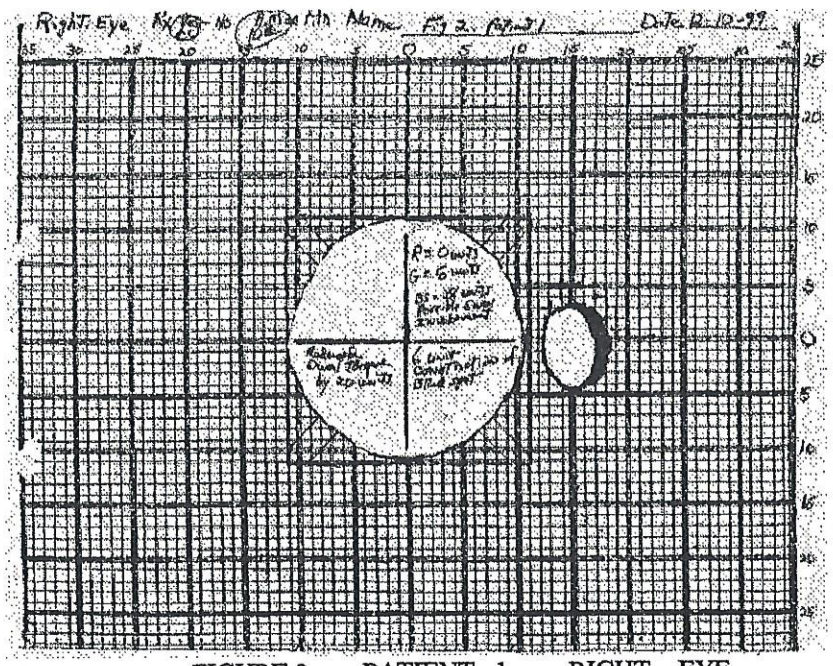
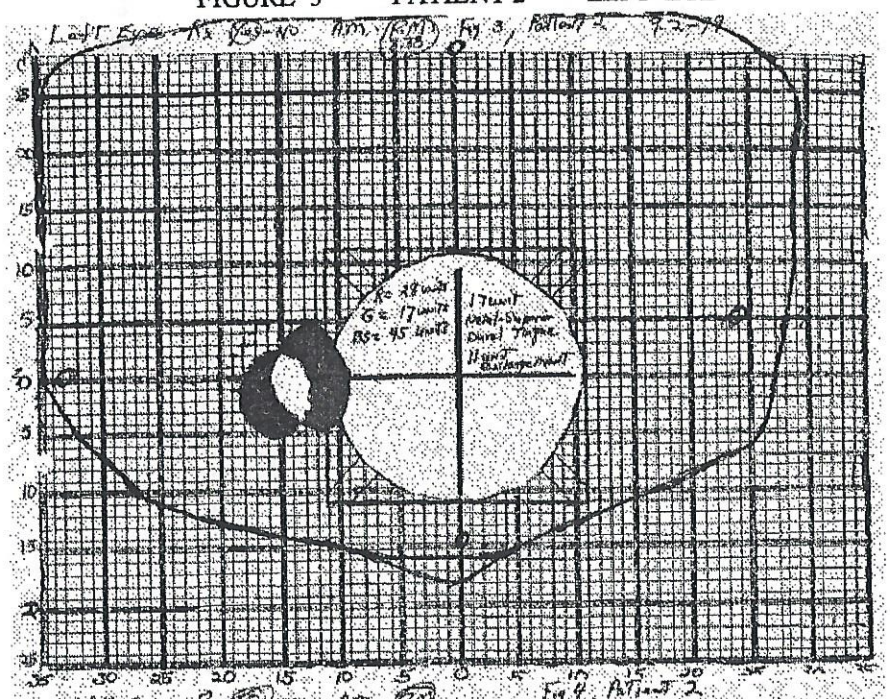


FIGURE 3 PATIENT 2 LEFT EYE



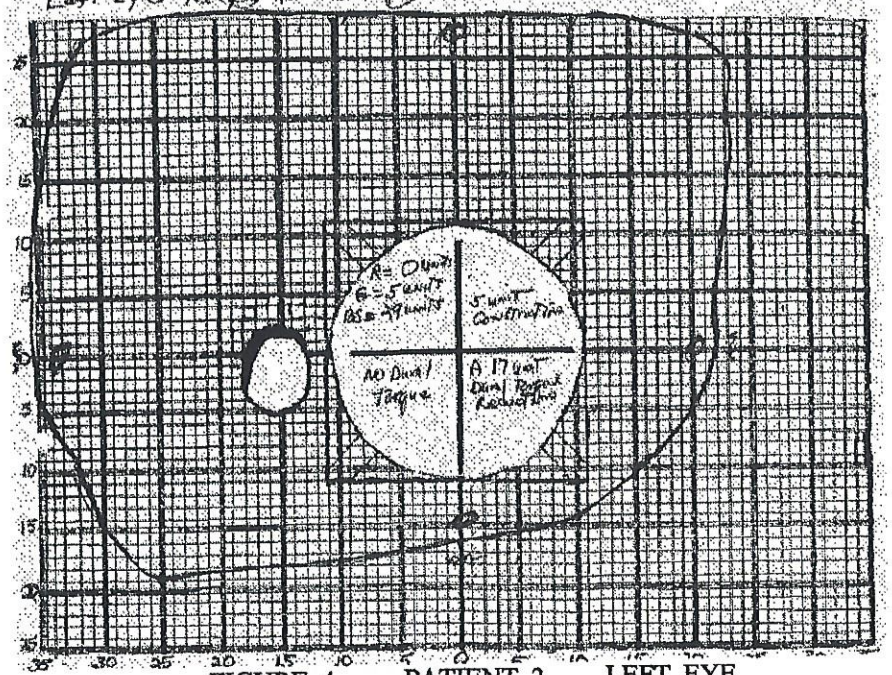
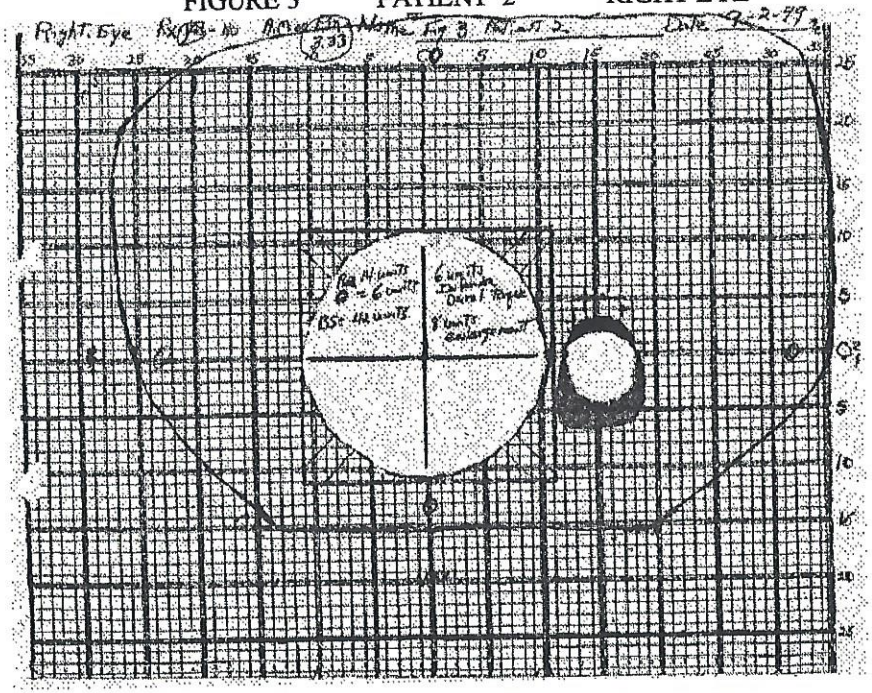


FIGURE 4 PATIENT 2 LEFT EYE

FIGURE 3 PATIENT 2 RIGHT EYE



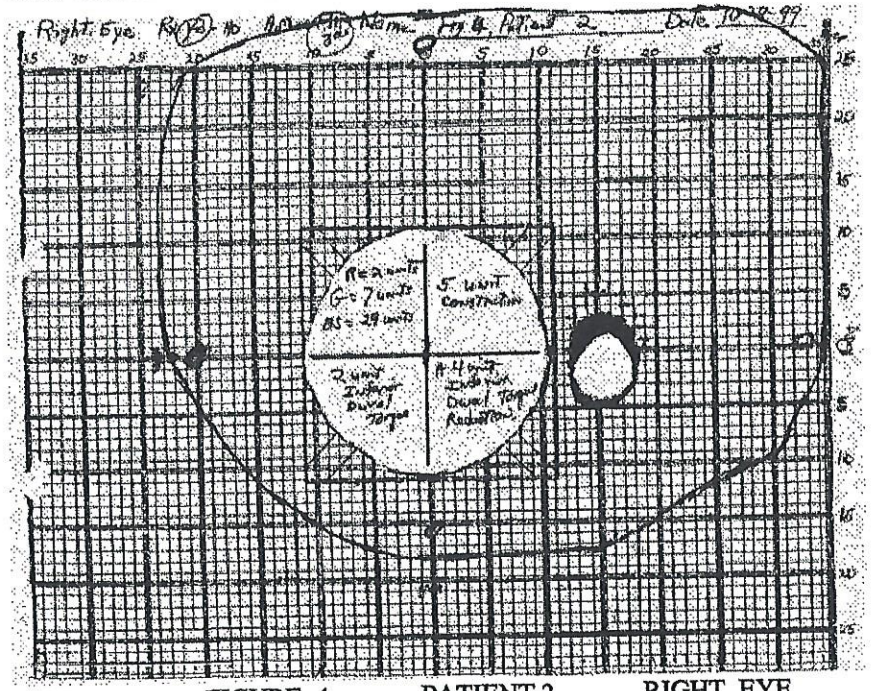


FIGURE 4 PATIENT 2 RIGHT EYE

Migraine and Colorpuncture

by Fausto Pagnamenta. MD.

Statistics show that 8% to 12% of the population suffer from migraine headaches. Another 3% of all people suffer from tension headaches.

This paper will present a clinical study of applying Colorpuncture as a primary treatment modality to decrease the severity of migraine symptoms.

Colorpuncture is a form 0' light therapy originated by Peter Mandel, German acupuncturist and color visionary.

Mandel's research with Kirlian photos led him to discover ways to interpret and interact with the fields of light emanating off the human body. The Kirlian photographs reveal the functional disturbances in the energy system, and through patient testing, Peter Mandel has developed treatment strategies of applying color light to acupuncture points and other highly charged energy spots of the body. Example of such a treatments are applying red light on S119 and BL5O as ways to boost Immune response '.0 chronic conditions,' yellow light on SP3 enhances the ability of children and adults to focus and concentrate on mental tasks, orange light on CV3 combined with blue light on Yin Trang harmonizes many endocrine imbalances.

The apparatus of choice for applying the multi-colored treatments is a pen shaped flashlight with seven Interchangeable colored glass rods designed to focus the colored light into a pyramid point. This pen Is manufactured under the trade name Perlux B-111, by Kamla AG Lucerne Switzerland.

As specific frequencies of light enter the body, they discharge photons along the meridians and into the body's other energy systems. Often these photons add energy to energy depleted areas. Further, the information in the color frequencies resonates the pathological informational patterns in the body. These information patterns in the body are like standing waves, or fields of stagnant energy which persist long after time of injury or pathology. With the appropriate color frequencies, the distressing information patterns break up, and allow the person to regain the natural health Of their original pattern, their "blueprint" of development.

This resonance effect is similar to the resonance of homeopathic formulas and flower essences1 only delivered directly through the purest of mediums, colored light. Unique to Mandel's form of color therapy is its ability to focus precise colors on acupuncture points for periods of 1 to 3 minutes. This modality allows for a multi-faceted approach, often involving a co-ordination of several different colored lights resonating an organ system in a single treatment session.

Through the application of several colors in one session. a "layering" effect happens. The resonances of the light not only add energy and shake free stagnant information patterns, they also resonate and coil out the pure energies latent in the client. The external colors help the internally generated light fields to become more harmonious. In this way Colorpuncture goes beyond being simply another strategy to tight disease, and actually serves as a very potent reminder of the innate resourcefulness and health in each individual.

As Dr. Pagnamenla observes in his practice in Switzerland, "For whatever reason, people say they feel happier afterwards. Lighter in both body and spirit. Even the family notices something different."

Migraines

Migraine headaches are a complex phenomenon due to the cross interference of many factors. Everyone knows the appearance of the symptoms--splitting headache pain, nausea, bad moods, and inability to work--but no one has isolated the cause sufficiently enough to provide a cure. Specialists in migraine headaches have found only limited success with a wide range of theories and treatment modalities. Often the therapies are only effective against the immediate symptoms but do little to resolve the underlying disturbances which bring the migraines about. This is especially true for the pain relief medications most frequently prescribed by doctors, These are at best partially effective in blocking the pain, and do nothing to prevent recurrent attacks. Further, such medications can frequently be highly toxic to the liver when taken frequently.

Various research mentions theories of the circulatory. neuro-genetic. and neuro-circulatory Systems, as well as theories of pathology, neuro-transmitter deficiency. neuro-peptlde disorders, anatomic dysfunction, and other sources (G. Jenzer).

My practical experience in the field of medicine tells me that the same rule applies here as in other areas of life: the larger the number of theories about what is wrong, the less effective ore any a' the therapeutic approaches.

In the alternative field, many different modalities are being used, but the authors have yet to find any definitive studies related to these. Once again, relieving symptoms is common, but preventing the recurrence of migraines is rare.

In the end, clients suffering from migraines often make the rounds from one modality and physician to another. Very seldom do they find lasting relief from this devastating condition.

Migraines Defined

The international Headache Society has proposed a detailed classification of headaches. We won't create further headaches by listing oil of them, but for the purposes of this study we will follow their guidelines for what constitutes a migraine:

1) At least 5 occurences or more of the headache patterns
2) Headaches lasting from 4 ~o 72 hours without therapy
3)Headaches with at least two of the following descriptions.
--lateral localization
--strong pulsation
--pain intensity from medium to very strong
--pain increases with body activity
4) In the acute migraine crisis we find
--nausea and vomiting
--hypersensitivity to light and noise

The Headache Society also distinguises another type of headache which has been treated In this study. It is the "cluster headache."

1) Painful crisis unilateral, around the orbit of the eyes or temporal lobe
2) Lasting from 15 minutes to hours without therapy
3) Usually accompanying symptoms are:
--red eyes
--tears
--blocked nose
--rinorea
--miosi
--ptosi
--edema over the eyelids
4) The frequency of the cluster crises is from every one two days to eight every day.

The Colorpuncture Research Group

During this study we have analysed a group of 56 people, of which 11 are men and 45 are women. Ages range from 9 to 60 years old, with an average age of 39. 53 people presented a migraine and 1 presented a cluster headache. None of these presented the common tension headache.

The duration of each Colorpuncture therapeutic session was 60 minutes for each patient, and the interval between sessions was between 30 to 6() days.

The **symptoms** were 53.7% diffuse, 38% lateral, 5.5% on the back of the neck.
55.5% complained of nausea. 38.9% had vomiting disturbances, and
31.4% experienced ocular disturbances.

The **intensity** of the symptoms was "strong" for 49 patients and medium for 7. Those with strong symptoms were unable to work during attacks, while the medium intensity experiences allow for some actions to be done under considerable duress.

The **frequency** of the symptoms is measured by the number of pain crisis days each month. The average frequency in this study is 12 days per month, with 12 patients suffering from daily mi9raines.

72% of the patients had irregular timing for migraine activity.

The **duration** or years of presence of the symptoms overage 14 years, with 28 patients suffering with migraines between 1 to 10 years, and 2 patients complaining of migraines for over 50 years.

94.3% of the patients had been using prescribed analgesics for pain control.

Diagnosis

Clinical diagnosis was made with Kirlian photographs of the energy emissions from the terminal points of the hands and feet. The analysis of these photographs was made according to the principles of energy emission analysis developed by Peter Mandel.

With each client we determined the most disturbed organ combinations, and the elemental patterns they represent In Chinese Medicine.

- **Elemental water:** Kidney-bladder meridians was most disturbed in 76.47%
- **Elemental wood:** Liver- Gall Bladder meridians 17.65%
- **Elemental metal:** Lungs-Large Intestine meridians 3.92%
- **Elemental earth:** Spleen-Stomach meridians 0%
- **Elemental fire:** Heart-Small Intestine 1.96%

Applied Therapies

The following therapies ore colored light therapies designed by Peter Mandel. Most of them involve a sequence of three to eight radiations of colored light on different acupuncture points, usually with each point receiving only one color per treatment.

- 41% received the basic combination for balancing the endocrine system.
- 48% received combinations for reducing inflammations due to toxic stress
- 93% received a sequence of blue lights called the "stomach rhomboid."
- 28% received treatment for the elemental water function
- 39% received treatment for elemental wood and liver regulation
- 31% received a seven light sequence for restoring internal balance called "Co-ordination #1."
- 54% received a light sequence applied to the fingertips, co-ordination #8
- 61% received induction therapy with microcurrents emitting pre-programmed patterns through electrodes taped to the Inner wrist.
- 74% received the higher frequency "Soul-Spirit" therapies.

For each person, the therapies were chosen based on the energy emission qualities in the Kirlian photographs taken at the beginning of each session.

The **duration of observation** of patients since the first therapy session has been between 1 and 60 months.

The **number of sessions** was between 1 and 15, **70%** of patients received **4** or less sessions.

Therapeutic Effect

The therapeutic effect has been evaluated with 3 parameters:

Cured: no migraine crises for of least three months 65%

Better; crises with less intensity, and the ability to maintain normal activity 30%

Not Successful: no basic improvement

Some of the interesting observations with this study are:

1) Patients receiving co-ordination #1 (basic endocrine balance) had an 88% cure rate. Another 12% rated their condition as "improved."

This statistic indicates the ability of Colorpuncture to harmonize essential endocrine imbalances, and to eliminate or reduce many of the symptoms of such imbalances, including migraine headaches.

2) Patients receiving co-ordination #8 (colored lights on fingertips) reported a 53% cure rate, with 41% claiming to feel "better."

3) Of the patients receiving four or less sessions, 71% reported 11cured," and another 26% said they were "better."

This shows how quickly Colorpuncture con re-align the body's energy fields. It also gives both doctors and patients a short time frame to ascertain the efficacy and response with Colorpuncture.

4) Patients requiring 5 or more sessions reported 38% cured, 46 % better, and 15 % not successful.

Obviously, some of the more resistantconditions both take longer to treat, and offer slightly less chance of a totally favorable outcome.

5) In this study only one patient was suffering from "cluster headache," with a recurrence frequency of 10 days per month. While under our observation for 6 months, he has not presented any more crises after the first session.

Commentary

This study investigates the use of Colorpuncture as a therapeutic modality for the deep- rooted migraine disturbance.

The statistics showing 60% cured and another 35% reporting "better" are quite extraordinary. This is especially so in the light of mast other therapies offering only limited, short term pain relief with little long term amelioration of cause or symptoms.

In this study, the patients have been followed up for 4 years alter the end of their treatments, and have confirmed the disapearance of symptoms even after the end of Colorpuncture therapeutic sessions.

It is also worth noting that the patients in the study have presented migraine symptoms for an average of 4 years, with one individual suffering for 50 years previous. All of these patients have been through thorough medical examinations (often Including TAC and EEG) and hove tried the usual pharmaceutical drugs routinely prescribed by physicians.

These results were achieved with treatment Intervals of 30 to 60 days. The majority of the favorable responses came with four treatments or less, while 38% of the clients receiving 5 or more treatments reported themselves cured.

This establishes Colorpuncture as a potentially swift, cost-effective, non-invasive, and effective therapy for clinical migraine disorders.

ATTENTIONAL ASPECTS OF LIGHT AND VISION TRAINING

by

John Searfoss, O.D.

An explanation for part of lights effect may be through the pathways of the attentional mechanism. Attention is found to be a controlling factor in most behaviors. Performance can be directly influenced by attention. Attention to the autonomic nervous system has been shown to regulate the heart and blood flow.

Focusing attention to desired effects can alleviate pain and change body temperature. Balances in biochemistry are also modulated by attention. Science is describing consciousness in terms of attention. The importance of attention is made known by the voluminous literature and research that has increased five fold in the last 20 years.

The premise that light effects attention that modulates most behavior, is basic. The idea that light enhances what controls attention is far-reaching and exciting to light workers. Science has described two main branches of attention. The first mechanism is stimulus-induced, which captures attention involuntarily with any sudden or novel change. The second is conscious or voluntary. This mechanism is commonly described as choosing what we "pay-attention" to. Choosing may be directed toward sensory information or thought. There appears to be something within us that controls attention. We believe that light training assists us to be aware and develop that something.

Where attention is focused energy follows. When attention is withdrawn so does energy. Thus energy and its many patterns are modified by attention. Focusing attention creates excitation. Dropping an energy pattern from consciousness assists inhibition. Inhibition acts as a buffer to the demands on attention. An individual cannot "pay attention" to everything. Learning the process of dropping and filtering out, frees up more attentional resources to direct available energy.

Different tools can be applied to bring the controller and its skills of attention into awareness. When we use an instructional set in the light training as part of vision training, we ask the patient to become aware of where their attention goes. This brings awareness of attention into the patient's consciousness. They become aware that something that they possess allows them to direct and allocate attention. The instructional set guides the patient to become aware of the act of focusing attention. They can become aware of what they dropped. They can be aware of the ability to control and change attention from within the mind to things perceived outside.

By example, if one simply listens to the sounds around them, attention appears to have the skill to reach-grasp-release anything we chose to intensify in our awareness. This includes aspects of the mind-body-emotion-spirit.

Another advantage in working through the attentional mechanisms is that patterns are easier to change when they are brought into our consciousness. (When we pay attention to them. Technically called attention allocation.) If we have denied, suppressed, or the pattern is beyond our sensitivity, it is likely not available to alteration. Patterns can consist of beliefs, thinking, behavior and motor performance. Even disease can be considered as dysfunctional and disorganizing pattern.

This is essentially how traditional visual therapy is done. We isolate a pattern or skill so we can put attention on it, bringing it into conscious awareness so we can change it. This is generally a motor pattern or a sequence of thinking directed toward a motor pattern.

In light work we go above the motor and most motor thinking processes. In this place or state above, we can re-examine experiences, attitudes, judgments and assessments that control our functions, behaviors and thinking. To do this, the first developmental step in our light work is to learn how to control attention.

Further Reading:

- Steinman S, Steinman B. Vision and attention. I: Current models of visual attention. Opt Vis Sci. 1998;75(2):146-55.
- Williams LJ. Tunnel vision or general interference? Cognitive load and attentional bias are both important. Am J Psychol. 1988;101(2):171-91.
- Tucker D, Derryberry D. Motivated attention: anxiety and the frontal executive functions.
- Neuropsychiatry Neuropsychol, Behav Neurol. 1992;5(4):233-52.
- Cohen R. The orienting response. An index of attention. In: The neuropsychology of attention. New York: Plenum Press; 1993:95-113.
- Naatanen R, Erlbaum L, editors. Attention and brain function. New Jersey: Assoc. Publishers, 1992.
- Cowan N. Attention and memory an integrated framework. Oxford Psychology Series No 26. New York: Oxford University Press; 1997:33-45.
- Joseph J, Chun M, Nakayama K. Attentional requirements in a "preattentive" feature search task. Nature. 1997;387:805-7.
- Milner D. Streams and consciousness: visual awareness and the brain. Trends Cognit Sci. 1998;2:25-30.

ABSTRACTS

The Effects of Colored Lights and Relaxation Exercise on Learning Disabled Adults' Visual and Learning Skills

Carol J. Rustigan
Learning Disability Specialist
California State University, Sacramento
12/91

The effects of colored lights and relaxation exercises upon learning disabled adults' visual reading and memory skills were investigated. Seventeen subjects were randomly assigned to two experimental therapies. The treatments consisted of (a) twenty, 20 minute sessions sitting in front of a Lumatron colored lights instrument, or (b) twenty, 20 minute sessions listening to relaxation exercises on a cassette player. Pre and Post vision and academic tests were administered to all subjects. T-tests analyses revealed that only the colored lights group demonstrated significant gains in post reading rate, reading comprehension and auditory memory scores. It was concluded that the effects of colored lights held promising implications for learning disabled adults confronted with inhibitive visual, reading and retention difficulties.

Monocular Visual Loss After Closed Head Trauma: Immediate Resolution Associated with Spinal Manipulation

R. Frank Gorman, M.B.B.S., D.O.
Journal of Manipulative and Physiological Therapeutics
1995; 18(5):308-314.

Objective: To discuss the case of a patient who demonstrated that spinal injuries may cause both cortical and ocular visual loss that was ameliorated by manipulative care.

Clinical Features: The patient suffered separate incidents of binocular and monocular loss of vision. A female child, aged 9 years, presented with bilateral concentric narrowing of the visual fields that returned to normal immediately after spinal treatment. Approximately 1 year later, she returned with monocular loss of vision after she was struck on the head by a ball.

Intervention and Outcome: The child was treated by spinal manipulation under anesthesia; the vision was found to be normal on awakening from the anesthesia. Both visual recoveries were authenticated by an independent ophthalmic specialist.

Conclusions: This case history adds to the other recorded occasions in which vision is noted to improve when the spine is manipulated. Discussion is directed to the basic pathogenesis: is her condition a form of psychoneurosis, is it a variant of migraine, or could it be a combination of both conditions?

Photosensitive Assessment: A study of Color Preference, Depression and Temperament

Beverly G. Dearing & Sangeeta Singg, Ph.D.
Subtle Energies & Energy Medicine 7(2):89

This was an explanatory study (with an extensive literature review) using the Photosensitive Assessment (PA) method designed for Brief Strobic Photostimulation. Colored strobic light was used to conduct PA of 15 extroverted/ depressed (ED), 15 introverted/depressed (ID), 15 extroverted/non-depressed (EN), and 15 introverted/non-depressed (IN) individuals. These groups were compared on the basis of their preferences for 11 colors. Significant results were found for colors ruby, yellow, yellow/green, green, red/orange, and blue. Depressed participants tended to avoid the color ruby more than the non-depressed participants. Extroverts preferred the colors yellow,. yellow/ green, and green more than did introverts. Red/orange was preferred more by the EN subgroup than by the ED subgroup. Blue was preferred more by the EN subgroup than the IN subgroup, and by the ID subgroup tha the IN subgroup.

Sight Recovery for Retinal Disorders Employing Integrated Therapies

by

Grace Halloran, Ph.D.

Diagnosed with retinitis pigmentosa (RP) and macular degeneration nearly thirty years ago, my life's work has been studying and implementing alternative eye health therapies to improve my sight and to prevent my children and now grandchildren from losing their sight. Earning a Ph. D. in holistic health sciences in 1979 from Columbia Pacific University provided a well-rounded knowledge base in the alternative medical field. After years of research and experimentation, the Integrated Visual Healing program was developed and put to the test.

The initial evaluation of an integrated therapy approach was independently monitored by several behavioral optometrists from,1983 to 1985. Although electro-physiological examinations were missing, the results warranted further investigation. The majority of participants in a three-week therapy/training program were diagnosed with retinitis pigmentosa. The second statistically significant group, were those diagnosed with macular degeneration. Of the 114 participants, provided pre and post assessments, including Tangent Screen for FOV (field of vision), distance and near acuity, and color vision by way of Ishihara Color Plate evaluations, 98 showed improvement in two or more areas. Fourteen tested the same at the post assessment (four had been within normal range to begin with) and two tested slightly less.

A more recently conducted evaluation, (1995-97) supervised by a neuro-ophthalmologist, included the use of the Humphrey FOV Analyzer, providing more objective data. Participants received therapy and training in a two-week period, all diagnosed with retinitis pigmentosa, cone/rod dystrophy, Stargaardt's, macular degeneration and one with glaucoma. Although the sample was small, (20 participants, age 13 to 83), this study included 4 controls (R P). The majority of the participants had positive results, whereas the controls showed no change or slightly less vision at the post test period. The monitors were masked as to participants or control group. (Case histories are at end of this report.)

Integrated, Holistic Approach

The National Eye Institute released a vision report in 1996 clearly stating that all serious eye disorders, including genetic conditions such as retinitis pigmentosa, had contributing factors to the decline of sight. Over exposure to UV radiation, smoking, nutritional deficiencies, pollution and toxins were on the list of factors. With the potential for multiple causes, a multiple disciplined therapy protocol provides the best potential for eye health improvement.

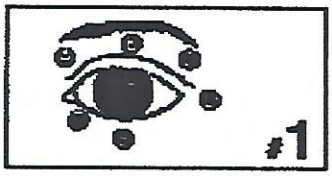
In 1983-85, the therapy program lasted three weeks, due to the testing parameters. In 1995-97, we had more sensitive testing available, and results were observed at the end of a two-week intensive therapy program. All participants were educated and trained in continuing the therapy routine at home for long-term improvement. Chronic and degenerative eye disorders need long-term and consistent therapies in order to fully rehabilitate, eye health and visual function.

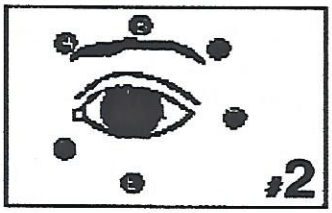
The IVH program is available to individuals diagnosed with serious eye conditions, and to professionals in an intensive training, educational and therapeutic format. All equipment and materials are available for home use. Participants are provided training, education and equipment in the following areas of therapies: nutrition and herbal supplementation (current protocol available upon request), micro-current stimulation of acupuncture points (Micro Stim Device, Micro Stim Technologies), eye health exercises, acupressure and color therapy (color lamp available for home use). Total body balancing, based upon the discipline, *Touch For Health* by Dr. John Thie, and stress management. For easy compliance, we found that combining therapies for home use increased their effectiveness.

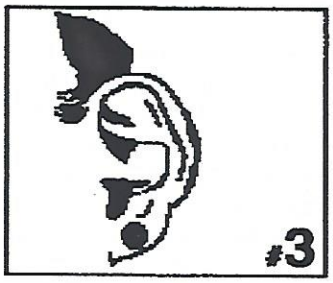
IVH Color Therapy Protocol

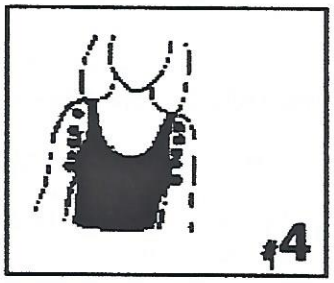
We have found that most retinal conditions respond favorably to a series of combined color filters. The home use lamp kit is built from a six-inch cast iron metal can (Par-Can/38), secured to a desktop microphone stand. The light source is a 60-65 watt reflector bulb. The series of filters are as follows: Filter A combines a white silk screen diffuse filter, primary red and primary blue. Filter A is for the macular region and a maximum of 10 minutes is recommended on this color. Filter B has the diffuse silk screen, primary blue and primary green. Filter B is for reducing inflammation, stimulating the lymphatic system, and overall eye health improvement. Filter C, silk screen diffuser, primary yellow and primary green. Filter C stimulates the rods, opening up fields, and has shown to improve night vision. Maximum time on filters B and C is 15 Participants follow a therapy schedule based upon their individual diagnosis. An intensive therapy schedule for those affected more severely is five nights a week, two months on, two weeks off, then repeat the therapeutic level. There are different schedules for early stages and maintenance.

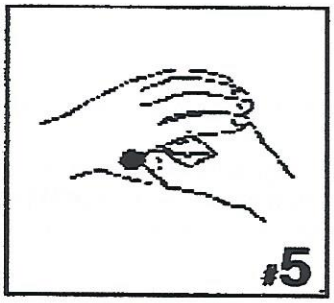
The following page reveals the use of eye acupressure during color therapy sessions. By combining these two powerful disciplines, time is saved, and the results appear to be more pronounced than when the therapies are done in isolation of each other.

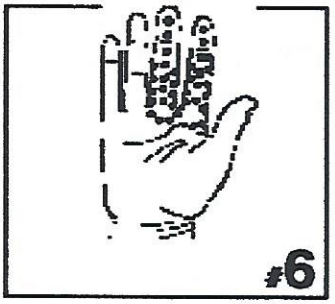












Acu-Eye Points & Violet

The violet range of color provides more direct stimulation for the macula region of the retina. Individuals with macular degeneration, cone/rod dystrophy, respond favorably to this particular color therapy.

#1 Inner Acu-Eye Points are stimulated by pressing finger tips to the points on either side of the nose, under the eyebrow, following the eye orbit bone. Firm, steady pressure is applied for up to 10 seconds. Lift fingers completely oft tissue to move to next acu-eye point, following the ridge of the orbital bone. These points stimulate circulation to the macular region.

#2 Outer Eye Points, begin above the eyebrow. Stimulate each point with firm pressure for up to 10 seconds. The acu-eye point directly under the eye on the top of the cheekbone is the beginning of the stomach meridian. The stomach meridian is the only meridian that goes directly through the eye itself, especially through the macular region.

#3 Ear Acu-Eye Points is a powerful micro energy-point used in macular acupuncture therapy. Thumb and index or middle finger using a "pinching" pressure on the center of the ear lobe provides stimulation to the entire eye.

Acu-Eye Points & Blue/Green

Blue/green is an incredibly powerful therapy for reducing inflammation and stimulating the lymphatic visual system. The acu-eye points that are outlined here are both directly impacting the lymphatic system to the eyes. #4 Neuro-lymphatic stimulation points, starting at the nub of the shoulder, following the biceptal grove down the side of the arm halfway to the elbow. These points must be stimulated firmly and deeply to activate the lymphatic system for the eyes. Six to ten seconds on each point is sufficient. #5 is a major acupuncture point, called **Ho Ko.** This point helps eliminate toxins from the upper torso and head region. Pinching and rubbing this point found on both hands for up to 15 seconds is adequate, while doing the blue/green color therapy.

Stimulating these points during a color therapy session provides the individual with a very powerful integrated approach. Combining these disciplines to complement one another has demonstrated positive results over a period of time, even in such eye disorders as macular degeneration, retinitis pigmentosa, glaucoma and others.

Acu-Eye Points & Green/Yellow

Green/yellow color therapy opens field of vision and enhances night vision. The hand reflex points as shown in #6 are distal points stimulating the entire visual system, promoting hormonal balance as well. The index and middle fingers represent the visual system, and can be stimulated for up to 10 seconds. Working both hands during the green/yellow therapy session promotes eye health and visual function. This particular combination is good for retinitis pigmentosa and glaucoma. For overall eye health improvement, all three- color therapies combined with the acu-eye points is recommended 3 to 5 times a week.

Sample of Case Histories 1995-97 Evaluations

Retinitis Pigmentosa
Pre Date: *9/7/96* Post Date: 9/21/96
Case History: Marilyn W., is a 66-year-old woman, diagnosed with retinitis pigmentosa (RP) at 60 years of age. Affecting central vision more than FOV, Marilyn reported extreme light sensitivity, reducing her to wearing sunglasses indoors, and several pairs for minimal comfort outdoors. No other health conditions were present.
Results: FOV changes were the most dramatic. The right eye on the Humphrey FOV Analyzer had a mean deviation of -29.1 3 at the pre-therapy examination, and two weeks later was in the near normal range of -7.86. The left eye was -29.44 and post-therapy test revealed an improvement in the mean deviation to -1 5.47. Ishihara color test stayed the same in the left eye, with some improvement noted in the right. Visual acuity for distance was similar, right eye, pre 20/70-2+1, post 20/70+1. Left eye, pre 20/100-2 and post 20/100+1. Subjective Observation: Marilyn reported dramatic improvement in comfort in bright direct or indirect light. Could see more clearly indoors as well.

Retinitis Pigmentosa
Pre Date: 6/14/97 Post Date: 6/27/97
Case History: Issa M. is a 16-year-old man who was diagnosed with RP in 1993. Patient history indicates some EEG abnormalities, and is on medication for seizure control. Extreme night blindness, and narrow field of vision were making mobility difficult.
Results: Significant improvement in Field of Vision, significant improvement in Acuity and color discrimination in left eye at post examination. Right eye was pre 20/200+1 and two weeks later at the post test, 20/100. Left eye was 20/200 and post was 20/100. Right eye color test was able to detect 11/18 at pre and only slight improvement at post, with 11.5/18. However, the left eye went from 11/18 to Identifying 13 of the 18 color plates. Overall improvement showed improvement in all area, including FOV, mean deviation, right eye -24.04 to -23.11, left from -25.26 to -21.82. (Normal range of mean deviation is -4 to +6).

Retinitis Pigmentosa
Pre Date: 2/2/97 Post Date: 2/13/97
Case History: Man, age 47, no other family history, diagnosed with RP. Had been to Cuba for surgery, within last five years, and has cataracts due to RP in both eyes. No other health problems presented.
Results: Significant improvement in acuity. FOV in left eye showed marked improvement. Subjective reports of increased ability to 'see' and to walk in darkened area. Right eye was 20/20~1 at pre and 20/70+1 at post exam. Left eye was 20/400 and post 20/200. Color tests revealed slight improvement, and left eye showed improvement in mean deviation. Right eye was unable to test at initial examination, so results are indeterminate, although FOV on right eye was able to be taken at post examination.

Macular Degeneration
Pre Date: 3/9/97 Post Date: 3/22/97
Case History: Sophie Y., age 58, diagnosed with macular degeneration for several years. History of high myopia. No other health conditions presented.
Results: Remarkable and significant improvement in visual acuity and FOV. Participant reported subjective improvement overall. Right eye was 20/400+1 and 20/200 at post. Left eye had most remarkable changes, from count fingers@5' to 20/100+1. FOV confirmed left improvement, going from -11.84 to nearly normal range of -4.97 in the mean deviation. Right eye was -10.99 to -8.19. Color tests showed improvement of identification of one plate in both eyes at post-test.

Macular Degeneration
Pre Date: 9/7/96 Post Date: *9/21/96*
Case History: Angie H. is an 83-year-old woman, diagnosed with age-related macular degeneration (wet-type). No other health problems presented. Not currently on medication.
Results: Improved in central sight on right eye. Pre was 20/400 and post was 20/200+2. FOV mean deviation in right eye was remarkable as well, from -7.1 9 to nearly normal range of -5.19.

Stargaardt's
Pre Date: 3/9/97 Post Date: 3/22/97
Case History: Judy A., age 35, was diagnosed with Stargaardt's (juvenile macular degeneration) since she was six years old and

was legally blind at that time. Had noticed dramatic drop in visual function within last two years. Used low-vision magnification lenses to identify words with difficulty, at 3-4 inches from face.
Results: The most significant and dramatic results were in the acuity evaluations. Participant's ability to see in the distance was clearly demonstrated in the post evaluation. Right eye went from count fingers (CF)@3' to CF@1 3', an increase of 10 feet. Her left eye went from CF@3' to a remarkable 20/200 in two weeks. Color and FOV were similar at pre and post evaluations.

Glaucoma
Pre Date: 1/5/97 Post Date: 1/17/97
Case History: Pauline M., age 67, with diagnosis of glaucoma. Has had laser procedure to reduce pressures, and has had allergic reaction to topical medication. Pressures were in the high normal range at both pre and post examination. Field deficit due to optic nerve damage from glaucoma had been documented.
Results: Pressures were stable and lower than at pre examination. Right eye, pre was 20/40, post -20/20+1. Left eye was 20/30-1 at pre and 20/25+1 at post-therapy. Mean deviation on FOV was significantly improved as well, going from -18.3 on right to post-10.86. Left eye from -6.04 to -5.46.

Conclusion

All serious eye conditions, typically considered untreatable, deserve to have access to a well-documented, integrated and holistic therapy. Conditions such as macular degeneration, retinitis pigmentosa and field loss due to advanced glaucoma have all been considered untreatable in the past, and many patient's given this diagnosis and prognosis live a life of impaired sight and diminished quality of life. These few results, provided over a two-week period clearly demonstrate that help and improvement are possible. It is time to share this with professionals and with the individuals at risk for serious sight loss. Indeed, something can be done. This program does require self-discipline and a willingness to take responsibility for completing therapies long-term. However, when quality of life and sight is improved, motivation is readily available.

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LECTURE SUMMARIES OF THE 1999

SYNTONIC CONFERENCE

by Sarah Cobb

BLOOD - A LIGHT INFORMATION CARRIER

by

Dan Oren, M.D.

The study of light, although largely overlooked in the past, is increasing within the scientific community. Dr. Dan Oren, in his lecture, Blood - A Light Information Carrier, looks to nature to unlock secrets about the function of light.

Color plays undreamed of roles, one of which is to absorb light. This is due to the unique double-bond single-bond arrangement within the molecule that occurs in both plants and animals. The configuration has the ability to "grab" photons as they pass through the environment.

If light is shone during normal periods of darkness when rhythms are more vulnerable to light, sleeping and waking times are altered. Body temperature and hormone changes fuel jet lag, a process that is still not completely understood.

Plants and people share numerous biological similarities, one being a phase-shift (jet lag). For example, if a California morning glory were taken to Paris, it would demonstrate delayed blooming times for several days. Why does this occur?

One needs to look no further than the "blood" in plants, animals and humans to begin to understand why. The double - bond, single - bond molecule configuration in the heme of hemoglobin that is so efficient in "trapping" light and carrying it through the system is nearly identical to the molecular structure of chlorophyll.

Phytochrome, another light-absorbing molecule that plays an important role in a plant's biological clock, is very similar to chlorophyll. The counterpart in humans is a pigment in the blood called bilirubin, once taught in medical schools to be a waste product. The heme and chlorophyll are made from a series of about ten molecules that create biochemical pathways, identical in plants and animals.

Blood makes intimate contact with every cell in the body. The heme's iron binds with carbon monoxide. When light is shone on the bond between hemoglobin and carbon monoxide, carbon monoxide is released. Blue light has a particular capacity to break this bond. Although it is taught that carbon monoxide is poisonous, it is critical to life.

If we think of hemoglobin as having two jobs -- one to carry oxygen and the other to carry active gasses -- then we can understand another way in which light can have its effects on the blood.

FUNCTIONAL FIELDS - NEW DATA, NEW EQUIPMENT
by John Searfoss, O.D., and Larry Wallace, O.D.

In an update on research of new techniques to appraise peripheral vision, Dr. John Searfoss gave a very interesting lecture on visual fields. Fields have long been used for pathology, but we are beginning to use the fields for functional measures.

If assessing the field functionally, one might wonder why the traditional field testing is usually done monocularly, on a slanted surface, and on black paper with a white target -- elements that don't usually translate to the real world. It was this question that prompted an inquiry into a more natural form of field testing executed binocularly.

Using a group of subjects, a probe was included to ascertain whether visualization was affected by a collapsed field by asking how much of the page an individual imagined seeing with his eyes closed. Drawings were obtained. The results indicated that there was a correlation between a constriction of the real field and the imagined one.

Visual fields can change immediately with an intervention. Some examples included the use of lavender paper that was shown to expand the field as much as a plus lens and yoke prism base up.

The research on attention, visual sensitivity and the ocular motor performance indicates that attention modulates visual sensitivity. This might be the reason ocular motor skills improve after syntonic treatment without any direct training.

In a school study of 71 children, Dr. Searfoss found that regardless of age, 21% of the normal to gifted children had tunnel vision. Within the challenged group, 25% had tunnel vision. When other aspects of performance were considered, the educators identified 13 children that were in the most trouble academically. Of those, 11 had tunnel vision.

There is an order of sensitivity loss in a continuous range. The first things to go are the color fields. The enlargement of the blind spot was next, followed by shrinking of the white isopter. The last was spiraling and collapsing of the white isopter, followed by blurring and darkening of the periphery.

According to Dr. Wallace, there is a new technology for measuring fields, produced by Welsh Allen and sold by Humphries. It is called the frequency doubling technology perimeter. The new instrument uses low frequency sign wave patterns in the form of bars that engage counter - faze flicker in 16 different positions. At a certain level, the bars double.

This new instrument measures the magnocellular pathway and correlates to the Humphrey instrument. Dr. Larry Wallace has been using the instrument in his office, comparing it to the kinetic fields produced on the traditional instrument. He has found a strong correlation between the two.

When case comparisons were presented to Welsh Allen, the company enthusiastically pledged more research and promotion. This is an opportunity for potential involvement by syntonic optometrists.

LIGHT IN HEART MEDICINE
by Will Croft

The light therapy offered by Will Croft uses the principal of bioresonance to allow the body, mind and spirit to reconnect on a cellular level. Using a method of pulse reading, developed in France by Dr. Paul Nogier, the correct color frequency that the person needs at the moment is revealed. After the light is applied by either by shining it into the eyes or into an acupuncture point with a specially developed fiber optic light pen, the body's bioenergy network is activated.

The pulse is first measured on the wrist. Croft says that the pulse system is basically reading out guidance from the heart intelligence about what are the best colors or sounds to use that will open and connect the energy system of the mind and body. The pulse can also specify where the color or sound is best utilized. Often the ear is used because it contains a holographic map of the entire body.

One of the instruments Croft developed is a color pen that looks like a small flashlight with a fiber optic tip. With the insertion of a colored filter, the light is released in a high intensity over a small area. Hundreds of different colors are possible. The pen is reasonably priced. For more information including other interesting devices he created, contact his Web site at www.igc.org/croft/lightfeld/inter.htm.

CENTRAL VS. PERIPHERAL VISION
by Ellis Edelman, O.D.

When an individual looks but fails to see,
There is no reason to move.
When an individual looks but fails to see,
There is no reason to speak.
When an individual looks but fails to see,
There is no reason to change.

The visual field, according to Dr. Edelman, represents a comfort zone for how much information a person can process. Peripheral areas represent the past and the future and the macula is the present. The signs and symptoms associated with a reduced peripheral field are:

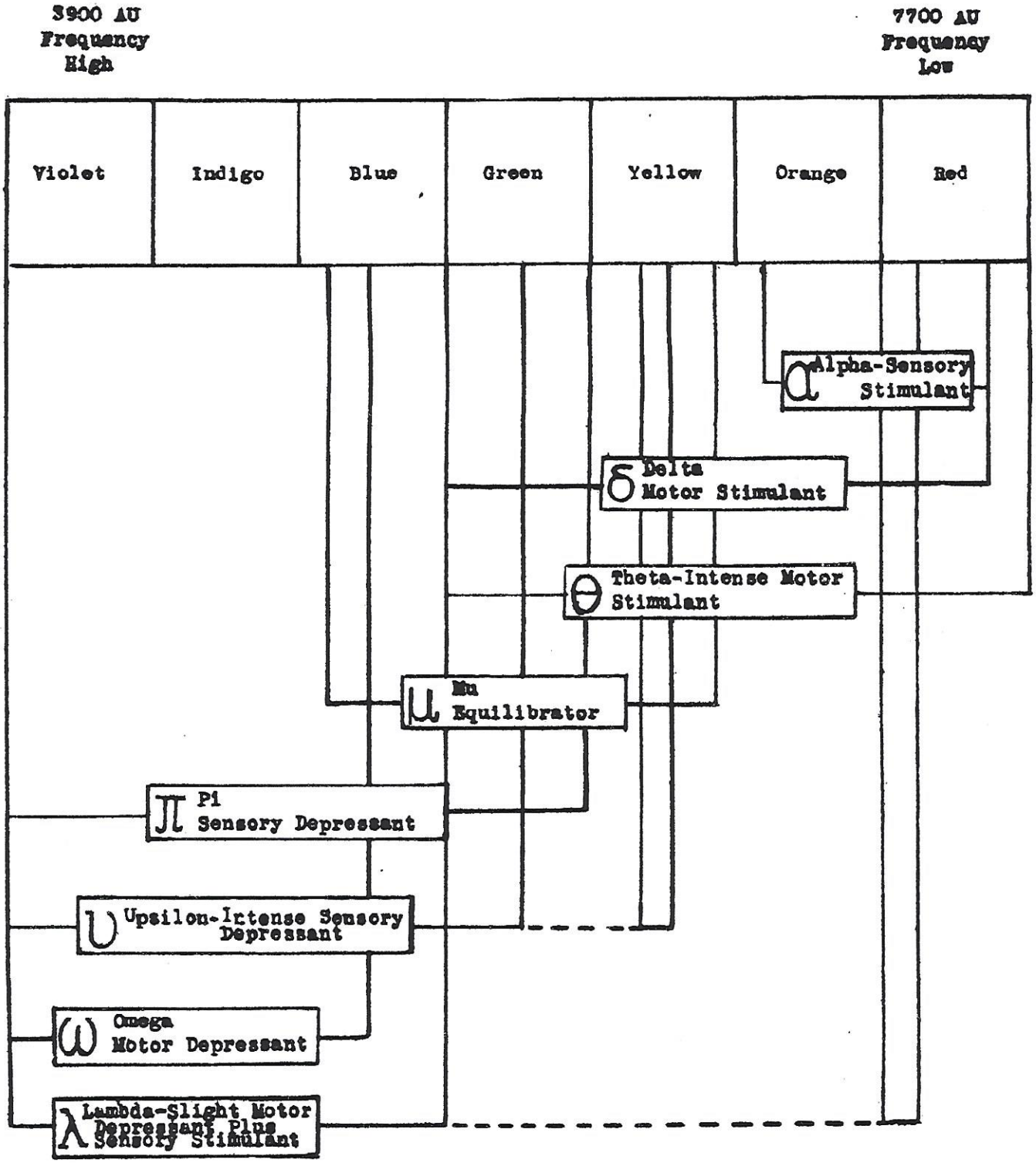
1. accident prone
2. double vision
3. difficulty of avoidance of sports
4. highly tactile to confirm where things are in space
5. drinking a lot of water (related to stress response and adrenal glands)
6. difficulty copying
7. tendency to read word by word
8. difficulties with comprehension or sequencing
9. strabismus, amblyopia
10. alpha-omega pupil (the bigger the pupil release, the smaller the visual field)
11. high myopes
12. suppressions on the Brock string

SAMASSATI COLORTHERAPY
by Nishant Mathews

Nishant's lecture was nicely summarized in his article, Samassati School of Holographic Healing (see JOP March 1999). During the lecture in Washington D.C., Nishant talked about hitting a main acupuncture point located between the eyes. An optometrist then asked about the secondary effects of the syntonic treatment hitting that point. At the time, Nishant gave a scant answer, so I decided to e-mail him and ask him to elaborate. This conversation ensued:

S.C. There are two points, one between the eyes and another above, that get stimulated while a person is accepting a syntonic treatment. Could you please help us understand what secondary effects the syntonic treatment could have on those points.
N.M. I don't know what secondary effects there are from syntonic work on the third eye point and the one above. I believe there will be some, but mostly marginal. The samassati colortherapy is like using acupuncture or acupressure. If you apply pressure or stimulation on a point, you get an effect. If you are working on a large intestine point on the hand, it is different to stimulate just the point than to squeeze the whole hand. The syntonic equipment stimulates the whole area. I don't believe it is useful to think of it as also point - specific work. It is more zone - specific, at best. The zone will have an effect, but it is not the same as with a point. Advanced practitioners can make syntonic work point- specific if they know how to tune into the points with clear intention. For this they have to be able to "aim" their intention into the point, and direct the recipient to do the same.
S.C. I have another question. Could you please describe the meridian that connects to the third eye and the one above.
N.M. The governor meridian connects to the third eye. This is the main meridian that runs up the spine and over the top of the head. The third eye point is one of the master points in acupuncture. It and the point above have direct connections into the brain. I believe this is one of the stronger links in color therapy. These two points are like vestigial eye receptors, which feed information directly into areas of the brain associated with consciousness. I don't see this as going via any meridians, but more like a direct channel, similar to the way light goes from the eye along certain nerves directly into brain receptors.

Diagram of Visible Range of Spectrum
Showing Approximate Transmission of Syntonic Filters



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