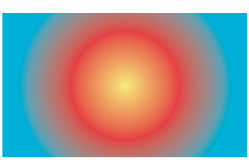
CHROMATICS



The correct use of colors in everyday life and chromotherapy

UNIPRINT

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MEDICAL DOCTOR

CHROMATICS

BE THE BEST WITH COLOUR

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CHROMATICS

BE THE BEST WITH COLOUR

dedicated to
Man's effort for evolution

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FOREWORD

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From my experience as a psychologist, and having studied the results of the latest researches in Chromatics, I have found solid evidence as regards to colour's influence on our everyday reality. A very large part of the chromatic "bombardment" which we are subjected to every day, escapes the awareness of many scientists. The analytical mind of the writer, however, did not succumb to the "colourless pallidity" of conventional research. He has succeeded in gathering, researching, classifying and presenting the laws which govern Colour and its uses both on a scientific and everyday level. The fact that the writer successfully accomplishes and presents this research, despite all its objective difficulties, is very significant.

The one thing I appreciated particularly in Chromatics, was the unprecedented level of proof I found here. I believe this will be appreciated by everyone, who realizes the value documentation gives to a scientific work. To look for and find the research results of other scientists around the world that verify the validity and credibility of your own work, is in itself substantiating the work. In Chromatics the abundance of proof presented is not only evidence of the pains taken

by the author. It is also serious evidence regarding the validity and credibility of the method itself. Moreover, the manner in which the book's scientific proof has been accomplished, is characteristically complete. It demonstrates the methodicalness and scientific organization of the author. Qualities which also contribute to the credibility of the method, in their own right.

The correctness of the method, which is an integral part of daily life, has been proven in practice and in its formal application in foreign countries. What renders Chromatics able to meet every type of exhaustive analysis is its scientific character. I believe Chromatics is a promising new science, and a challenge for further scientific research in practically all the sectors of human life.

Prof. S. J. Harrison,
Psychologist

"Amid the colours, there are certain friendships.
Several, next to others take on beauty and grandeur ."

ALBERTI

INTRODUCTION

INTRODUCTION

Colour today has become one of the most basic traits characterizing our lives. Great technological advances have permitted man to create thousands of chromatic shades.

These shades dominate our daily visual environment and bombard us with thousands of stimuli. The stimuli are codified and classified in our brains, and thus signify the beginning of physical and pychological-mental functions.

Our chromatic environment is nearly always determined by fashion.

It is also determined by the efforts of marketeers to create impressively coloured packaging in order to attract the consumer's attention.

Our personal chromatic choices are also determined by factors which are subconscious, instinctive and almost always unkown and incomprehensible.

Often, someone feels oppressed by wearing colours he doesn't like. But he wears them nonetheless, merely to follow the current fashion.

Someone else on the other hand avoids the colours he particularly likes, so as not to be

misjudged. Colours today are characterized as being aristocratic, chic, gypsy, cheap, vulgar, royal, lively, dead, in, out etc.

Man, from his childhood, is living in a chromatic environment which has been chosen by others.

Very often the work environment is grey, colourless, and impersonal.

The setting of colours in upholstery fabrics often resembles a basket full of grapes, screws, pegs, feathers and watermelon rinds.

Housepainters show us a colourchart full of hundreds of hues and shades and as a result we become confused and, not knowing how to make a choice, we end up selecting the "classic" grey or white.

In the huge jumble of colours that bombard us everyday, lies the basis of the problem called: ***colour and its proper use, based on its qualities.***

This book tries to unravel the serious problem of colour use. It aims to put an end to the unruly, unreasonable and accidental use of colours which are source of subtle biological energy for the disorganized man of contemporary society.

"... I wonder if there exists a natural history of color and to what degree it is in proportion to the natural history ofplants? Is it not temporal the latter and timeless the former?.. "

WITTGENSTEIN

Chapter 1

THE HISTORY OF COLOUR

The History of Colour

Since ancient times man has wanted to lavish colour on his everyday objects and especially his clothes. The Chinese, the Hindus, the Mayas and the Egyptians possessed the secrets of the dyes for more than three thousand years. The method of preparing dyes was a well guarded secret, under the penalty of death, and was imparted only in a special initiation ceremony.

The dyes were prepared from natural materials, both organic and inorganic. The preparation itself, took on the aspects of a religious ceremony.

Since the colours were produced in small quantities, their acquisition was a privilege only of kings and the rich sovereigns. In Greece, the craft of dyeing was imparted on a wider scale after the campaign of Alexander the Great who brought back many secrets from the nations he conquered.

Blue, black and yellow were originally the colours used on a wide scale.

Paleontology provides us with information regarding the dye used in painted depictions. At first these pictures were drawn only in black and later brown was added.

The art of Purple, that is the production of a

deep crimpson shade from a certain type of shell, flourished from very early times. In the 4th century A.D. the Byzantine Empire set up special Purple-dye workshops with Phoenician artisans, exclusively for dyeing the regal clothes worn by their royal-blooded, born in the purple, progeny.

Later, the elaboration of many more natural substances in Physical Science laboratories made new dyes available which were given out quickly to the general public.

In our times the chemistry of colour, with its astonishing development, gives forth a huge range of colours and hues.

Colours of general use, like acrylic synthetic, semi-synthetic, organic, and inorganic are at everyone's disposal. Also colours for specific uses such as medical chromatography and Laser dyes for special scientific use, are at the disposal of researchers.

In addition, artificial colours are used in abundance in the various foods to give strong green, yellow, red etc. shades to icecreams, sweets, cakes, candies and many other edibles.

Photographic colour films, thanks to their widespread use, make it possible for everyone to enjoy chromatic qualities of great perfection.

Colour TV and videos have brought colour into every moment of our lives.

Chapter 2

CHROMATICS

What is Chromatics?

Chromatics is a method which teaches the proper application of colour in our daily lives, aiming to improve man's functional coexistence with colour and also to enable him to reap the most possible benefits.

Colour, as a form of energy, conceals forces within it which can be utilized to strengthen the organism and for the everyday regulation of its functions so that the "energy balance" of the organism remains positive. Self-regulation and self-organization are two of the most basic qualities-achievements which should be included in man's daily objectives.

Chromatics, with the particular knowledge it imparts regarding the use of colour, helps secure these objectives in a sin.ple way. Its application is both convenient and pleasant.

Types of Chromatics

Individual: when Chromatics is applied for personal use according to the specific needs of the individual.

Collective: when Chromatics is applied to groups of people who either share or not common

characteristics, and have a common or different puprose.

Business: Chromatics in business could be applied in a way either individual or collective. It is characterized :

a) by a primary threefold objective: *better communication, reduction of stress* and *improved work productivity* .

b) by a secondary threefold objective: *reduction of fatigue, improved standard of living* and *better health* for everyone using Chromatics.

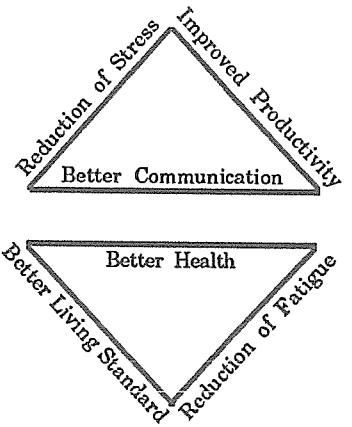


Illustration 1: The primary and secondary threefold objective of Chromatics

Medical: when used for purely medical purposes. Medical Chromatics is called Chromotherapy (colourtherapy). Chromotherapy

is designated as being either therapeutic or preventive.

Therapeutic Chromotherapy is practiced exclusively by physicians, because it requires a particular medical diagnosis. It could help various illnesses such as asthma, allergies, gastritis, spastic colitis, migraines, etc. It is accomplished by applying an intense colour beam of light, either locally or generally, from a special spotlight.

Dr. Wallace MacNaughton and his associates are credited with having greatly improved upon the method of therapeutic Chromotherapy, as well as the specific instruments used in its application.

Preventive Chromotherapy is based on the same principles as therapeutic Chromotherapy. It is a method of preventive medicine which can be put very easily into practice by everyone.

Today there are many therapeutic methods, which can be characterized as orthodox, unorthodox, holisitic, etc. This book does not aspire to add another therapeutic system to the long list existing already (including both more and less effectual methods). It aspires to provide a system of preventive medicine, in order to fill a large void existing within the area of disease prevention, in general.

Chapter 3

THE COLOUR

The Concept of Colour

The sense of colour is closely intertwined with the sense of vision. Both senses, however, and especially the former -as will be examined shortly- are subjective concepts.

The study of colour is better fascilitated if it is taken into consideration that although these concepts, and all their relevant, are well known to all people, however, they are lacking a clear definitive scientific vocabulary.The majority of the definitions given, are descriptions of processes that take place during vision. For example, the definition of colour can be referred to as that element of visual perception which allows the observer to distinguish the differences between two optical fields which are absolutely identical in shape and texture (Experimental Process). In other words, the difference which is observed between the two fields, is induced by the difference in the spectral synthesis of the two light beams which illuminate them.

Principles of Physical Optics

a. *Theories regarding the nature of light.*

The nature of light as a topic, has occupied the

human mind since the very old ages. The most ancient existing testimonies considered light to be rays that left the human eye and fell upon various objects, thus making them visible. The first theory with serious scientific foundations was put forth by Isaac Newton in 1708. Newton suspected light had a wavy nature. That is, it is a wave, the dissemination within the space of an oscillation. But the equipment available during his time made it impossible for him to prove this type of theory. In 1960, Huygens made public some experimental data which supported the wavy nature of light. This data was studied by T. Young who in 1803 published the most correct, for that time, Wave theory of light. That theory maintained that light was a wavelength, in the same exact manner as sound. In other words in order for it to travel, it must have a medium. (sound travels through solids, liquids and gasses but it doesn't travel in a vacuum). Light, however, does travel in a vacuum. Because of this fact, Young presumed that there existed an elastic medium for carrying light and he named it "ether".

"Ether" would have to exist everywhere, and be extaordinarily thin and weightless (since it falls outside the range of our perceptions). At the same time, ether would have to possess the elasticity of steel and not be alterable. This medium, naturally, has not been discovered as yet.

In 1865 J. Maxwell brought about a revolution in physics with his theory that light was an electromagnetic wave. It was a revolutionary

theory because it explained nearly all the properties of light which had been investigated up until then. Its most important contribution was that ether's existence was not necessary, since electromagnetic waves travel even in a vacuum. However, there still existed certain phenomena such as the Compton phenomenon and the Photoelectric phenomenon, which Maxwell's theory could not explain. Time was needed before an answer could be given to this troublesome query. It was not until the beginning of the 20th centrury, in 1901, that Planck's Quantum Theory offered the solution. Einstein later elaborated on the theory in 1905. The improved Quantum theory postulated that light traveled in "bundles of energy" and not in a continuous wavy form through space. In other words, it has a "particle" nature. The "bundles of energy" are called photons or light quanta.

The syncrhonous Quantum mechanics took us out of this apparent chaos. De Broglie, having taken into consideration Einstein's Theory of Relativity, proved that light is in fact dualistic. It has both a wavy and a particle nature. Stated simply: in short wavelengths light displays its particle nature, while in longer wavelengths it displays its wavy nature. (footnote 1)

Footnote 1: The energy of every photon is given in the equation

$$E = hv \text{ or } E = hc/\lambda$$

where c is the velocity of light, h is Planck's constant, v is the frequency and λ is the the wavelength of the radiation. The wavength is in essence a a different way of expressing frequency. In general, the higher the frequency of the wave, the greater the energy it contains. From the mathematical relationship connecting frequency with wavelength o $v=c/\lambda$ we can rephrase the previous premise accordingly. The smaller the wavelength of a radiation, the greater its energy.

b. *Some phenomena observed during light dissemination.*

Reflection

When a thin beam of light meets a smooth flat surface, it is reflected (changes direction) in such a way, that the incoming angle φ1 (angle of incidence) is equal to the angle of reflection φ2. (Illustr. 2)

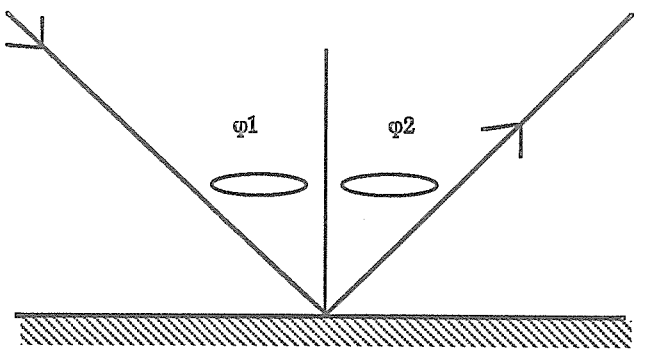


Illustration 2: Reflection of light

Refraction

When a thin beam of monochromatic light (footnote 2) traveling in some medium (i.e air) meets the surface of another transparent medium (i.e water) in which light travels at a different velocity, then part of the beam enters into the second medium simultaneously

changing direction, and part of it is reflected. The change of direction is such that ημα/ημα,= n is valid, where n is the refracting index of medium B. The greater the optical density medium B has, (the greater index of refraction it has) the smaller angle b is. (Illustr. 3)

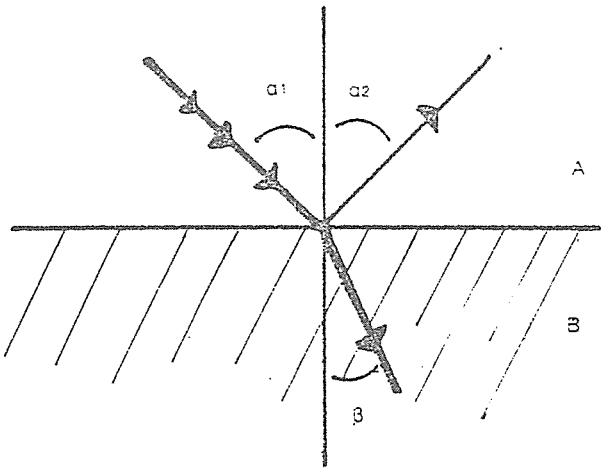


Illustration 3: Refraction of light

Dispersement - Analysis

Monochromatic light was used in the study of refraction. If white light is used, then it is observed that the beam of white light disperses into a spectrum of seven colours -*red, orange,*

Footnot 2: Monochromatic is called the light which consists of one wavelength. White light is comprised of an infinite number of wavelengths.

yellow, green, blue indigo and violet. This occurs because the index of refraction is different for the various wavelengths (as the wavelength increases, the index of refraction decreases). Thus, the red colour exhibits a larger refraction angle than violet. If we now direct a thin beam of white light through a prism, the beam will disperse into its spectrum. We can see this if it is projected on a properly placed screen. And if this screen has an opening, through which it allows only one colour beam, and we direct this beam to a second prism, no further analysis will be observed. This proves that the seven colours of the spectrum are in essence monochromatic radiations. (Illustr. 4, 5)

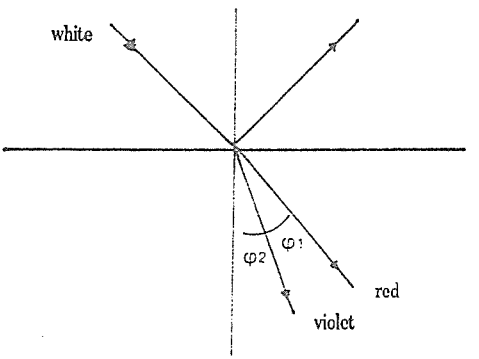


Illustration 4: Refraction and analysis of light

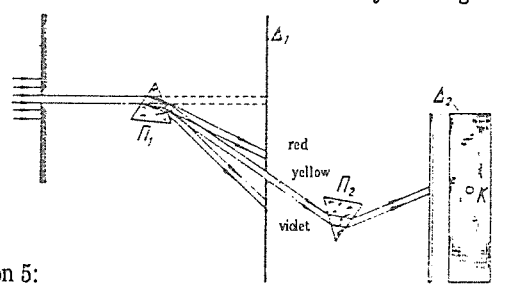


Illustration 5:
Monochromatic light cannot be further analyzed through primsm P1

The visible part of the spectrum of white light starts at 750nm and ends at about 400nm. Below 750nm lies the infrared radiation. Above 400nm the ultraviolet radiation begins. Both infrared and ultraviolet radiations are invisible to the human eye. However, we can easily prove their existence by using an electric thermometer for the infrared rays, which have an intense heating capacity, and an electroscope or a simple photograhic plate for the ultraviolet radiations, which have a great ionizing capacity.

The Human Eye

a. Anatomy of the eyeball

The eyeball (Illustr. 6) has an almost spherical shape. Its walls are composed of three coats. Beginning with the outermost layer and proceeding inward, they are as follows:

a. The Fibrous Coat: the toughest covering, of which the front part known as the Cornea is transparent and thinner, while the rest is opaque. It is called the Sclerotic Layer ("the white of the eye").

b. The Choroid Coat: is underneath the sclerotic layer. It consists mainly of a network of blood vessels that nourish the sclerotic coat and the interior of the eye. In the front part, behind the cornea, the Choroid Coat is modified into a circular diaphragm, the Iris of the eye, which dilates and contracts with the help of the appropriate muscles. The opening which is

formed in the center of the iris is called the Pupil. The size of the pupil alternately icreases and decreases with the widening (dilation) or narrowing (contraction) of the iris for the purpose of controling the amount of light that enters the eye. Behind the pupil is found a clear crystalline double convex lens. The lens is attached to the ciliary body; a circular muscle that brings about the increase or decrease, of the curvature of the lens in order to achieve the accurate focusing on the retina of the viewed object. (Accomodation to close or distant vision)

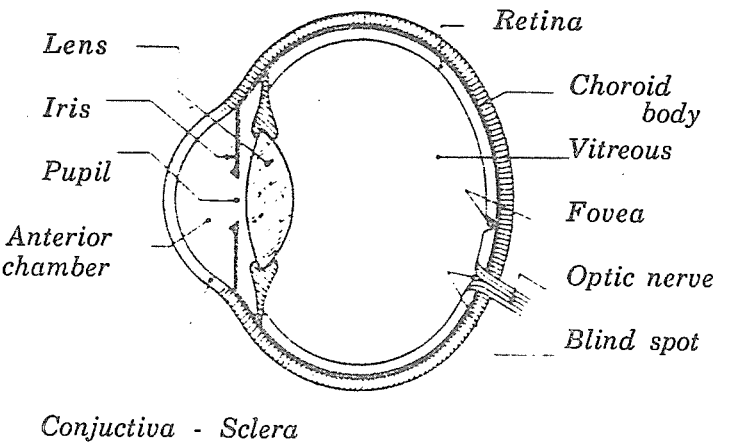


Illustration 6: Anatomy of the eyeball.

c. The Retina: is the innermost of the three coats, and at the same time the one and only sensory layer of the eye. Here is where the optic sensory cells and the branches of the optic nerve are found. The optic nerve enters the eyeball from the rear, a little below its transverse axon (blind spot). On the surface of the retina, and particularly on the back part, are found the light-sensitive cells (light receptors), a layer of bipolar cells, and a layer of ganglionic cells. There are two kinds of optic cells or light receptors, the cones and the rods.

The cones function in vision when there is abundant light, while the rods function in vision with dim light (less than approx. 3lx). The distribution of cones and rods is not uniform in the retina. The cones are more abundant in the centre of the retina and exhibit an even greater abundancy in the fovea centralis. Here the distance between the cones is just 1μm (10^{-6} cm); while in the periphery of the fovea the distance is 3-5μm. This explains why the keenest discerning capacity of the eye presents itself in the area of the fovea, keeping in mind the fact that, in order for two points of an object to be distinguished as being separate, their images must affect at least two different cones, which must not be in close proximity to each other.

Illustration 7 shows a diagram of the relative discerning capacities, in relation to the distance of the image from the fovea. The keenest discerning capacity the human eye can attain is 1' (one second of a degree).

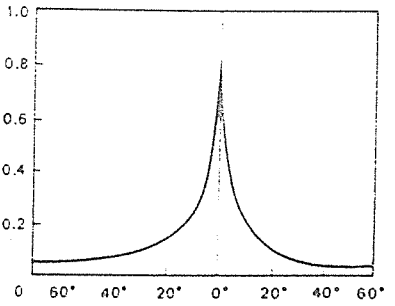


Illustration 7: Relative discerning ability of the eye.

The Rods in contrast to the cones, are extremely scarce in the fovea. As a result, the fovea is nearly blind in situations of dim light, approximately below 3 lx, (twilight vision) and the eye must assume peripheral vision. In addition, it is important to note that the rods are not sensitive to colour. This is why in dim lighting conditions we cannot distinguish colours.

The eye is a complex visual system that creates on the retina, a true image of the object being observed. The arrangement of the component parts is such that the visual system of the eye corresponds to a thin lens, with focal point f=1.7 cm. (without Accomodation)

b. Physiology of vision

As mentioned, the light receptors, the cones and the rods are found in the inner surface of the

retina. In general terms the mechanism of sight is as follows: A light stimulus brings about the breakdown (decolouration) of a colour substance found in the cones. This breakdown, by a complex biochemical process, initiates electric polarity in the membrane of the cones, thus creating an electric impulse. These electric impulses are transferred through the optic nerve to the brain with a speed of 5msec (thousands of a second).

This pattern explains in fact how the three basic colours are distinguished, since there are three types of cones. But it doesn't explain the sensing of different shades of red, green, and various other colours such as brown, yellow, etc. For colour vision, more complex mechanisms have been claimed. These will be explained below.

The Subjectivity of a Light Stimulus

a. Psychological System of Notation -the eye as a measuring organ.

The first physical units of measure defined for photometry (cd for radiance, l, lumen for the luminous flux Φ, lux for the illluminance, etc) were based on the capacity of the human eye to compare the equal levels of two illuminations. In other words, cd and the other units derived from it can be regarded as standards of a subjective psychological notation system. The same quantities, however, can be measured in energy

units, objectively. Thus we will have the corresponding W for the luminous flux, W/sterad for the radiance and W/m^2 for the illumination. These units comprise another system of standards, the objective physical notation system.

It is obvious, that if we consider only the visible part of the spectrum for a field of reference (the physical system of units is valid for the entire spectrum), there must exist some relationship between the two systems. This relationship should take the form of

$$\Omega = \kappa\Omega'$$

where Ω is a photometric measure in the psychological calculating system, Ω' is a photometric measure in the physical calculating system and k, a standard relation factor. (footnote 3)

Thus, if a luminous flux of a monochromatic lightbeam, wavelength λ=555nm, is measured with Φ'=1W and it is found that Φ=680 lm, then K_{555}=680 lm/W. Similar measurements of the entire spectrum are shown in Illustration 8. From this curve (distribution according to Gauss) it is derived that the eye is most sensitive for a light of 555nm (yellow-green). The lack of sensitivities (k) in the areas (λ) which range between 750 and 400nm, signifies that a bundle, however great, of luminous flux Φ', does not create a light stimulus. Naturally, this occurs because radiation outside the range of 750-400nm is invisible to the human eye.

Footnote 3: (k) because in essence expresses how much the capacity of a subjective measurement approaches the corresponding objective, is called sensitivity.

Generally, in order for a visual stimulus to become perceptible to the eye, it must fulfil two conditions: 1. It must have a wavelength between 400 and 750nm and 2. It must have a luminous flux Φ greater than 4×10^{13} lm or Φ' greater than 6×10^{-15} W, which corresponds to a flux of approximately 150 photons of green light per second (sensitivity limit of the eye). This minimum limitation is determined for an eye adjusted to darkness for at least 30", which increases its sensitiviry about about 10.000 times.

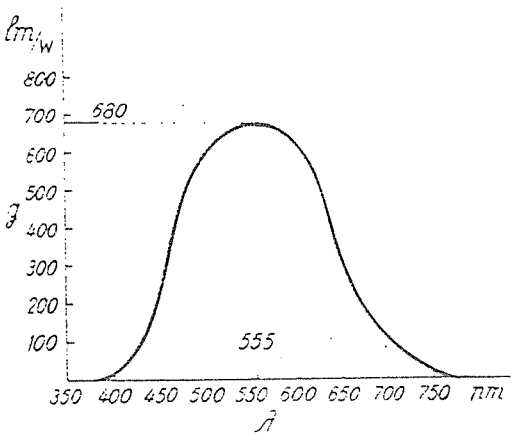


Illustration 8: Sensitivity curve of the eye.

The curve of Illustr. 8 is valid, as long as Φ is greater than approximately 3lx. As we said, for a Φ less than 3lx, vision is accomplished with the rods only. The sensitivity k, however, of the rods

is greater when λ=520nm. The curve, that is, transposes itself towards the right to a smaller wavelength. The result of this displacement (Rurknije phenomenon) is that a surface illuminated by a weak light (less than 3lx) appears slightly blue. Also, two surfaces which have the same brightness, except that one is red and the other blue, in a weak light will be visible as different shades of grey with different brightness (since with Φ less than 3lx we don't have cones-chromatic vision). The blue will appear brighter.

Apart from the subjectivity, the human eye introduces to the qualitative measurement of light stimuli, it also presents (with regard always to measurement) another difficulty. It is unable to compare the quantity of two light stimuli, unless the relationship between them is one of parity. In other words, it can tell if two light sources have the same bright intensity for example, but it cannot inform us if they have a double, triple, etc. intensity of a third source.

We shouldn't regard the eye here, as a subordinate organ. On the contrary indeed, it is an exceptionally sensitive sensory organ; since just a few photons (light stimulus) are sufficient to create a visual impression.

In addition, the eye can detect a wide range of intensities. As shown by Fechner and Weber lightsensation A is proportionate to the logarithm of the light stimulus H. If light stimulus H is defined as the quotient of the luminous flux divided by the number of cones it stimulates, that is :

$H=\Phi/n$

then the equation is as follows

$A=C\ln(H/Ho)$

where A is lightsensation, C a constant quantity, H the light stimulus, and Ho the least light stimulus needed to stimulate the eye (the eye's threshold of sensitivity). This means, that in order to create light senses A, 2A, 3A, 4A, 5A corresponding light stimuli H, 2H, 4H, 8H, 25H must be given. (footnote 4)

b. The physical analysis of a light stimulus - the theory of colour.

The energy of the visible radiation that enters the eye acts according to two well known factors, the predominant wavelength and the intensity.

The intensity of a luminous radiation at a specific point is defined as the amount of luminous energy which passes perpendicularly from the surface unit (which comprises the area) to the unit in time. That is :

$J=dE/dSdT$ or $J=d\Phi/dS$ since

$d\Phi=dE/dT$.

In other words, the intensity is defined also as the amount of luminous flux per unit of surface area (power). The intensity of the luminous radiation has a relationship to the width of the wave and determines the psychological brilliance of the light sensation.

Footnote 4: Let it be indicated here, that light stimulus is understood to be the physical cause which stimulates the sensory organs of vision, while light-sensation is perceived as its result.

The second factor related to the subjectivity of a light-sensation, as has already been partially explained, is the wavelength λ of the radiation. Which as we said, is defined as the quotient of the speed of light, divided by the frequency of the radiation. $\lambda=c/v$.

The degree to which a wavelength is predominant in a luminous radiation defines the purity of the radiation. 100% purity means that one wavelength is predominant 100% in the radiation. The radiation is therefore monochromatic.

The above facts are easily understood with regard to monochromatic radiations, or simple colours. However, when talking about complex colours, we must first introduce two new concepts: the shade and the degree of saturation.

The light-sensation of a complex colour always has a shade, that is, a predominant colour. This shade can always be created by combining the shade of the corresponding pure colour with white. For example, we can refer to the blue colour of the sky. The colour shade of the sky is owed to the predominance of short wavelengths in the atmospheric refractions (Rayleigh's law). The sunbeams, as a light stimuli, though, include all the wavelengths of the visible spectrum. The shade of sky-blue can also be achieved by combining pure blue (monochromatic blue) with white light in a particular proportion.

A complex colour is characterized by the "insaturation" of its predominant shade, (while

inversely a simple colour is characterized as being completely saturated) since the simple colour from which it theoretically is derived "has been thinned out" with white.

If we compare a series of colours of the same shade, starting from the simple "pure" colour (monochromatic light) and continually adding white, we will have a series of wanning degrees of saturation. It will start from 100% simple colour saturation and reach to white, which is regarded as insatiable (saturation degree 0). The degree of saturation depends also upon the intensity of the light source. It diminishes as the intensity increases.

A complex colour can be produced in at least two different ways: with the random mixing of simple (pure) or complex colours, or with mixing white with the pure colour which corresponds to the shade of the complex colour we want to create. And a third way is by mixing the three simple colours in a certain proportion.(footnote 5) These three colours are called *primary colours* and are shades of red, green, and blue. If the three primary colours are mixed in a particular proportion they will yield white. White can also be created if a third primary colour is added to the new complex colour produced upon combining the other two primary colours.

Footnote 5: When the term mixing is used, it is understood to be the combining of monochromatic radiations, and not the combination of dyes, which is governed by different laws to be shown later.

We have then:

Red + Green = Yellow of four - coloured printing
Green + Blue = Cyan of four - coloured printing
Blue + Red = Red (Magenda) of four - coloured printing

Yellow of four - coloured printing + Blue = White
Cyan + Red = White
Magenda + Green = White

In general colours that when combined produce white, are called complementary. The three primary colours and their three complementary colours can be rpoduced with the use of appropriate filters on white colour.

To recap, a complex colour can be produced:

1. By mixing random colours, simple or complex.
2. By mixing a simple colour of corresponding shade with white.
3. By mixing the three primary colours in a fixed proportion.
4. By removing the three primary colours from white, according to a fixed precentage.
5. By mixing two simple colours, of which only one can be chosen arbitrarily.

All five methods can produce complex colours of a desired hue. If five shades of sky-blue are produced according to the five methods

described, and the appropriate proportions are followed for each method, all five shades will be the same. The eye, in other words, cannot distinguish the method by which the complex colour was produced.

Finally, there is another category of colour-sensations, which is not bound only by the characteristics of the light stimulus (wavelength, intensity, hue, etc) but also by the presence of other factors. The psychological elaboration of these factors, together with the light stimulus itself, create a light-sensation, a colour, which is called ***psychological colour***. An example of a psychological colour would be as follows: if a bundle of chestnut coloured light falls into a dark room, the observers experience a light-sensation of a colour betwen yellow and orange (psychological colour). If there is another light in the room, of any colour at all, the psychological colour immediately disappears and the observers experience a chestnut coloured light sensation.

Surface Colours

a. Macroscopic Analysis

Whatever has been explained so far is valid for bundles of coloured light. The same principles also help to explain the colours of surfaces. Consider a surface that when illuminated by a white light produces a red sense -it appears red. Clearly, for this to occur, the light stimulus that reaches the eye -after it has been reflected on the surface- must be characterized by a dominant

wavelength found within the range of red. However, as long as the illumination of the surface is being accomplished with a white light, the conclusion that must be drawn is that the remaining wavelengths within the white light have been absorbed by the surface. And this is what precisely happens. Consider a flat section of the surface shown in Illustr. 9. This section can represent the coloured surface of the object, if in fact the object is red, or the superficial layer of dye -if the object is simply dyed red.

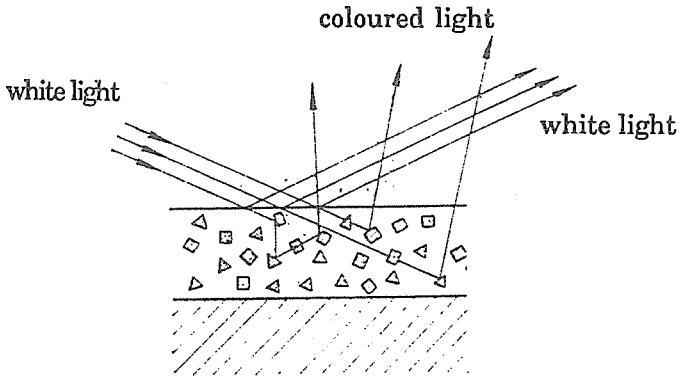


Illustration 9: Colours of Surfaces

To simplify the example, consider white light as if it were composed of only red, green, and blue. Now we will examine the case where the object is dyed red. The dye consists of a clear (transparent) dissolving medium which contains isolated particles form various solids. These

particles, naturally, are very small and equally distributed to transmit a uniform impression to the eye. They are in essence multi-molecular coloured chemical compounds which selectively absorb specific wavelengths (the reason why this happens will be explained shortly).

Part of the white light which falls upon the surface is reflected and part of it refracted. The reflected portion of the luminous bundle continues to remain white, since it is continuing its course in the same visual (air) medium, and consequently doesn't change its wavelength. The remaining portion of the light bundle enters the layer of dye and is refracted. While continuing its course in that medium, it spreads out and continually stikes the particles in the dye. With regard to red dye, the particles absorb all wavelengths, except for the red. The luminous bundle (light) which finally comes out of the layer of dye will have a reduced intensity and completely altered spectral synthesis. Red will be the dominating colour. Of course this is a simplified example. The process simply describes the manner in which various objects appear coloured.

In the example given above, the coloured surface was illuminated with a white light containing all the wavelengths. It absorbed all the wavelengths, except for red. Clearly, if it had been illuminated with a monochromatic red light, the result would have been the same. If however, it had been illuminated with a different wavelength, the result would have been completely different.

Consider an ideal situation where the object in question absorbs all the wavelengths (100%), except for one. Now if it were to be illuminated with any other wavelength, no matter how intense, the object would appear black. In reality of course, this situation is impossible, and thus the result differs more of less in proportion to the extent to which the ideal situation can be achieved. Along general lines in any event, it is valid to say that an object's colour depends upon its absorption spectrum and the spectrum of the light illuminating it.

b. Microscopic Analysis

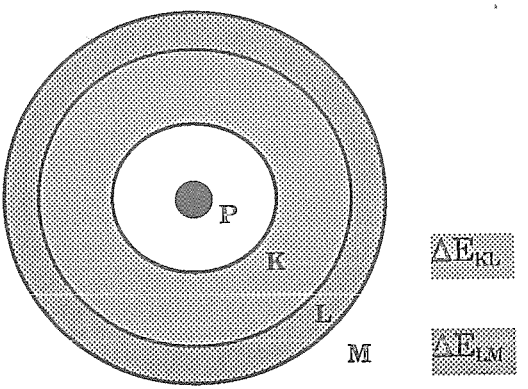
As we said, the coloured appearance of objects is caused by the small coloured particles responsible for the selective absorption of specific wavelengths. To what, however, is this selective absorption owed to? In other words, what is the reason that causes the particle itself to be coloured?

The answer to this question is found in the electronic structure of the atom of chemical compounds from which the particles are formed. Naturally, to explain the modern conceptions of Quantum mechanical theory regarding the atom, and the sub-atomic particles here, would be impossible. Along general lines however, only so that the meaning of colour's "origin" can be perceived, a simplified picture will be presented.

Consider that the atom is made up of one nucleus, around which the electrons (e-) move in curvilinear paths. (Illustr. 10) The model of

course, is very old, and almost obsolete, but it suffices to give and idea of how and what is happening in the atom.

The total energy carried by each revolving electron depends chiefly upon its distance form the nucleus. This distance, however, has been quantized; that is, it can only take specific numbers. In other words, the electron can only move in restricted paths. These paths are called orbits and are symbolized internationally with the Roman alphabet K, L, M, N, O .. , beginning with the orbits closest to the nucleus. The distances between the orbitals are constant, and correspond to the difference in energy between them.



$$\Delta E_{KM} = \Delta E_{KL} + \Delta E_{LM}$$

Illustration 10: Represantation of the atom and the orbits

In other words, an e- which is found in orbit K has an energy E_K . If it were in orbit L, it would have and energy E_L. Thus, for an e- to go from orbit K to orbit L, an enegy equal to the energy difference between the two orbits would be needed. That is $E_L - E_K = \Delta E_{KL}$

As it appears in Illustr. 10, the energy differences between the orbits are not equal between themselves. As a matter of fact, they become smaller as the distance from the nucleus of the atom increases. This occurs because, the closer an e- is to the nucleus, the greater is the force that attracts it, and it revolves around the nucleus at much faster speed. It has more energy. If we consider then, an e- in, let's say, orbit K, it is characterized by energy E_K. Further out, is the orbit L with energy E_L followed by M, with E_M etc. (Illustr. 11)

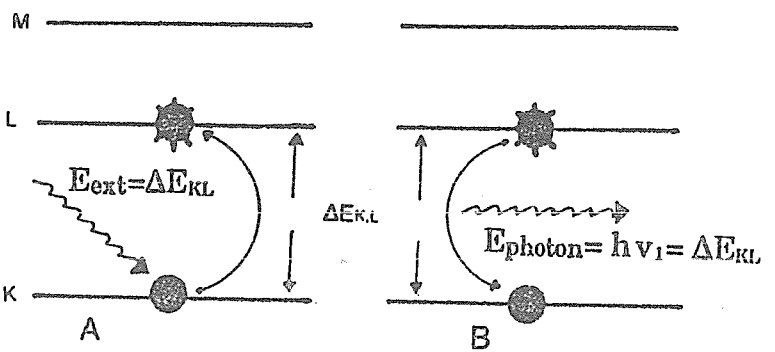


Illustration 11:

A. Schematic representation of e- in an excited state.
B. Schematic representation of e- in a stable state.

If external energy E is offered to this electron, to cover the energy gap between the two orbits K and L (that is, $E_{ext}=\Delta E_{KL}$), then the electron absorbing this energy will leave orbit K and jump to orbit L. The e- then is said to be in an excited state. This condition, however, is characterized by an energy instability, because the e- stays in orbil L only for a fraction of a second. It goes back immediately into its originating orbit, (Illustr. 11) expelling the surplus energy in the form of a photon of energy.

$$E_{photon}= h\nu_1= \Delta E_{KL}$$

Clearly, if instead of $E_{ext}=\Delta E_{KL}$, $E_{ext}=\Delta E_{KM}$ is given (ΔE_{KM} is greater than ΔE_{KL}), then the e- will jump directly from K to M orbit and when returning to its stable state, will emit a photon of energy $E_{photon}= h\nu_2= \Delta E_{KM}$.

Since the distance of e- from the nucleus is quantized also the ΔE_{KL}, ΔE_{LM} and ΔE_{KM} are quantized. For this reason, an e- in orbit M can absorb energy $E_{ext}=\Delta E_{KL}$ or $E_{ext}=\Delta E_{KM}$. If an energy greater than ΔE_{KL} but less than ΔE_{KM}, is offered the e- will not accept it.

Since the energy gap between orbits M and K is greater than the energy gap between orbit L from K, the photon jumping back from M to K orbit will carry more energy than the one jumping from L to K orbit. And since $E_1= h\nu_1$ and $E_2= h\nu_2$ are valid, and h is a constant (Planck's constant), then the two photons will have different frequencies v. The second photon will have a higher frequency.

The difference in frequencies means difference

in the wavelengths since $\lambda=cv$. In other words, the second photon will have a shorter wavelength than the first. Now if a large number of atoms is continuously given an external energy $E_{ext}=\Delta E_{KM}$, they will continuously produce energy photons. $E=hv_2=hc/\lambda_2$. They will produce a monochromatic light, wavelength λ_2. In the same way electrons taking part in the bonds between two or more atoms, in chemical or natural compounds, can go through the same excitation.

In order to give a better explanation reconsider the example of the red surface being illuminated by a white light. When a surface is being illuminated by a white light, in reality, countless photons of every wavelength between 750-400nm are falling on it. The photons fall uncontrolled on the dye's red pigments. Now, the special about these pigments, is that they can absorb the wavelengths which allow electron excitation, thus causing the production of a photon of wavelength 780nm, enter the eye and cause the light sensation of red colour.

Chromatic Vision

Newton was the first to observe the spectral analysis of white light after it has passed through a prism. However, his epxeriments concerning the dispersement and synthesis of light didn't have only a physical significance. Since he proved that white light could be created

and also from the various colour triads, the question was posed; How is it possible that rays of different quality (light stimuli) can produce the same chromatic impression (light sensation)

The first theory proposed was unbelievably extravagant. It suggested that there were as many kinds of light receptors as there were the colour shades.

This theory was proven wrong by T. Young in 1802 according to the principal that the light receptors react more or less, in proportion, mainly to the intensity of the ray. But the message which results from this reaction doesn't furnish any information regarding the wavelength of the ray. Chromatic vision, however, was a fact and so the efforts to explain it continued. Helmholtz, in 1863, accepted the existence of three types of chromatic receptors, red, blue, and green each having a separate nerve pathway to the brain. But this model was inadequate to expain what happened in reality. For instance, he couldn't explain the distinction between the varieties of shades of red, or the distinction between red, orange and yellow. Moreover, according to Helmholtz, equal parts of green light 530nm and red light 650nm should yield a red-green colour at 580nm. At 580nm though, we see yellow.

In 1872 Hering presented the model of "incompatible colours". According to this theory there are two pairs of receptors responsible for all colour sensations; pair red-green (R/G) and pair yellow-cyan (Y/C). The R/G pair is responsible for red or green light sensation,

while the Y/C pair is responsible for yellow or blue light sensation. Within each pair, the member colours are antagonistic to each other, that is there are no such light sensations as reddish-green or yellowish-blue.

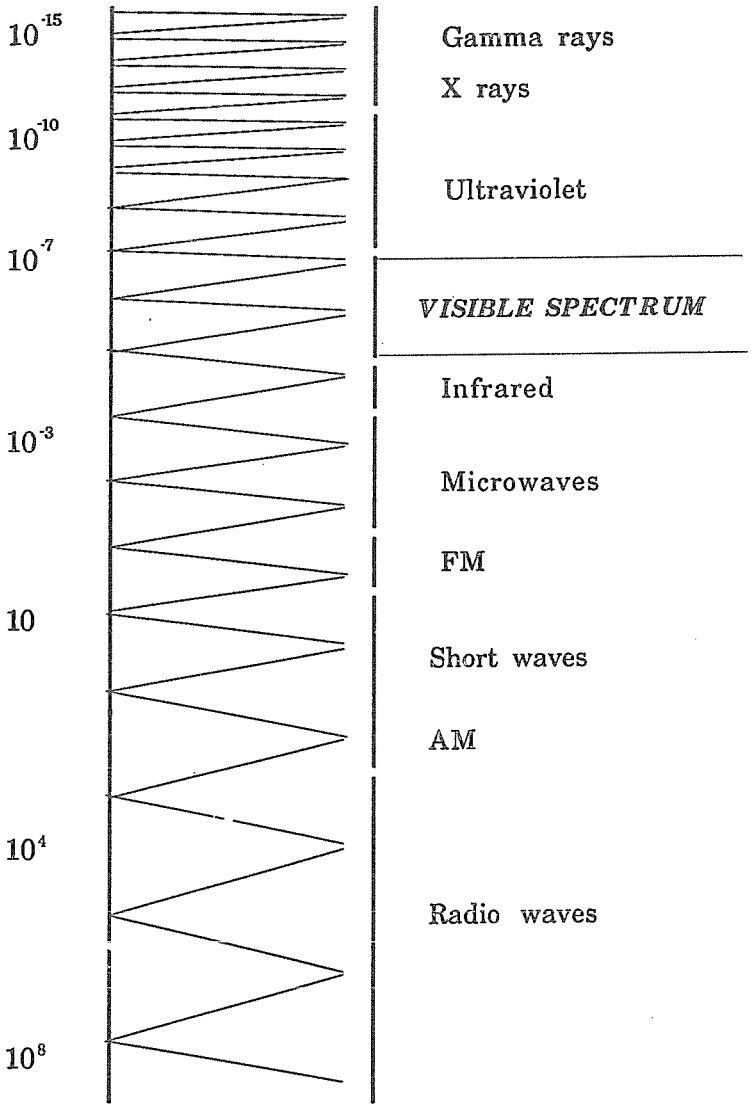
The light sensation resulting from each pair of light receptors depends on the part of the pair that is mostly stimulated. If both parts are equally stimulated then the resulting light sensation is grey. For example light of 450nm wavelength stimulates both pairs of receptors (R/G and Y/C) and produces the light sensation of "reddish-blue" (crimpson). Light of 580nm stimulates only the Y/C receptor pair and especially its first part and the resulting light sensation is yellow.

Modern physiology follows a further developed pattern set forth by R.L DeValois and K.K. DeValois. It can be summarized as follows:

a. There are in total four types of light receptors in the retina: the rods, and three types of cones, known as L, M and S cones. The division of cones is based on the different light-sensitive pigment they have. The pigment of cone S exhibits the greatest absorbing capacity at 455nm, while the pigment of cone M at 535nm, and pigment of cone L at 635nm. The pigment of the rods appears the greatest absorption at 505nm. The cones are considered to be like simple photoelements which initiate an electro-stimulating impulse. The extent of the impulse depends only upon the intensity and wavelength of the light stimulus. For a stable intensity, the electro-stimulating impulse

becomes greatest for the wavelength which coincides with the light receptors' greatest pigment absorption.

b. There are also four types of competitive cells, symbolized by +R-G, -R+G, +Y-C, and -Y+C. These cells derive their information about colour, by subtracting the electro-stimulating impulse of one cone from another. For example, cells +R-G subtract the elecrto-stimulating impulse (HEΔ) produced by cones M, from the HEΔ produced by cones L. Since cones L exhibit the greatest HEΔ at low wavelengths, the competitive cells +R-G are responsible for the light sensation which corresponds to those low wavelenghts, that is the red colour. In other words, the function of the competitive cells (and consequently the colour-sensation) is related to the degree, some types of cones absorb a particular light (light stimulus) moreso than some other type of cone.



The Electromagnetic Spectrum

Chapter 4

COLOUR IN NATURE

Colour in Nature

The role that colour plays in Life's expressions and functions and in Life itself -if the term is to be considered in the wider possible sense- is a topic that occupied the minds of the researchers and scientists of every era. Doctors, biochemists, and psychologists are conducting complicated research programs in all the major universities. They have shaken theories regarding the role of colour in nature, from their foundations. These programs have proven "that reality has colour", beyond any doubt. It is not by chance that the world around us is coloured. The various colours found in the plant and animal kingdom are not used for the simple pleasure or whim of Mother Nature but are clearly following a predetermined higher principle which has not still been explored in its whole depth and dimensions.

As mentioned before, a substance -an element, or a chemical composition- appears coloured if its molecular structure is such that it has a selective absorption and re-emission of a particular wavelength within the visible range of the spectrum. There are quite a few substances at our disposal today, that possess this type of molecular structure. Some have been produced in chemical laboratories, and others have been isolated in plant and animal organisms. These substances are called "pigments" or "colouring

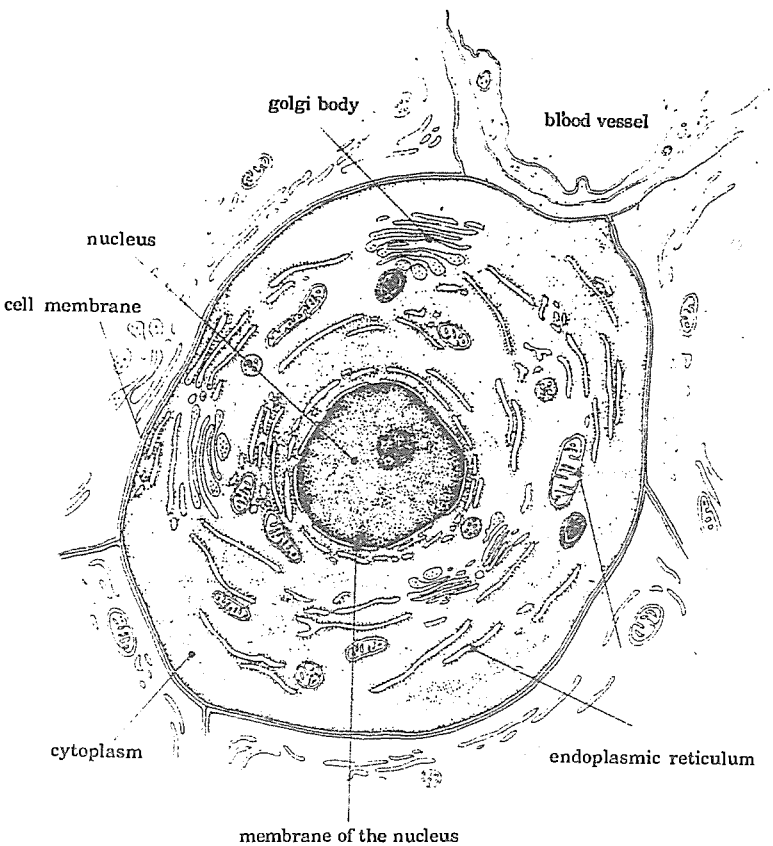
chemicals", or simply "colourings".

The molecules of pigments can be found scattered throughout the entire body of a plant or animal or they can be concentrated in specific areas (usually in the surface) to produce the various designs and forms characterising the morphology of the plant or animal. Melanine, found in human skin, is a characteristic example of diffused colouring. The tanning of the skin during sunbathing, and the specific colour of the black race are indebted to this colouring. Other such pigments are those found in the carotenes group (the carrot root owes its colour to these pigments), those found in the chlorophyll group (the colouring matter responsible for the green colour of the plant's upper parts), and others.

The colourings to which the various designs observed in the surface tissues of plants and animals are indebted, belong to various categories. Their concentration in particular areas of the organism -plant or animal- and by preference in the surface tissues, is controlled by the genetic pattern of the organism. The genetic process is a complex biochemical mechanism. Its foundations, are two macromolecular combinations, deoxyribonucleic acid (DNA) and ribonucleic acid (RNA). Both are known as nucleic acids from the Latin word "nucleus" (of the kernel), since DNA and most of the cell's RNA are located in the cell's nucleus.

A typical cell is made up of the following parts, beginning with the outermost, and proceeding inward, they are: (Illustr. 12)

1. The cell membrane: it is a functioning barrier around the cell. Within this wall, the cell accomplishes the exchange of substances with its environment.



2. The cytoplasm: is the principle mass of the cell. Floating in the cytoplasm are the organelles which complete the biochemical processes which

keep the cell alive, and establish it as a functioning unit of the whole that we call organism. Some of the organelles found in the cytoplasm are the chloroplasts (the main sources of photosynthesis in plants), the mitochondria (energy producing factories of the cell), and the ribosomes (protein producing factories of the cell).

3. The nuclear membrane: is a protective, functioning barrier which separates the genetic material, ("cell's rulers") from the cytoplasm, where the orders are carried out. ("cell's executives")

4. The nucleus: is the most important part of the cell. The cell's "know-how" and the orders that must be carried out, are found in this structure.

Organisms are classified into two categories, *Prokaryotypes* and *Eukaryotypes*, from the Greek root karyo=nucleus=kernel. The essential difference between the two, is that the latter have a "well" (eu) formed nucleus. Their genetic material is surrounded by the nuclear membrane. Such is not the case in the prokaryotic organisms. The following information applies to both categories.

DNA, the most wonderous molecule known to man, is found within the nucleus. It is the only molecule known today that can copy itself and thus create its own exact replica. DNA is a macromolecule. It is composed of chains of alternate units of phosphate and a pentose sugar (deoxyribose or ribose) with organic nitrogenous

bases, one to each sugar molecule. These bases (purines and pyrimidines) are the foundations of the genetic code. Their international symbols appear in the following chart. (Uracil is listed by itself, because it is found only in RNA.)

Base	*Symbol*
Adenine	A
Guanine	G
Cytosine	C
Thymin	T
Uracil	U

The DNA molecule performs two "key" functions:

a. It reproduces itself during cell division, since it must be present in every one of the billions of cells in the body of any organism.

b. It makes copies of portions of its structure -particular RNA molecules (t-RNA)- which then carry to the organelles in the cytoplasm, the instructions necessary for their functioning.

The most important cellular function with which the majority of the cells are entrusted, is the synthesis of the proteins necessary to the entire organism. Proteins are also macromolecules, whose structure has many points in common with those of nucleic acids. An organism uses proteins, chiefly as constructing blocks to build the structural compounds

necessary for its proper function. An example of this principle would be insulin, the well-known hormone regulating the amount of sugar in the blood. Hormones are proteins that affect the endocrine system of the organism.

Summarizing, DNA controls every single function of the cell, from birth to death. DNA controls the functions of the entire organism. It determines the kind the organism will be, and what shape or form it will have. For instance, the genetic mechanism controls the tissue colourings (pigments), the colour of the pupil, of the hair, of the skin, the form and shape of the face, etc.

Naturally, DNA is also found in the nucleus of the cells which have the responsibility of reproduction and the perpetuation of the species. For the human being the genetic cells are the ovum and the spermatozoon. Thus, the characteristic traits of the previous generation are transferred to the following generation. Changes take place in the DNA molecule during the complex process of transferring genetic material from generation to generation. From the variety of forms which result, through the process of natural selection and evolution, the species "evolves".

It has become evident, that the existence of colours, as part of the inherited morphological features, is not due to chance. The latest researches, however, are pointing to an exciting new conclusion; not only the appearance of colour, as a morphological feature, is not made by chance, but it appears that the selection of the

particular colour shades follow some higher principle which has not yet been fully perceived.

The Role of Colours in the Plant and Animal Kingdoms

It can be easily ascertained that plants use color more than any other organism. It is astonishing how plants have made use of colour so that even though the plant kingdom accounts for huge number of species, one cannot find two dissimilar species using the same colour code. (this fact can be explained if one refers to the Laws of Genetics, the science researching the process of heredity and evolution.)

The, almost, exclusive reasons plants make use of colour are survival and reproduction. Within the thousands of years of adaptation, natural selection, and evolution, plants have devised ingenious methods to achieve these two most vital purposes in life. One species of plant, for example, imitates the shape and colours of a female insect. It even secretes a hormone similar to the sexual hormone of the insect. The male insect is fooled as a result of this "sophism", and is attracted to the plant for the purpose of fertilization. In its effort to fertilize, what it thinks is the female of the species, it is actually fertilizing the plant by transferring its pollen. Another species of carnivorous plant imitates the colour and odour of raw meat during daytime, when insects are more active. This attracts a particular type of fly which the

plant eats, as soon as the fly approaches it.

The manner in which a plant reacts to a light stimulus is also of great interest. Plants are able to "respond" to a light stimulus, depending on their ability to move. The simpler monocellular or multicellular organisms that have the ability to move, gather towards the light source. The more developed plants which lack mobility, however, are only able to turn their leaves towards the light . (positive phototropism)

For animals, the situation is very different. Most animals have a great capacity of mobility and very little depend upon light for their nourishment. In addition, animals are endowed with specialized visual sensory organs, necessary for achieving a satisfactory speed of movement. The complexity of these organs begins in simpler degrees, involving an uncomplicated phototropism, parallel to that in plants. It progresses by developing into an organized but still imperfect visual organ, as in the case of Pecten, or of Coppilia. Continuing in its development, it finally reaches the stage where it is an extremely specialized visual organ. The development of the visual organ is evidence of adaptation to the peculiar conditions of life.

The eyes of a certain tropical fish (anableps tetrophtalmus) that spends most of its time on the surface of the water searching for food are an excellent example of specialization. On the water surface, however, anableps confronts a fairly complex problem. While it must see out of the water for its food, it must also be able to see in the

water. It must constantly be on the watch for larger fishes who would want to devour it. The complexity of the problem can be understood if one remembers that light follows a different course in air, and a different one in water. In other words, the fish needs two lenses with different refractory indexes - which is precisely what it has. Its eyeball is divided into two parts with the intercession of an iris. The upper part has a lens adapted to the refractory conditions prevailing outside the water, and thus enables the fish to search for food. The lower part of the eyeball has another lens adapted to the conditions in its watery environment. Thus, the lower lens helps the fish escape its enemies, while at the same time it searches for food.

Animals make use of colour mostly during the mating period, just like plants. At this time even a complete change in the morphological profile of the particular species can be observed.

Animals also use colour for the purpose of survival; so as not to be visible in their natural environment. Consequently, there are white polar bears, insects in the colour and form of a dry twig, and fishes that have the same colour as the sand they hide in. We even find animals like the chameleon, which have the astonishing ability to change their colour according to the environment they are found in.

In addition, plants and animals alike use colour to assert their identity. A special caterpillar for example, is protected from its numerous enemies by the figurative enlargement of its head. Its real head is being

much smaller in size. At the bottom edge of its head the caterpillar secretes a poisonous droplet, which it uses to temporarily blind birds. Birds that feed on caterpillars recognize this "dangerous species" from its coloured markings, and do not disturb it. A similar situation occurs with a species of butterfly, etc.

The fact that animals use colour to assert their identity, by itself, doesn't mean very much. It could be supposed, for instance, that the birds in the previous example could perceive the poison in the body of their prey by some other means. The phenomenon of "mimicry", however, proves this supposition wrong. A caterpillar species completely different from the poisonous caterpillar has copied the latter's chromatic code, and as a result, both species look exactly alike. If the birds were able to trace the poison by some other means, they would then regard the "imitator species" as being harmless. But such is not the case. The birds avoid the "mimic species" caterpillars and butterflies, exactly as if they were the originals. Therefore it is the colour morphology the birds recognize as the identity.

The Role of Colour in Man

The influence of colour on man is a commonly accepted fact. Besides the fact that man's colour characteristics are hereditary determined, man also possesses the most perfect and explict system of chromatic vision and perception. (It is a well known fact that only a few other animals like monkeys, honeybees, and goldfish, have a

capacity for chromatic vision somewhat similar to man's.) These animals, however, are almost completely lacking the highly complex system of cerebral interpretation of the visual stimulus. In the final analysis, it is this interpretation that compensates for the eye's imperfections, and establishes man as being a more privileged animal in comparison to others. The fact of man's perfected chromatic vision, not only is not due to chance, but has played an inconceivably important role in the formation of the contemporary social structure.

After ages and ages of evolution, man's chromatic vision has become basically different from what it was when Homo Sapiens first appeared. Now his chromatic vision is influenced more by the fine "psychological" factors, than by the strong "primitive" factors because man is no longer on the same evolutionary plane from which he started his development. In other words, how the organism perceives and subsequently reacts to a stimulus depends more on the elaboration of the visual stimulus in the cerebral cortex, than on the quality of the visual stimulus. (The term "visual stimulus" should not be confused with "natural" or "objective stimulus". The first is, in essence, the "signal" the eye gives to the brain when it "sees" the objective stimulus.)

Man is subject to the natural principle of colour use. His dependence on colours, however, lies on a completely different level from the dependence a plant or an animal has on colour. As mentioned before, both plants and animals

use colour principally as a means of expression -a language of communication with their environment. (We say principally, because it has already been proven that colour plays an important role as an external factor also in the life of both plants and animals.)

In the first stages of development, man was simply a more intelligent animal than the rest that existed around him. Thus, his relationship with colour was more or less the same as that of other animals.

Man judged plants and animals by their colour, and avoided what he thought would be dangerous, even if the remaining elements of their appearance didn't indicate any cause for alarm. At the same time he discovered that plants with particular details in their chromatic characteristics could, for instance, be cultivated to produce edible fruit. With the passing of time, these discoveries began to be classified and put into practice systematically. This second step in development distinguished man from the animals. It was, at the same time, the first step towards the development of the practical sciences.

Thus colour began to enter man's life. It became common-place and ordinary in his everyday life. Simultaneously, man's consciousness of the value of colour began to grow. He became conscious of the fact that nearly everything around him was coloured. He also realized that all the animals took advantage of this fact in order to protect themselves from their enemies, search for food, etc. He realized that the

existence of colour nearly always meant life, and the lack of colour signified disorganization and death.

Naturally, these observations could not but influence man's life to a large extent. The appearance of drawings, representations of people, animals, hunting scenes, etc is suddenly observed in the caves man lived in. These depictions first appeared in black and white. Very soon, however, man discovered the first inorganic colourings, charcoal, coloured minerals, and even later, prepared mixtures from plants. Man's designs acquired colour. From this point on, colour began to influence man on a plane higher than the purely physical. Colour was related to man's struggle for survival, it now began to be used for aesthetic pleasure. The design became the purpose; the hunter was becoming an artist.

As the centuries passed, man developed his civilization. And both art and elegance have their vital places within it. But, observations and studies concerning colour still continued. Colour began to touch man more deeply. It entered his philosophy and his sciences. Now man uses colour to balance his environment and make it more pleasing. He uses it to raise the quality of his standard of living. Finally, in the beginning of the 20th century, man has started to explore his superior energy hypostasis (Greek word meanig essence) and the influence colour can exert on it, examining colour from its superior and more complex nature; its purely energy nature.

Chapter 5

EVIDENCE ON COLOUR PROPERTIES

Coming back to Dyer's research, he tried, apart from discovering colour's weight, to determine to what concept each colour is associated. This association has clearly an energy character and depends upon the extent to which the impression that is created in man from a particular concept matches the impression created from a certain colour.

For example, does the connotation of the word serenity "match" more with red, green, or blue colour? What about the word altruism? Does the meaning of altruism match more with yellow, orange, or purple? Does the connotation of harmony match with blue-purple, red or green?

Dyer used as criterion the successful recognition of a colour, within a minimum amount of time, when the colour was accompanied by a special meaning, such as those we have already indicated. Thus, a preliminary arrangement of the concepts and the psychological qualities matching each colour, was formed .

The Institute of Human Evolution (INHE) identified the qualities of colours by testing the strength of the deltoid and of other muscles of the human body. The subject being examined was guided, with the help of another person, in bringing to mind and perceiving a particular concept. At the same time he/she was receiving the influence of a coloured light beam from behind. (so that the colour being used could not be seen)

Thus, the conclusion drawn is, that every

colour has a "weight" and a "flavour", as Luscher reported in his research. It also has a specific relatiohship with the various concepts, and psycho-mental situations. Subsequently it is natural that each colour creates a sense of weight, a sense of flavour in man, and predisposes him for the development of a specific psychological- mental status.

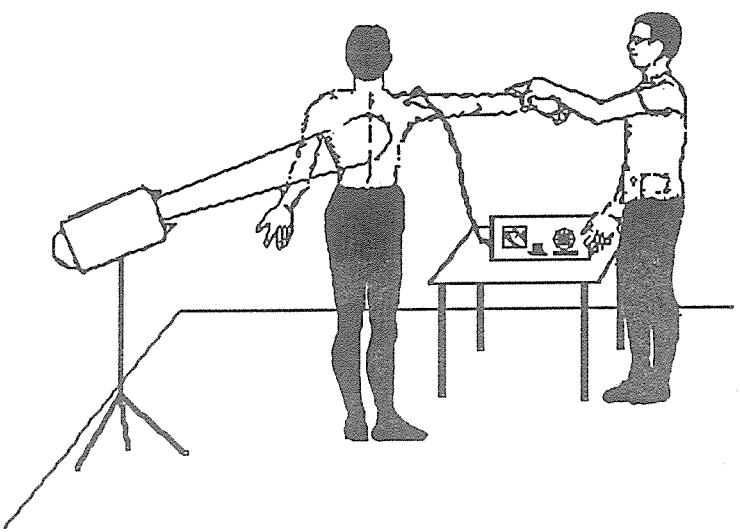


Illustration 14: The deltoid muscle test
(on the left the person being examined, on the right the guiding person and in the middle the electromyograph)

In addition, colour and the connected with it concepts, appear to have a universality. They are expanding in mankind since ancient times even when communication between the various

human races was not facilitated. This fact has puzzled phychologists and sociologists. Research studies have led them to the conclusion that colours and their relevant meanings are very much connected to the human soul (psyche); in essence comprising strong archetypal meanings.

Research studies carried out by doctors and biochemists from a different scope, showed that colours directly influence the individual's energy and thus bring about changes in his psychological and emotional world, as well as in his own physical body. The significance of this deduction is extremely great, if one considers it proves the original (archetypal) character of the colours. Since colour A has an X effect on ALL of the people, all will associate it with one particular condition; and the condition's linguistic expression and description will differ just slightly from nation to nation, as a result of the differences between civilizations themselves.

The above can be easily understood, if we refer to the following example:

In nature colour is prevailing, in the overwhelming majority of cases. Very few creatures or natural objects are completely white or black in nature. The majority of minerals and the other physical elements are coloured. The lack of a preponderance of white or black is even more evident in plants and animals, except for the rare situations where they are needed for camouflage.

Since the beginning of his history, man, a close observer of nature, had noticed the "colour"

in life's expressions. He had been taking notice even more of the fact, that colour's peak use is observed during mating seasons. In the mating rituals especially, colours become more bright and intense.

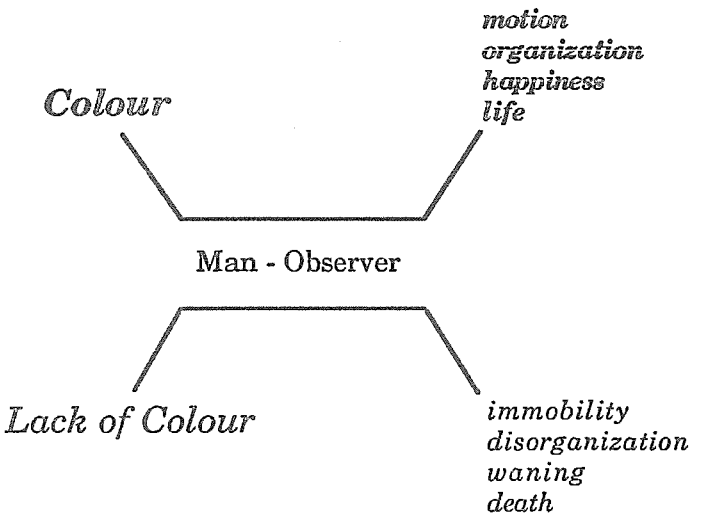


Illustration 15: Relationship of colour to qualities of life.

Thus man has connected, colours and more specifically the bright and intense ones, with the existence and manifestation of life. In man's mind this connection is further strengthened by the observation that each colour is doomed to be lost with the death of the plant or animal it is a part of.

The subconscious influence man receives from colours, in general, affects him even today.

Furthermore, the qualities of each colour are becoming topic of extensive study.

Using the colour properties as a basis the psychologist Clydesdale, in 1978, proceeded in his own research study. He proved colour played a most determining role in a consumer's preference for a certain product. He also suggested methods for objectively measuring this type of influense.

In 1975, two other research psychologists, Jacobs and Suess, helped to affirm the properties of colours with their research on the connection between anguish and colours. Their study was conducted on a large number of high school students, and measurements were taken every five minutes. The results of the research showed green and blue to be the most "tranquilizing" colours.

Does colour, perhaps, have an influence on the other functions of the body?

Dr. Pellegrini, Dr. Schauss, and Dr. Birk answered this question in 1980 while conducting their research at the University of Rome. They discovered that a simple gazing at coloured pictures had sometimes positive and sometimes negative effect on the mobility of man and his capacity for producing muscular work.

It is not difficult to understand the correlation between colours and the various psychological situations. Psychologist Peretti gives us evidence in this direction with his research on university students. Dr. Peretti ascertained that yellow corresponds to a state of happy disposition, while

blue corresponds to a much lower mood. ("I'm feeling blue".)

Finally, since 1968 Doctor Bauer has been researching the effect of light and colours on the visual acuteness at night. He is also studying the eye accomodation of pilots under the same conditions during a night flight.

Colour and chromatic concepts not only have a relationship to the physiological, biochemical, and psychological functions of the individual; they also have an immediate relationship to the individual's level of civilization. This was proven in the research study conducted by Berlin and Kay in 1969. They showed that even though the words for each colour are different in the various lignuistic idioms and every language arranged in its vocabulary a different number of basic colours, there is one basic order of fundamental chromatic definitions present in every educational system.

And this order determines the level of development in human societies. In other words, even the more primitive societies with primitive languages, have terms in their vocabulary to distinguish white from black. The more developed languages will add a definition for red colour. The languages next in the developmental scale will have definitions for white, black, red, and will add a definition for yellow or green. The even more developed languages will have definitions both for yellow and for green colour etc. Berlin and Kay maintain that children learn to distinguish colours in this same order.

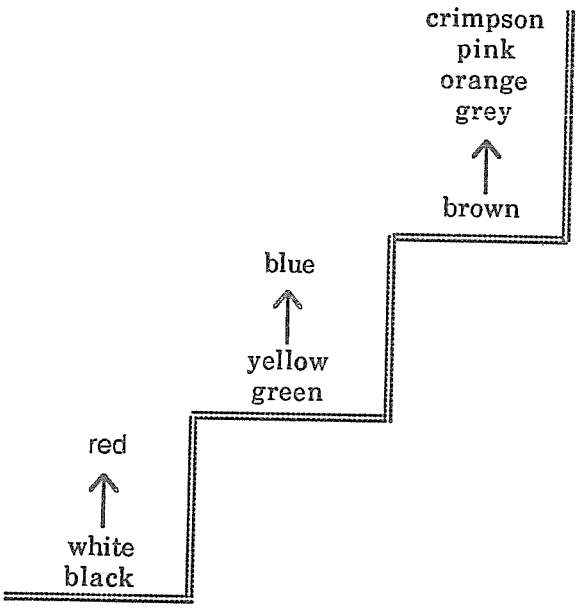


Illustration 15: Evolutionary scale of fundamental chromatic definitions

"...whoever agrees with Goethe, believes that he identified the nature of colour. Here nature is not that which has resulted from experiments, but that which is found in the meaning of colour..."

WITTGENSTEIN

Chapter 6

THE PROPERTIES OF COLOURS

Evidence Regarding the Properties of Colours

A strange meal demonstrated the following: when a group of guests were served under special lights which made their chopsteak appear grey, the celery pink, the peas black, and the coffee yellow, the majority were not able to eat. And even though the food was excellent, those who made an effort and finally did eat, became seriously ill.

Could you imagine that within man's brain, colours correspond to a certain weight?

Did you know that two packages which in reality are exactly alike in weight, do not "weigh" the same if they are not of the same colour? Pick up in your hand and weigh a white package of one kilo. Then do the same with a similarly shaped package weighing one kilo, wrapped in red paper. Without a doubt, the red package will seem "heavier" in your hand. Conduct the experiment with other people. You will discover what F. Dyer discovered in 1973 at the University of Massachussets, when he did the same research. The results showed that colour in fact does have a weight.

A large percentage of various people, both men and women, who took part in the study agreed that a blue package seemed heavier to them than

a yellow. Actually both packages weighed exactly the same. So, a weight scale for colour was created which measured colours in order of weight, begining with the heaviest to the lightest: red, blue, green, orange and yellow. Dyer found that white was the lightest of all and that the "weight" of a colour does not depend on its brightness. In the same year, two other scientists, Morton and Chambers, tried to find out what influence the speech symbol (the name of the colour) had in determining the colour's weight. By introducing a special new test called the Stroop Test they repeated the study and showed that the speech sign did in fact influence the determination of a colour's weight. But not in such a way as to overturn the results of the previous study. Consequently the weight gradation of colours from the original studies remained the same.

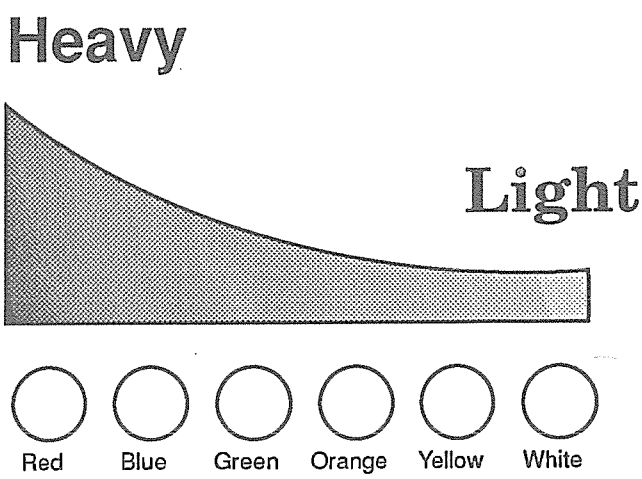


Illustration 13: The " weight " of colours

red

Alkaline
Animating, encouraging
Creates a disposition for action
Creates a desire for communicating
Gives energy
Warms
Induces creativity
Increases the production of blood cells (haemopoiesis)
Stimulates the blood circulation
Dispels drowsiness
Releases accumulated tension
Increases the capacity for understanding
Creates a desire for exploring the new
Creates extroversion
Increases vitality
Increases creativity
Enhances the ego
Releases suppressed energy
Expands the range of activities

orange

Moderately alkaline
Encourages the release of new ideas
Helps in the assimilation of new ideas
Releases, mobilizes existing energy
Induces the expression of physical potential
Mobilizes the processes for attaining intellectual wisdom and knowledge
Transforms a lower form of energy into superior energy
Transubstantiates the inferior to a superior nature
Warms moderately
Increases consideration
Gladdens
Coordinates the physical action with intellectual wisdom
Helps in the associating of ideas
Increases mental capacity
Strengthens will power
Mobilizes the mental mechanisms of self-control
Mobilizes the processes of mental enlightenment, and inspiration
Activates suppressed energy
Helps to liberate the intellect

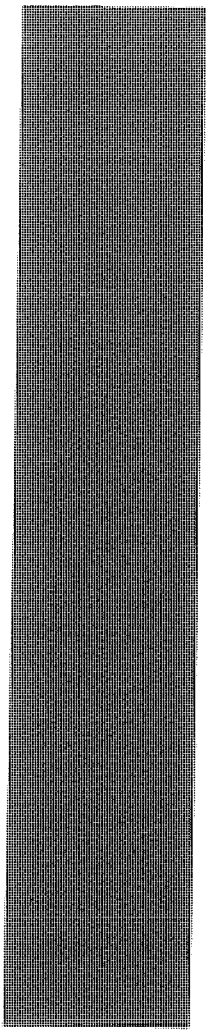
yellow

Slightly alkaline
Increases mental maturity
Strengthens the nervous system
Induces intellectual inspiration
Increases self-control
Gives vitality of a superior kind
Helps in the awakening of talent
Helps in creating new ideas
Helps in creating self-awareness through self-criticism
Makes it easier to select helpful ideas
Helps in clarifying the emotions
Helps in choosing higher values in life
Helps to activate emotions
Purifies thought
Helps the assimilation in the body
Increases the capacity for assimilating ideas
Strengthens the intellect

green

Neutral
Helps the expression of emotions
Develops logic
Increases communication
Balances
Strengthens emotions
Reconciles two opposite tendencies
Balances the tendency for disorder
Creates harmony
Replenishes lost energy
Creates conditions suitable for the progress of body and mind
Balances the nervous system
Enhances brotherhood
Brings about a regeneration and renewal in the body and the mind
Helps the flow of ideas
Develops cooperative ability
Conciliatory
Fights conceit

blue



Slightly acidic
Intensifies the desire for research
Creates a desire to quest for the absolute truth
Creates an inclination for scientific research
Creates inner serenity
Conducive to higher ideas
Develops the scientific mind
Renews our supplies for life's everyday battles
It has a calming effect; its action exerted on a dynamic level
Helps in the concatenation of ideas
Gives persuasive ability
Creates an inclination for exploring the unkown
Gives inner strength
Creates a spirit of justice
Strengthens religious sentiments
Creates the ability of selecting the authentic
Produces inner harmony

indigo

Moderately acidic
Develops the individual via catharsis
Purifies the blood, mind and soul
Enhances intuition
Gives strength and practicality
Purifies the mind and the emotions
Frees our spiritual (of the psyche) capacities
Helps utilize the spiritual inspiration
Creates suitable conditions for spiritual freedom
Combats negative thoughts and emotions
Increases our ability to understand the laws of nature
Creates a desire for research on a spiritual level
Enables spiritual homoeostasis in unfavourable environment
Increases spiritual communication
Gives consistency in following spiritual principles
Expands the perceptions of the psyche
Enables self-knowledge
Conquers fear
Enhances inner understanding
Protects from the perversion of natural energy

violet

Acidic
Antiseptic
Activates the nervous system
Increases psychic capabilities
Increases the understanding of higher ideas
Creates inspirations on the spiritual level
Enhances the ability to understand the properties of the divine
Contributes in acquiring knowledge of God
Gives a spiritual exaltation
Creates a mood of citizenship and service
Creates inclination for idealism and self-sacrifice for the common good
Creates high ideals
Helps to utilize higher ideals
Directs intuition to higher perceptions
Gives nourishment to the spiritual world
Increases the capacity for meditation
Helps to develop spiritual maturity
Prepares the psyche for its encounter with God
Creates disposition for peacemaking

It must be noted here that the properties of colours are unalterable. They have the same effect on any and every type of living organism. Red, for example, exerts its envigourating influence on man, as well as on any plant or animal. This is absolutely natural, since the aforementioned qualities make up the characteristics of the entity we call red colour. Consequently their effect remains the same, regardless of the organism they are influencing.

As we understand, the colour properties are all positive. Whether they direct their influence towards man's physical, mental, or spiritual level, all colours advance and help man's evolution. All the colour properties contribute positively to the man who is trying for his evolution.

Perhaps the question arises at this time, if colours have any negative properties?

The answer to this question is, no. There are no negative qualities in colour. If we were to generalize a little on the subject we could say there are no negative qualities in life. This statement, however, is a complete contradiction to the disappointing reality which exists in our everyday lives. The world is full of evils, hatreds, passions, treacheries, negative emotions, lies, frauds, etc. How could we possibly say there are no negative qualities in life or colours? The answer to this question lies in the way man makes use of his personal attributes and abilities.

No, there are no negative qualities in life.

Negativism stems from the bad or improper use of good qualities. It is a result of the flagrant violation of the natural laws and of our refusal to respect the universal principles which govern life, as a general phenomenon, on this planet.

We mentioned that yellow has an inspiring quality on the intellect. The mis-use of this quality would start a chain-reaction of negative qualities that would result in the misfortune of the human species and on any other species that comes into contact with it. When someone uses the inspiration given to him by yellow colour, to design and create weapons, he is plainly violating, directly and indirectly, one of the basic laws of nature which states that we should neither destroy nor contribute to the destruction of somebody else' s life in any way. The results of this transgression will be antagonisms, hatred, war, death and in general a myriad of negative qualities which all began with the wrong use of the positive quality known as inspiration.

When someone uses the increased persuasive ability given to him by blue colour for the purpose of deceiving his fellow man, he is clearly violating the law of nature which states that we should respect the personality and the rights of our fellow man, even if he himself is unable to do the same. Transgressing this law will again result to many negative qualities and lead to misery and death.

In conclusion, we realize that the improper or mal-use of positive qualities, which are abundant in life and nature, and the transgression of nature's laws have resulted in the creation of the

negative qualities flooding life today.

This same improper use becomes a "boomerang" which returns to strike us with force, according to another law of Nature; the law of action and reaction. (cause and effect)

Chapter 7

MAN'S CHROMATIC PREFERENCES

The Psychological Substratum of Man's Chromatic Preferences

If we look at a colour chart, we will certainly find that, spontaneously, some colours attract our attention and gain our preference while others repel us. This is not by chance. It is directly related to our biological and psychological-mental condition. Someone loves the red colour, another "goes crazy" over blue, somebody else dislikes yellow, and still another wonders how it is possible that a wonderful colour like yellow could cause such a dislike. There are quite a number of factors influencing our chromatic preferences and aversions. Some are conscious and others are subconscious. We will mention below the factors that exert an influence on our chromatic preferences.

a. *Environment's Chromatic Influence*

Our chromatic environment both at home and at work, influence our colour preferences. It creates a type of "colour habit". An individual gets used to several colours because he is constantly coming in contact with them in his direct environment; he "lives" with these colours. He gets used to their existence and subconsciously looks for them when a choice of colours is imposed upon him.

The prevalence of particular colours, especially in the provincial areas, is the result of this factor's influence. Examples of this are: the white in Mykonos island, the blue or crimson colours on the door frames and windows of the houses in Greek islands, the blue and ochre coloured walls of Macedonian farm houses etc.

The development of a chromatic "establishment" helps preserve the colour tradition of these areas. Any kind of change would be a discordance and would be unacceptable, as far as public sentiment is concerned.

b. Fashion's Influence

Fashion is one of the most significant factors in the development of chromatic preferences. For example, fashion dictates that "the IN colour of this year will be green". This phrase is extremely suggestive, because the dictates of fashion are directly associated with the individual's personality, his prestige, his social hypostasis, his display of financial status (real or unreal), and other factors both personal and not. The messages of fashion easily enter the mind of the contemporary consumer and quickly develop into a general preference for green, and its various shades.

In "Consumerism: The Technique for Understanding the Behaviour of the Consumer", of Dr. K. Magnissalis, is described at length the influence of fashion on man. Dr. K. Magnissalis explains how fashion uses the advertisement as

a powerful "vanguard" to create artificial chromatic needs to the consumer and also how the consumer acquires a certain psychological attitude.

c. Colour Associated Reflexes

A colour associated reflex is a strong subconscious factor which causes an automatic like or dislike for a particular colour. For instance, if sometime ago in the past you had a serious accident, involving a yellow car, which severely shocked you and endangered your life, there is a great possibility you will develop an intense aversion to yellow. The associated reflex is activated spontaneously with the sight of yellow colour. If on the other hand, during a pleasant night, when you were feeling happy, your "sweetheart" offered you a beautiful pink rose, this is enough to establish a corresponding associated reflex for pink colour and create a fondness for it.

d. Indirect Imposing of Colour

This factor is associated with our psychological mood in relation to a particular individual who directly concerns us and whose opinion we concider to be very important. Very often, for instance, a woman will wear red on a date because she thinks her escort prefers it, and it makes her look more appealing to him. The same can apply to a man.

e. The Established Culture of Colour

As we have already mentioned before, in contemporary man's vocabulary there are a number of expressions such as: "that's a boorish colour" or "a chic colour" or "a gypsy colour" etc. All these phrases, which describe colour, are related to the prevailing chromatic culture of every society which differs from place to place. In India and other Asian countries, for instance, there is a predominance of intense, vibrant, and often phosphorescent colours. While these types of colours are associated in Asia with gentility and finesse, in Greece they are considered to be boorish and gypsyish. Thus, the particular chromatic culture of the individual's environment can exert a very strong effect on his colour preferences and aversions.

The problem now under consideration is, to what extent does or does not man truly express his likes and dislikes in regard to colour.

Everyone is influenced by at least one or more different colours. Each human being has deep inside him innate characteristics that enable or not his "coordination" with the qualities of certain colours. This fact creates the true -authentic- like or dislike for a particular colour. So the colour properties, which have been mentioned earlier, play a decisive part in the formation of fondness or aversion towards a specific colour.

Let us suppose, however, that a particular individual has escaped the influence of the above factors (fashion, environment etc), and expresses a true fondness for a colour. This could have two

possible explanations:

1. Lack of Colour 's Properties

Let us suppose for instance, that this individual goes "crazy" over red and at the same time appears to be sluggish, lacking the inclination for any type of physical or mental effort and is fatigued. He is introverted, reserved, and lacks vitality in general. He is suffering from a condition which is characterized by a complete lack of the properties of red colour. This is enough to create a natural inclination in the person towards red, since he needs these "red" properties to adjust his energy level.

2. Overabundance of Colour 's Properties

Let us suppose now, that this same man "goes crazy" over red, and at the same time he appears to be full of life, spirited, extroverted, and ready for action etc. but to such a degree that he becomes restless, quarrelsome, careless, nervous etc. This man is suffering from an overabundance of the properties of red colour, to the extent that they have become a negative influence in his life.

This man appears to love red because his entire nature "beats" in the rhythm of the properties of red colour. It appears then, that both the lack and the overabundance of the properties of a colour can create sympathy for the particular colour. Also, these same circumstances can create an intense aversion.

We can say that all people are under the influence of a particular colour during certain periods of their lives, and then under

different influence and so on and so forth.

When Picasso, for instance, was asked why he preferred blue for all his paintings during a significantly long period of his career (known as Picasso's "Blue Period"), he answered, "I was very poor and I only had enough money to buy blue. It was the cheapest." There is both truth and humour to this answer. But at the same time, it is puzzling.

Could it be that Picasso during that period, was seeking the Absolute Truth in the fine art of painting?

Could it be that he was under the influence of an interminable disposition towards researching the boundless field of painting?

Could it be that he was in the mood to explore the unkown areas of art, which resulted in the creation of a new technique?

Finally, was Picasso under the strong influence of blue radiation, which affected his entire nature and manifested itself as a strong preference for blue, characterizing, thus, this period of his development?

We cannot easily answer these questions unless we first analyze Picasso's physical and psycho-mental attitude at that time. But these questions are posing on us the same cogitation Chromatics is trying to pose. The answers resulting from this cogitation may shed light on man's deeper, quintessential Energy Nature.

Chapter 8

CHROMATICS IN PRACTICE

Chromatics in Practice

The use of certain colours on certain occasions has become established; it is a kind of "law". The presentation below of several examples purports to show that the use of colours has created a "prevalent subconscious" which is reinforced by symbolic concepts which have been developed in the various nations.

Our daily "coloured" life will be examined through the "filter" of Chromatics. We will attempt to prove whether the present chromatic establishment is correct or not. Our judgement will be based on the qualities of the seven colours of the spectrum.

Medicine: In Medicine the method of Chromotherapy is used for the treatment of the newnatal jaundice. The suffering newborns are placed in a ward, which is illuminated by a special blue light. It has been proven that blue colour helps in the rapid treatment of hyperbilirubinemia and recovery takes place in substantially shorter time.

Actually, years before the blue colour was established in conventional medicine, it had been used with great success in the treatment of jaundice by the medical school of Chromotherapy.

White is used in the blouses of doctors, dentists, and medical personnel, on a world wide scale. It is related to the absolute cleanliness and symbolically to the ideal of the medical duty.

The green colour, on the other hand, is the established colour for the surgery since this colour is related to the harmony and the balance which the doctor requires in order to perform safely the operation.

Psychology: The "white cells" are known as rooms where the white colour prevails completely. The personality of a person who has been living for a certain amount of time in these cells becomes disorganized. The physical and psychological resistances are reduced and brain-washing becomes easy.

Psychology, intensely tries to discover in depth the effect of the green colour of nature on the psychosynthesis of the individual. The psychological reactions of people who live in all-green surroundings are examined and compared to those who live in rocky or desert areas, as well as to those living in the colourless environment of the cement cities. The sense of balance and rejuvenation, which one feels from his contact with the natural green colour, is also a subject studied by Psychology.

Biology: Biology has already interpreted a great part of the role which the colours of the flowers play in the attraction of insects in the process of fertilization. It has also interpreted a great part of the mechanisms which are used by the animals so that with their colours they attract

the opposite sex or camouflage themselves in the presence of their enemies.

Tradition: Black in tradition plays a dominant part and it appears as the colour of mourning. We all know women who dressed in black express, in this way, their refusal for a joyful life, their refusal to colours, the darkness of their internal world which is due to the loss of a beloved person.

On the other hand black is the dominant colour of the clergy and expresses the solemnity of the priests and the monks, the introspection, the resentment from the temporary wordly pleasures and the withdrawal from the petty wordly affairs.

On the contrary, Buddhist monks, use for their cassocks, the orange colour, since this is the colour which contains within it the ability of transmutation of the lower energy to higher energy. These monks are devoted to the effort of nature for evolution and they use to the extreme the transubstantiation of the lower human nature to a higher one. For this purpose they need the energy which the orange colour gives, to this direction. The halos of saints in church icons are presented in gold colour or white which is related to the supreme perfection and holiness.

Politics: In Politics colour always played an immense part in the mobilization of the masses. The red colour is, from this point of view, the most appropriate, since it is related to mobilization, vehemence, intensity and

ecnouragement.

The flag, as a symbol, conceals many other psychological, conscious and subconscious meanings, which differentiate the reaction of the individual towards it. The flag is a national symbol which is related to the armed struggles of the various countries. It is a symbol which must encourage people for yet, more struggles, mobilize for conquests, to give audacity and intensity to the struggle. The flags of the various countries contain to a rate of 85% the red colour. The various political parties adopt a certain colour for their flags and their symbols, which accoding to its qualities, determines subconsciously certain patterns of thinking and action, which would be better that they do not come into conflict with the basic principles of the party.

Entertainment: Entertainment games have certain basic colours for their various parts.

The billiard table had originally a dark red baize which was later replaced by green, and this is the prevalent colour up to now. The green colour has a direct contribution in maintaining the balance between the two competitors. It creates harmony between competitors and reconciles the two opposing trends, so that the game becomes more relaxed and does not end up to a fight with the billiard cues.

It is in gambling that competition and adversity between the players peek in intensity and passions show up unrestrainedly. The soothing and balancing role of the green baize is

apparent. A research of the Institute for Human Evolution INHE, conducted by doctors with a gambling group, lasted for eight months and proved that the red baize irritated the card players who quarreled with words, resulting in the interruption of the game, to a rate of 31%. Black baize disrupted the game sooner than the agreed time, to a rate of 27%, due to fatigue and aversion to the game. The green baize was the most favourable one for the game.

In discos colours alter at a quick rhythm but the red colour prevails over the others to a rate of 30-65%. The mobility, the joyful disposition, the energy, the heat of the red colour are completely harmonized with the general climate of the disco. The same extroverting qualities of the red colour are those that tend to mobilize passers by for a visit to whore houses, which are distinguished by a red lamp.

Advertising: Colours are related to various qualities which, apart from psychomental, have also somatic equivalents. Lusher based on this, reports that the red colour is related to "astrigency" as regards taste and it would be inappropriate as a dominant colour in the packaging of sugar or sweet products because it would create a sense of repulsion. On the contrary, the blue colour is related to the sense of sweetness and is more appropriate for this use.

Based on the same consideration the red colour would be unsuitable for the advertising of bed-sheets or blankets or bedroom furniture because its qualities are contrary to the psychological qualities which the advertised item

creates. The Institute for Human Evolution studies from this point of view all advertisements. On the basis of the principles of Chromatics it researches their rate of success in conjuction to the rate of their chromatic balance. This research is made with a computer and the results are presented with graphic designs. We must emphasize that this research presents immense complications and great difficulites because the result of an advertisement does not depend only on its chromatic balance but on several other factors (mode of presentation depending on the target group, the season, the media through which it is presented etc.) which must be taken into consideration for the validity of the results of the research.

Results up to date have shown that a chromatically balanced advertisement has a substantially greater penetration than an ordinary one. In advertising, the correct use of colours (depending on the item being advertised, the personalities who advertise it, the place where the advertisement is made and other factors) increases very substantially its effectiveness.

Packaging: Today there is a special branch of activity dealing with packaging and recommending solutions for the packaging materials, especially those of food products where special specifications are required. Great emphasis is also placed on the packaging of consumer items. Chromatics collaborate with the method of packaging for the creation of new forms which will promote the product they

contain.

Decoration: Decoration is a vast field for the application of Chromatics. The chromatically balanced environment creates an attraction to stay in it, increases creative capability, improves communication between people in the same space, relaxes, soothes. On the contrary, a chromatically imbalanced environment creates a repulsion, psychic fatigue, sublimated nervousness, bad communication etc.

Red colour is not recommended for a bedroom, although modern trends would so have it, because it is "warm" and "sexy". It would be good for a room of erotic activity but not for a bedroom. Red bedsheets are not recommended for the same reason.

In nurseries bright colours prevail with red being the predominant one. A child which cannot easily go out to nature to regain balance and to "steam off" pressure, but on the contrary spends most of its time confined in a room, where the red colour predominates, will surely become nervous, restless, and undisciplined. On the contrary, a room that is chromatically balanced gives to the child the possibility to feel comfortable and it reduces stress.

Lusher reports that a chromatically balanced environment in the interior of an airplane can reduce to the minimum, the stress and the fright which are connected consciously or subconsciously with an airflight. Think of an airplane with red wall paper and red seats. Its environment immediately creates tension and

stimulation. On the contrary when decorated with correctly selected and combined shades of green or violet it reduces the tension and leaves the passengers more calm and relaxed at the end of the journey with the result that they prefer that particular airline for their trips.

In work areas chromatic imbalances create fatigue, repulsion for work, nervousness, reduced communication between the employees etc. The results of this ill effect are very unpleasant and the social cost is heavy because of the reduced productivity and the increase in the number of work accidents. Chromatic adjustments are required in all groups or individual work areas such as schools, factories, private and public businesses, banks as well as institutions such as prisons and reformatories.

Business: In Business, Chromatics can help to create an environment conducive to productivity and at the same time restful. Chromatics can be applied in work areas, from the executive offices to places where heavy machinery is in operation. This way the physical and psychological fatigue created in people who work in such places, due to the general noise of the environment, is being counterbalanced with the relaxation offered by the chromatic environment. As a result work accidents are reduced.

Stockbreeding: Several poultry breeding units in Texas use blue light because it has been proven that it increases the laying of eggs and because it keeps the poultry population in a state of relative calmness.

Traffic: The red colour has been connected with danger and this is why it is used in traffic lights. The red light, however, is often violated. Rushing and time pressure is one of the reasons but it has been proven by a research of INHE as well, that the red colour of a traffic light, when it appears right after the green light, instead of stopping somebody it creates a disposition to attack, to continue, to move.

On the contrary the green light generates the disposition for a stop and calmness. The research of INHE has proven that the violation of traffic lights is reduced by 32% when the red colour is used for movenent and the green colour for stopping. This research was conducted with individuals without any traffic education, to whom red and green colour were completely indifferent, from the point of view of favour or disfavour.

The lack of traffic education was required so that the individuals would be free from dependent reflexes regarding these two colours. The complete neutrality, towards red and green colour, was a prerequisite so as to avoid the psychological effects which would have adulterated the research results if there were favours or disfavours.

In 1982 Dr. Strong and Dr Pace, with a research conducted at the Waterloo university in the U.S.A, showed that pre-presbyopic individuals which were being examined with the occulist's table from a distance of 40cm displayed the tendency to create outward squinting (strabismus) when the background of the table

was green. On the contrary, when the background was red or white this phenomenon did not appear. Also this phenomenon would disappear when the board was placed at a distance of 6m. This discovery is extremely important for those working with computers because the screen is green and the distance form the individual is about 40cm. Those who are pre-presbyopic will present a secondary outward squinting, with the result that the organism will exert a greater effort for the adaptation of the eye and will so become extremely tired.

The following question therefore arises: Since this phenomenon has not been studied for distances of 15-20-25-30m could we assume that secondary outward squinting, reappears in great distances? Perhaps to a certain degree traffic accidents occur due to this reason by individuals suffering from pre-presbyopia? If on the contrary, the red colour was used for movement and the green colour for stop, this phenomenon would not contain any danger for drivers. This is a subject for future research by INHE. Until then we can only make an assumption which perhaps might be proven to be correct.

Botany: Experimental cultivations with plants, under conditions, of altering coloured lighting, according to special rules, proves the immense effectiveness of Chromatics in advanced biological cultivations, with great yields in both exterior cultivations and in the development of in-doors space plants.

Cosmetology: In the cosmetology of the face and the body, Chromatics helps the individual to

relax. It also helps for the improved application of the various methods of Cosmetology. Chromotherapy is combined perfectly with cosmetology and can be used before the treatment, for the preparation of the individual, during treatment and afterwards. Cosmetology greatly increases its results from its combination with Chromotherapy.

Art: In modern painting, if the rules of Chromatics are used, paintings can be created that can be completely balanced, chromatically, with the result that the demand for them will be increased due to the sense of balance which they create.

In photography for the creation of works whose chromatic synthesis will correspond to familiar or desired emotional sensations.

In graphic arts for the purpose of creating the appropriate psychological conditions which will induce attraction towards the items covered by a package or a cover and are addressed to a special or a wider market.

In Decoration the possibilities for the application of Chromatics are immense, since they afford the possibility to create an ideal vital space, depending on its use, its natural lighting, the psychosynthesis of the people who will use it and other special factors that should be kept in mind at the study of the immediate environment.

Sciences: Chromatics can be applied in

psychology for the treatment of autistic children and generally of children with problems of adaptation to the environment.

In medicine as a method of preventive medicine.

In sociology for the application of systems which will increase the communication and improve the contacts between people.

The chromatic education of a social group with difficulties in functioning solves a great part of the problems, and makes easier the acceptance of accompanying solutions proposed by other sciences.

Evolutionary methods: To the various methods, used by man for his personal evolution, Chromatics offer a tremendous help, because through the use of Crhomotherapy deeper relaxation, deeper meditation, better self-regulation is achieved and self-realization is reached easier.

INHE has prepared programs for the application of Chromatics on all the above topics and organizes studies of the results of Chromatics in individual or group applications.

Chapter 9

THE USE OF LIGHT AND COLOUR

The Use of Light and Colour

Apart from the theories of Physics which tend to prove the pure energical nature of light, research in Medicine tends to prove that the light, white or coloured, "hides" certain energical qualities which create extremely interesting phenomena. This "hiden quality", carried in light as an active ingredient, makes its appearance on several occasions.

Dr. Burmer and Dr. Norwood, of the Washington pathological clinic, used in 1980 the light in a special way in order to selectively abolish certain groups of cells in vitro. The study was made with fluorescent pigments.

In 1981 Dr. Ananthaswamy and Dr. Fisher, of the Maryland Anticancer Institute, discovered that the visible light has the ability to restore the alterations at the DNA molecule, which were caused by artificial or natural ultraviolet radiation.

In the Washington preclinical pharmacology laboratory Dr. Cohen and Dr. Neff discovered in 1982 that only the light has "something" that stimulates the enzymatic reactions in the retina which are responsible to receive the light stimulus. The same reactions can be triggered

from drugs or artificial compouds. Nevertheless, the result is not the same, because that "something" the light has, is missing. Dr. Brown, of Yale university, identified in 1979 the changes in the molecule of bilirubin which are caused by the blue light and determined the dosage of blue light for the treatment of physiological neonatal jaundice.

Furthermore Dr. J. Lucey, of the medical school of Vermond University, discovered that phototherapy turns bilirubin into non-toxic products which are excreted from the organism easier. What is proven is that a great part of the material excreted is bilirubin itself. One can therefore conclude that phototherapy has a directly beneficial effect on the liver and the kidneys.

The blue light has a special influence on the metabolism and the excretion of bilirubin in the newborns which is due to that "something" carried in the blue light.

In 1983 Dr. Damassa, Dr. Gustafson and Dr. Chari of the Boston medical school research centre, discovered that the alterations of light-darkness in a special frequency, when conducted in guinea pigs, resulted in the accelaration or decelaration of their sexual maturity. In other words the light has the capability to influence the secretion of genetic hormones, when alternated with darkness, under a certain frequency. Specifically when young mice are constantly under a light, the light-receptors, cells of the retina, release special compounds (neurotransmitters) which activate

the cerebral neurons. These neurons, in turn, transmit signals along complicated neuro -endocrinical paths which reach the pituitary gland, where they provoke the secretion of certain hormones (gonadotrophins) which in turn accelarate the process of maturity of the ovaries.

Since 1981 Dr. Hagelin, Dr. Janson, Dr, Roeckert and Dr. Seman, histologists of the university of Göetebörg in Sweeden, use coloured filters for the distinction between the healthy and the destroyed muscular fibers, in piercing wounds caused by projectiles. This shows that the healthy muscular tissue has a different absorption of colours from the destroyed muscular tissue and, in general, a different response to light.

The special relation of the various tissues, healthy or pathologic, to coloured light results to the phenomenon that some fibers absorb more the green light, others the yellow light or any other colour etc. We see therefore that the various organs have a greater of lesser relationship to the various colours.

Based on this quality of coloured light Dr. Parver, of the Georgetown eye clinic, used green colour to locate the tumours of the choroidea since they absorb completely this colour and are thus distinguished from the surrounding field.

What we realize then is that the white or coloured light has the capability to directly affect the tissues, the organs and the biological or psychomental functions of man in a way that is

specific and precise.

This conclusion is confirmed by the research results of the scientific group of Dr. Natarajan, Dr. Van Zeeland, Dr. Verdegaal and Dr. Filon, which was conducted in 1980 at the university of Leiden. The research proved that violet colour can restore to its normal form a DNA molecule that has suffered an artifical mutation. Also Dr. Fraikin and Dr. Rubin, research biologists at the Lemonosof university at Moschow, proved with their research, conducted in 1980, that violet colour greatly affects the metabolism, the reproduction rate and other biochemical processes of the bacteria.

The effect of light on the human organism in the case of illness is being intensely studied today by scientists. Dr. Ric. Wurtman and Rob. Neer have worked on the influence of light on the ability of the organism to absorb calcium. The lack of sufficient exposition to ultraviolet radiation during the summer months greatly reduces the utilization of calcium by the organism even when there is a surplus of the element in the diet of the individual. This view is reinforced by the researches of Dr. Aaron Jean in the department of metalic metabolism of the Leed's general hospital. Dr. Aaron discovered that lack of metallic minerals is observed more often in samples of autopsies collected in England during the winter months.

Dr. Philips and Dr. Hunter, after long lasting studies in the psychiatric institute of London, have presented in 1983 the results of their studies, according to which patients suffering

from migraine tolerate in varying degrees the different colour shades. Their tolerance to the various colours ranges from "acceptable" up to "completely bad".

Coloured light presents, as already mentioned, a special relationship to the tissues and the organs of the human organism. We could say that the liver "likes better" the orange colour, the kidneys "prefer" the yellow, while the heart "likes" the green and the brain the violet etc.

It is known that blood presents the greatest absorption in the yellow and green colour while the walls of the vessels best absorb the violet and red colours. Dr. Kaefer, of the university of Heidelberg, based his studies on this chromatic preference and formulated in 1980 a method for the use of monochromatic light in the diagnosis of degenerative lessions in the vessels of the eye bulb.

Light carries a great amount of energy which is capable of having substantial effect on the biological rhythms of the human being. The influence of light, white or monochromatic, is applied on man, whether man is capable of seeing the light or not. If a person keeps his eyes closed while a beam of white or monochromatic light is directed on him, he is influenced by the light despite the fact that visualy he is unable to perceive it, or may even ignore its existence.

This conclusion is confirmed by the researches of Dr. Lewy and Dr. Newsome, which were conducted in 1983 in the university of Portland, and which have proved that the alterations of

light-darkness, on blind individuals affect the daily rate of secretion of melatonin in their organism.

Similar researches by Dr. Richard Wurtman have shown that the body temperature in mice, which under normal circumstances varies according to a 24hour pattern, can be altered if we change their daily light-darkness cycle. Dr. Wurtman, and his associates, discovered that the green colour is much more effective in the establishment of a new rhythm than other radiations (red, yellow, blue and violet were used).

Apart from the biological rhythms, that are affected by the colours, psychomental rhythms also present a dependence on the white light and its components.

Based on this Dr. Melnikov and Dr. Gracheva developed a method for the release of the neuropsychic tension with the use of light. This method was standardized in 1980 after researches that were conducted in the university of Moscow.

Chapter 10

CHROMATICS IN MEDICINE

Chromotherapy

Chromotherapy, as has already been mentioned, is the part of Chromatics that deals with the prevention of disease. It is a method that teaches man the correct use of colours, which will enable him to gain the energy necessary for his everyday life. The colours used in Chromotherapy are produced from Laser filters and a spotlight of a specific intensity.

Coloured light carries energy. This energy is transmitted to man when he comes into contact with a light beam. Thus, the energy properties characterizing the colour are offered to man.

It is definitely preferable to prevent rather than to cure. But how are we to prevent a disorder or an illness? There is indeed a way of life which gives man the chance to replenish the energy he looses in his daily activities.

This way of life, first of all, must include a daily program which should be in harmony with the "biological clock" of man. Every violation of this "biological clock" results to energy losses which can not be replenished and thus, the organism is worn out much faster. Also the nutritional habits followed should not burden the organism. Useless energy losses for the decomposition and utilization of heavy or complicated and indigestible foods, weakens our

organism. Finally, we should develop a psycho-mental attitude in everyday life which will enable us to eliminate wasting our energy.

Some of you may think at this point that all these imply that we should become expressionless, unsmiling, frigid, introvert etc. On the contrary all the above mean that we should be discreetly extrovert, affable, cheerful and agreeable in order to avoid the excessive frictions in our daily lives which lead to wasting energy.

This special way of life is, today, a utopia and that is the reason why humanity is suffering more and more from disease. At this stage of the evolutionary process of man comes Chromotherapy to teach man how he can benefit from the subtle energy entities with which he is daily in contact; that is Colour and Light.

We have emphasized that Chromotherapy is given as a means of preventing a disorder, or an illness. It acts as a complement of the way of life described above which is unattainable today, due to the present circumstances.

Let us suppose that a particular individual is suffering from an intense anxiety. Anxiety today, is a most common phenomenon torturing a large percentage of people. Very often, anxiety is focused in the area of the solar plexus, in front of the stomach. As a result, the anxiety ridden person feels a "tightening" in the stomach, a heaviness, a distress. If the anxiety becomes chronic, gastritis will appear at some point of time. Gastritis is the somatic equivalent of the

unbearable feeling of anxiety. Sooner, for some, or later, for some others, gastritis develops into a peptic ulcer.

A peptic ulcer that remains uncured and becomes chronic, will result in cancer of the stomach for a sufficiently large percentage of the cases, as has been proven by statistics. Thus, we have followed the complete course of development of a disease that started as an umpleasant, familiar, disagreeable sensation called anxiety and resulted to the complete disorganization of the organism.

A conclusion drawn at the 1983 Congress of Psychosomatic Medicine was that more than half of the illnesses torturing mankind today have psychosomatic origin, and still many more tend to be proven as being psychosomatic. This comes as a natural conclusion, and is easily understood, if we consider the triadic hypostasis, of man: Body-Mind-Psyche. Between these three elements there is interdependence and interaction. Homoeopathic Medicine has supported this point of view for the past 150 years.

Let us return, however, to Chromotherapy. If someone interferes with anxiety, the first link of the previously referred "chain", and neutralizes it, then the entire development of the morbid syndrome will be stopped. Thus, the chain reaction of anxiety-gastritis-peptic ulcer-stomach cancer, will stop at the very beginning and further developments will be avoided. All this can be possible through Chromotherapy. It is evident, therefore, Chromotherapy can be used

as a significant weapon in the struggle to prevent disease.

How Chromotherapy Acts

The very significant influence of white and monochromatic light on man's biological and psycho-mental functions has already been mentioned.

The fact that light and colours are in essense energy is clearly evident. These energy qualities have the ability to help and support man's own nature, his Energy Nature. Coloured light strengthens man's constitution and helps him to meet his daily energy expenditures. Chromotherapy uses the coloured light to fill the "energy batteries" of man's organism, so that he is always kept properly regulated and in good order.

Coming to the end of a difficult day, man feels characteristically fatigued, irritable and weak. This is the result of spending a large part of his energy on his activities, without replenishing it in some substantial way.

Chromotherapy solves the problem of man's energy balance in his everyday-life.

Chromotherapy offers the energy needed to balance the tired individual. Fatigue, nervous irritability, anxiety, disappointment as well as, various other negative biological and psycho-mental states are neutralized with the

practice of Chromotherapy. Thus, the morbid chain which starts precisely from this condition is halted. And the various illnesses which otherwise would have followed it subsequently, if the imbalances were not corrected, are prevented.

An experiment conducted at the University of California, demonstrated how a hard studying group of students was more efficient, and 37% more tenacious when the students were applying yellow colour Chromotherapy in comparison to when they were studying under the same conditions but did not apply Chromotherapy. When the experiment was repeated with two more groups of students, studying under the same conditions, the same results were obtained. The group which had received Chromotherapy with yellow light studied more effectively and tirelessly than the group that had not. Again the same positive results were obtained, when the experiment was conducted by the IN.H.E (Institute for Human Evolution) in Greece.

The results of these studies are not at all due to chance, since as we know yellow is capable of stimulating man's inspirational capacity on an intellectual plane. A necessary factor for a students' serious study.

Who Can Adopt Chromotherapy?

Chromotherapy is a gift to every harassed and weary man living in cement metropolis, in

barren and unfriendly land, and in a society plagued by doctrines and taboos. It is not necessary to belong to a specific group to be benefited by Chromotherapy. Chromotherapy is available to everyone.

In addition, it is not limited by personal health. The results of our studies lead us to the conclusion, that there are no limitations whatsoever placed on Chromotherapy. If our organism is "charged" with the correct type and amount of energy it requires, man is able to meet with greater ease the various pressures and irregularities forced upon him by our present way of life. Also it is not particularly difficult to adopt habits that afford us with energy. All we have to do is ignore the barriers our minds have placed upon us in the form of old habits.

When someone begins to adopt the proper habits, he will meet resistance from his own mind only at the first steps of his effort. But once his system begins to "tune" itself, and he realizes that these new habits are exactly the ones that offer him a massive -literally- and qualitatively correct energy, he will keep himself on the way. He will continue in the new path out of ardent desire. Discipline and diligence will no longer be as necessary. There are instances where individuals performed physical and intellectual accomplishments which they themselves considered "inconceivable", according to their own estimations of their abilities.

The Method of Chromotherapy

The influence exerted by colour on our lives has been pointed out to be most significant up to now. And this influence has been accomplished subconsciously; since man has never had any type of general instruction-education in Chromatics. As a result, man's environment has been determined by factors irrespective of his individual requirements for energy.

Formal Chromatic education is offered only to those particular groups whose specialties are related to colour. For example, painters, interior decorators, fashion designers, artists, etc. But their education is not based so much on the rules of Chromatic psychology, as it is on the aesthetic principles of colour which are determined by art-schools, styles, ways of thinknig, etc.

Nothing is left for us then, but to begin the application of Chromotherapy with the purpose of regulating the energy balance of our organism. The application of Chromotherapy has two stages:

a. the choice of colour
b. the application of the colour

The Selection of the Colour

The most basic and essential stage of Chromothepy is the choice of colour. This is the stage where we try to select the colour or colours we will apply to ourselves in order to achieve the regulation of our energy. This is the stage where we must decide which colour or colours have an energy relation to our organism. In other words, they must have the specific properties we need so that with their application on ourselves we will accomplish the beneficial results we desire.

There are two steps to the choice; the preparation of the choice, and the choice itself. (principal selection)

a. The preparation for the choice

As it was explained in a previous chapter, our chromatic preferences are very dependent upon factors which are external, internal, conscious, subconscious, etc. As a result, our choice of some particular colour is not the result of our own, real, personal preferences, but rather the result of the coincidence of all these factors which act automatically and uncontrollably when we come in contact with some particular colour.

Let us say we have a colour chart in front of us, and we are asked to choose a colour we like. We examine all the colours closely, we linger

over a few, while others go completely unnoticed. Finally we end up choosing some particular colour, but we are almost always wavering irresolutely between our choice and some other colours. In the short length of time it took us to make our choice, a few, if not all, of the previously mentioned factors associated with the projection or repulsion of the colours, exerted their influence on us.

Thus, our final choice of colours is not really our own. It is owed to factors we cannot consciously control.

Who could actually be absolutely sure of his chromatic preference? Who could say with *absolute certainty*, the colour he chose was really the one he liked, and he wasn't influenced *in any way* by factors beyond his control? Who could exclude the case of ill-matched and incorrect choice, as a result of all the factors previously mentioned? One must be very well trained in particular mental techniques, in order to be able to express only his personal colour preference, locking out all the factors foreign to him. One must know how to reduce or neutralize all these influences so that his own authentic colour preference can appear.

Very few people can boast about such an ability. Very few people know the technique which allows them to make, undistracted, a free choice. A choice which is undiverted by other influences.

Naturally, this does not apply only to chromatic choices. It happens every time

someone is called upon to make a choice between a number of similar situations, things etc. Therefore, when someone makes a choice, he can never realy be sure if what he chose, is actually what he liked, or what he has been "taught to like".

In the case of Chromatics, if we apply a colour or colours on us, which do not represent our true choice, we will not achieve anything at all.

When a colour is not in harmony with us (or we really do not like it) that means that the energy it carries does not correspond to us and so it will not particularly affect us. On the contrary when we truly like a colour and it represents our true preference, then this means that we have an energy relationship with it. We could say that we are moved by the colour, vibrating in the same wavelength. Therefore it is the colour which is most beneficial to us.

There is a need for a method, then, which will free us from outside influences. Only then will we be able to pick out the colour we truly prefer.

This method is given to us by Chromotherapy, and it is as follows:

For seven days we apply certain colours in a specific sequence. These colours enable us to be released from the influence of the limiting factors we mentioned earlier, and we begin to function unrestricted and independently towards colour.

The influence of the limiting factors had created an energy status within us which

directed our choices. The application of the colour series we are about to discuss has the purpose of dissolving this status and setting free our personal choice. The entire process is accomplished with the application of colours; in other words with the use of energy. The sequence of colours is as follows:

INDIGO - GREEN - VIOLET

Use Indigo for seven minutes, *immediately afterwards* green for another seven minutes and then violet for sever minutes more. This process is to be repeated daily, irregardless of whether you dislike these colours or not. In about seven to ten days, you will be sufficiently regulated so as to allow your true colour likes and dislikes to function. Then you will be in a position to make your own personal choices.

b. The Selection

Since we have passed the preparatory stage, and released ourselves from the various influences which destroyed our ability to make a proper, unobstructed choice, based on our energy level, we proceed to the stage of the main choice.

The choice itself can be accomplished in either of two ways. They are the "Spontaneous Selection" and the "Autoanalytical Selection".

The Spontaneous Selection

The instinctive spontaneous selection is based precisely on the ability of human nature to be

attracted or repulsed by similar, or related to her, energy qualities.

In order to make a spontaneous selection we arrange the seven colours used by Chromotherapy on a white fabric or paper. In this way each colour is clearly visible and without thinking, we instinctively choose the colour we are most drawn to or repulsed by, in the least amount of time. Since we have already passed the preparatory stage for our choice, our ability for spontaneous and authentic choice is unhindered. So we are quite able to find the colour which is truly related to us in regard to its energy properties.

That one colour you select or reject represents the colour you must be concerned with. If you find you like or dislike two colours, put them someplace aside. After a few minutes look at them again, but do so without previously thinking about it and without programming your choice. You should not select a colour simply because it matches with the clothes you plan on wearing later, or because you are emotionally or intellectualy attached to it. Your mind and emotions must not stand in the way if you are to reveal the true desires of your organism. For this reason, do not think about the colour you are going to select. The choice is more precise if you let the seletion or rejection to take place always at the last moment.

The Autoanalytical Selection

The autoanalytical choice is an indirect way of selecting the colour or colours we need to apply

in Chromotherapy. It is based on one's potential for introspection and the need for self-psychoanalysis. We believe environment plays a decisive role in man's external reactions. We know that the conditions of man's environment can create anxiety, phobias, aggressiveness etc. We must not forget, however, that when the organism is at a balance of energy, his endurance to every type of stress is strengthened. Therefore it is very difficult for him to be influenced by environmental factors. There are a great many people who get angry at the slightest thing. A trivial cause from the environment is enough to trigger off an involuntary chain of vigorous reaction. This does not happen because these people are "bad" on intention, or because they want it to happen. It happens because their nervous system is imbalanced and neglected and they have reached the point where they are excited and over-react with the slightest of provocation. Chromotherapy provides the energy necessary and the nervous system strengthens its endurance to stress, so that its ensuing reactions are accomplished calmly and normally.

Naturally there are some limits. There are certain types of stress which can literally crush a man. But there is also an antidote. There is a way to strengthen our resistance to stress and make all things much easier.

We all know when something is bad for us. But we can not escape it, because we do not have the necessary energy reserves to fight it. For example, all of us have often heard the following

statements from people in our close environment: *"I know that getting angry is irrational and harmful to my health, as well as my personal relationships. But it is something I just cannot hold back. It escapes my control. It is stronger than me"*. And of course: *"I am very much afraid of the dark, I am paralyzed with fear every time the sun goes down and I'm alone in the house. I know it is absurd, it's silly, I'm no longer a child. Nevertheless fear overpowers me, paralyzes me. It wears me out, and my reasoning can't fight it"*

There are numerous such daily examples which demonstrate the dependency upon unreal situations which cannot be overcome, because the organism lacks a certain "something". That is nothing more than the energy needed to interpret outside stimuli correctly. Another example will make this clearer. When someone severely lacks life's Vital Energy, for instance someone who is in a delirium, then his perception becomes frightfully distorted. i.e, he considers a chair to be a horse, a column to be an angel, and so on. This happens because his organism lacks the required energy which would enable his brain to translate the external stimuli correctly and react accordinly. Thus a "chair" stimulus in his brain is interpreted incorrectly as a "horse", and he is driven towards the wrong reaction. He wants to go riding. If this individual had not been so imbalanced, and had maintained an adequate reserve of vital energy, his brain would have been able to correctly interpret the extrenal stimulus created by the chair. He would then be able to see the chair as it really is, and

not as a horse. The ensuing reaction towards the object as well would have been more normal. He would have wanted to sit down, instead of going riding.

Through Chromotherapy, it is possible for us to be supplied with energy daily. This energy will prevent us from ever becoming delirious, and misinterpreting the images of the external world. With man's daily energy coordination, his "tuning", he is even able to fight several other physical and psycho-mental imbalances; since they also owe their existence to an energy deficiency, which renders us unable to control our own selves. If the people in the examples given above had used the methods of Chromotherapy, they would have had the necessary energy to overcome their fear and temper.

A diagnosis must be made in order to determine what is necessary, before Chromotherapy can be applied for self-regulation. This is much harder to accomplish than it appears at first glance. A self-diagnosis is an exceedingly fine and difficult task to perform. It is even more difficult to accomplish it correctly, when the individual has no prior experience. In its effort to maintain control, our mind will often play tricks on us. It makes up excuses, it releases us from our responsibilities, it praises us, it flatters us. But rarely does it ever tell us the plain truth. If for example, at some time an individual asks himself, *"Am I temperamental? Do I uselessly get angry over the slightest things?"* The

majority of the answers will be as follows, *"Oh come now, I am a perfectly calm person. But what can I do when my neighbours make me furious with their noises? It is all their fault, not mine. I am perfectly normal"*. Of course, many times our environment becomes extremely unfavourable to us, and as a result it causes our violent reactions. Do not deceive yourself, though. We are the ones who are guilty. No one else. No matter how much our mind justifies us, no matter how we try to put the blame on other people, on other things, or on the "establishment" it is a fact that we are to blame. So it is better that we face it.

In order to face our sensitivities and imbalances, we must first locate them. Locating them is accomplished through the method of autoanalytical selection. This method aims to bring us closer to our essential nature. It helps us love ourselves, even with the great many faults we have which we are now starting to correct, through an energy process.

Since we have decided to take a close look at ourselves let us take a piece of paper and write down in detail our daily activities from morning till night and also our emotions during each phase of the day. The entries must be written in the third person. It will help us to make a more impartial diagnosis, when we concern ourselves again with our own text. For example, we must write, "Mr. .... did A. and B." and not "I did A and B". Let us give a detailed example.

Monday, June 6

Mr. G.P woke up with a headache and was illdisposed. He felt very down. His sleep had not been at all refreshing. He felt very heavy. He went to the bathroom to splash a little water on his face but could not find a clean towel because his wife had not been feelng well and neglected to put one in the bathroom. He became enraged. He began shouting and swearing. His wife woke up frightened and started crying. After he calmed down, he sat at his desk and tried to justify to himself the confusion and agitation he had just caused in his wife. Later he left for the office. At a traffic light, a child came to clean his car windshield. He gave the child some coins. As he proceeded on his way, he began to think about his own difficult childhood. He became incredibly affected, emotionally. He started crying. He was forced to stop and move to the side of the road. After some time, he finally reached his office. There was a thick file of business affairs waiting for him. Some of the items he was seeing for the tenth time, but he still couldn't decide how to deal with them. He had a long and difficult day at the office and at the end he was so tired and fatigued, he could not calculate the change he was supposed to receive at the news-stand. He returned home. He apoligized to his wife for the morning argument and immediately went to sleep. He felt very down etc.

With this method, we have described the entire day, with all its good and bad moments. We must do the same thing for three days, which do not necessarily have to be consecutive. But

they should at least be in the same week.

Once we have completed our three day journal, we must put the papers in a drawer and forget about them for a week. We must make a note on our diary as to what day to look at them again. On the appointed date we open the drawer, take out our journal, and with a red pencil, we make notes of our remarks and criticisms, as is done in the example below.

Monday, June 6

Mr. G.P woke up with a headache and was illdisposed. He felt very down. His sleep had not been at all refreshing. He felt very heavy. (SLUGGISHNESS) *He went to the bathroom to splash a little water on his face but could not find a clean towel because his wife had not been feelng well and neglected to put one in the bathroom. He became enraged.* (ANGER) *He began shouting and swearing.* (INSULTING) *His wife woke up frightened and started crying. After he calmed down, he sat at his desk and tried to justify to himself the confusion and agitation he had just caused in his wife.* (GUILT) *Later he left for the office. At a traffic light, a child came to clean his car windshield. He gave the child some coins. As he proceeded on his way, he began to think about his own difficult childhood. He became incredibly affected, emotionally. He started crying. He was forced to stop and move to the side of the road.* (OVERSENSITIVITY) *After some time, he finally reached his office. There was a thick file of business affairs waiting for him. Some of the*

items he was seeing for the tenth time, but he still couldn't decide how to deal with them. (IRRESOLUTION) *He had a long and difficult day at the office and at the end he was so tired and fatigued, he could not calculate the change he was supposed to receive at the kiosk.* (MENTAL FATIQUE) *He retrurned home. He apoligized to his wife for the morning argument and immediately went to sleep. He felt very down* (ALTERNATING MOOD) *etc.*

Try to be firm in your judgment. Mr. G.P. is a man who is concealing his enegy nature within himself, in a state of "hypnosis". He must awaken his energy nature and allow it to act, so that he can benefit from it. Only then will mankind be able to demonstrate love, understanding, kindness, trust, and satisfaction. Only then will mankind be able to develop with rapid pace.

Once the various negative qualities poisoning man's essential nature, such as in the case of Mr. G.P , are obliterated with an energy method, there will be no reason for mankind's criminal laws to exist any longer. Criminally punishable acts will no longer be committed. The observance of law and order will not be based on fear, but rather on a deeper understanding of the natural law of "action and reaction", an understanding which all the balanced people will possess.

Now then, try to be strict with Mr. G.P , so that you can help him as much as possible. Uncover your own self. You are alone with him. Noone else can overhear you. Talk things over with him openly. Be frienldy and sincere about

Show him that you want to help him, and try to convince him on the fact. Everyone tries to cling to someone else, in order to hide his own weaknesses. You should not make the same mistake. Only you can help youlself. So stop asking for help from others. Now you have the opportunity to give yourself the love, support, affection and recognition you need.

Embrace your own "self". Soothe yourself. Say the kind words it so much needs to hear. Show that you stand close to him. Speak to it with fatherly understanding and say:

"Come here, Mr. G.P. Since this morning, you have sworn, yelled, and cried. You have felt bored and depressed etc. I know you are acting this way because the past decades have been quite tumultuous for you. You have become confused. You have adopted a great many things and then discarded them. Many things you have been deprived of. Many goals you were not able to achieve. Many times you found yourself in a deadend. Now you are tired, and nervous." Then caress yourself and say, "Now I have decided to concentrate on you. I have decided to show you the love I have denied you and kept buried all these years. And the most important is that I have discovered the way to help you. I am offering it to you as my greatest gift. I am positive it will help you incredibly. In a short time, you will feel so good, you will be able to give it to others as your greatest gift."

Since we have made our diagnosis, we have reached our final conclusion of the three days. We have found, for instance, ANGER seven times,

FRUSTRATION six times, JEALOUSY three times, and DISAPPOINTMENT two times. Now we will deal primarily with anger. If we look at our Practical Chromotherapy guide (chapter 11) we see ANGER: GREEN (7) BLUE. This is the series of colours we will use in applying the method of Chromotherapy.

The Application of Chromotherapy

Instruments of application. To apply Chromotherapy, we use:

a. Seven filters made from a special material (crystalline plastic), coloured with Laser dyes.

These are not ordinary filters. Their material and the special Laser dyes make it possible for a coloured light to come out of the filter with the particular spectral properties necessary for the application of the method. There are quite a few types of coloured gelatines on the market used for children's toys and gift-wrapping material. There are also various coloured spotlights with a multitude of colours. These, however, are all completely unsuitable for Chromotherapy's purposes, because they emit a coloured light which is completely out of the range of the requirements of the method.

b. A spotlight with a special holder in front of it, for the placement of the Laser filters. This spotlight is constructed to produce a beam of light, in such a way that it will not change the chromatic yield of the filter. It is designed for private use, and in combination with the Laser

coloured filters it provides us with the right light for the Chromotherapy. There are other kinds of spotlights which produce a much stronger light. They use special incandescent or halogen lamps. There are also expensive complex lighting systems with a number of lenses and automatic functions. These, however, are intended for professional use by doctors.

c. Eight geometric cards: paper diaphragms cut in some particular geometric form. They are placed in front of the spotlight, together with the laser filters. The coloured light beam passing through the geometric aperture is given special characteristics which are owed to the wave properties of the light.

Points and way of application of Chromotherapy

Chromotherapy can be applied on any uncovered part of the body, as long as the light beam comes in contact with the skin. We use a special spotlight with Laser and geometric filters to create the specific light beam required. We sit comfortably, once we have placed the spotlight 1-2 meters away from us, and allow the light beam to fall on any uncovered part of the body (for example, face, limbs, torso, etc).

As mentioned in our previous example, the result of the autoanalytical colour selection for ANGER is GREEN - (7) BLUE.

This means, that we take the green Laser filter and place it on the spotlight. We sit under the green light for seven minutes. Then we place

the blue filter, and behind this in the same hold, the geometric card with number 7. We sit under the blue light beam for another seven minutes.

The same process for ANGER can be repeated a second time during the same day. ***But do not repeat the same procedure for any one of the conditions more than two times in one day.*** The next day proceed to FRUSTRATION, and apply the colours prescribed in the corresponding definition. On the third day concern yourselves with JEALOUSY, and use the colours directed. Devote the forth day to DISAPPOINTMENT, and meet it with the colours indicated in the corresponding definition. On the fifth day start to repeat the cycle from the beginning. You can apply as many cycles of Chromotherapy as you like, until you feel released from the negativities. In a short time you will realize that anger, frustration, jealousy, and disappointment are appearing in a lesser frequency and at a much lower intensity. You will realize a strong deep change in your reactions to daily occurrences. You will find your environment is becoming friendlier, more understanding, and adversities will be fewer. And all this because your reactions, which at first were irreconcilable with the facts, have now been modified. You will notice that your personal relationships are improving, because you are better disposed towards people. You will feel deep relaxation, tranquility, serenity, relief.

Very often people try to "relax" in ways that require a great deal of effort, of energy on their part. In trying to calm down, they actually

stretch their nerves to the limit and become "subconsciously neurotic". They hide this emotion under a mask which sometimes depicts a "broad friendly smile", and sometimes an expression of "solemnity, "serenity", and a state of "Nirvana", borrowed from the great teachers of the East who have been imitated so much today. But things can be so much more simple. Now that you have discovered which manifestations you want to better coordinate, place the corresponding colour filter and geometric card on your spotlight, and "shower" yourselves in the beneficial light. The rest takes care of itself. Your energy batteries will become charged and you will begin to see everything more clearly, correctly, and more substantially. You can repeat a self-diagnosis every three months with the autoanalytical method.

Occasional Application of Chromotherapy

For those who do not have the time to devote to Chromotherapy every day, (but really are you not worth 30 minutes out of your day?) all is not lost. You can follow the procedure described below.

Whenever you are in a discussion and you feel it is becoming stressful, open the book to the page on stress and do what it says. When someone has angered you, treat your anger with Chromotherapy. If you have a very important appointment and suddenly you are overcome with fear, treat it with Chromotherapy. If you feel melancholy because you are all alone in the house, treat it with Chromotherapy, etc.

In general, Chromotherapy can be used

whenever and wherever it is necessary. It can be used at home, at work, if the space allows it, and on vacations. Chromotherapy can be practiced everywhere. Help yourselves to transcend the present imbalances before they become future heavy illnesses.

Frequency of Application

Chromotherapy can be applied once or twice a day. A more frequent application is not harmful, since Chromotherapy has no side effects. Quite simply, its excessive use is a waste of time. Imagine a glass under a running faucet. Once the glass is full, nothing more will happen. It makes no difference if the faucet continues to run. The water will just go to waste.

Do not keep applying Chromotherapy aiming to achieve a desired feeling. Changes in your organism follow a natural (physiological) rhythm, and they take time. Do not create more stress, in your efforts to free yourself from it. Use the colours in the proper sequence, and for the required amount of time and *everything will take place in the best timing.*

Begin by repeating the method of autoanalytical choice every three months, and later every six months; because the status of the organism is continually changing and must be carefully monitored. You will find, though, that at each subsequent autoanalysis, the factors needing regulation will be diminishing in number and intensity.

Duration of Application

The application of each colour ranges from at least 3 minutes to 10-12 minutes, maximum. The average application time is 7 minutes.

Conditions of Application

a. Position of the body: The position of the body is not important as long as you are feeling comfortable. If you know of a method to relax, use it during the course of Chromotherapy.

b. Activities: While applying Chromotherapy you can be thinking, reading, speaking, writing, painting, taking a bath or even drive, as long as the light does not obstruct your visibility. (In fact it is possible to improve your alertness and driving reflexes with the help of Chromotherapy) But do not use Chromotherapy while eating or sleeping, because the energy status of the organism does not need external influence at this time. If you are familiar with a form of meditation, you can use Chromotherapy while practicing it, to obtain even better results.

c. External Stimuli: The External auditory, visual, and olfactory stimuli do not play a role in Chromotherapy.

You may choose to apply Chromotherapy in an environment that is, as much possible, free from other stimuli. This condition may be efficient, but it is not absolutely necessary.

Refrain from listening to music that arouses specific emotions. If, perhaps, you prefer to hear music, listen to something you would consider light and emotionally indifferent to you.

Man perceives all these colour properties with some degree of difficulty. His senses have become dull as a result of the way he lives. His mind is continually overburdened and confused. And yet, there is a great deal to be gained if one concerns himself with colours and his preferences towards them, even for a short time. He will develop into a more competant and productive person in both his personal and business life. He will feel more free and less dependent upon his immediate environment. He will gradually aqcuire the ability to change his surroundings. In essence, he will develop his inner self. He will perfect himself and become more complete and powerful. Thus, he will escape whatever problems were holding him tied up until now.

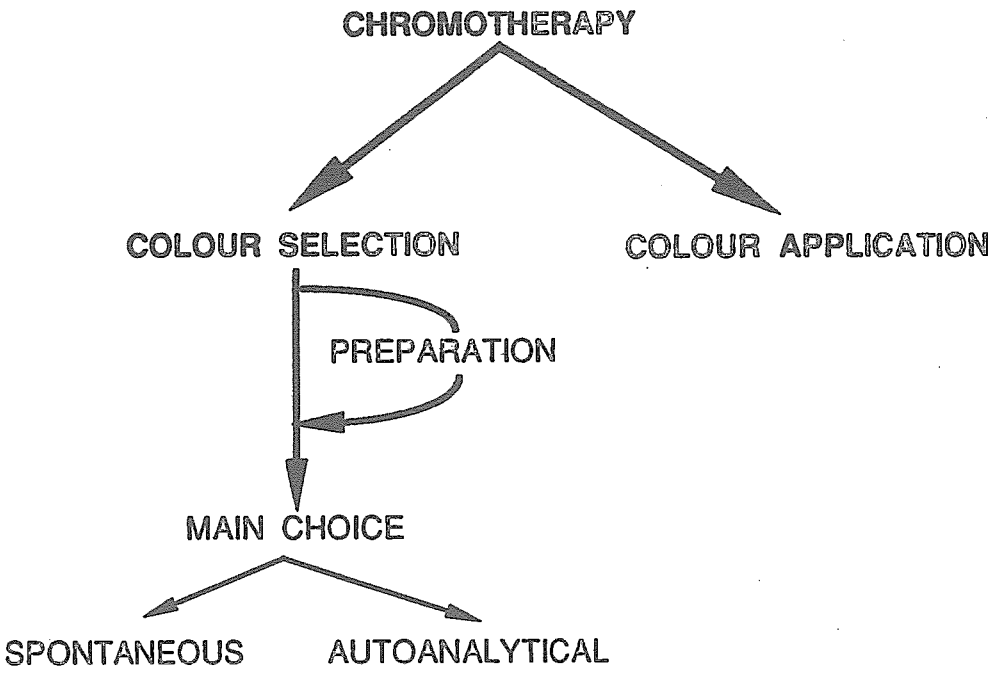
The one prerequisite to accomplish all these things is the, as much as possible, systematic use of Chromotherapy. Since monochromatic light conceals the essential nature of the colour, Chromotherapy is a very powerful method. Therefore it is necessary to follow the instructions given above, very carefully.

Chromotherapy, as well as other things in our daily lives, demand proper application and a specific use if they are to reward the maximum benefit they can possibly offer. A car, for instance, is a car only for the person who knows its use. For a primitive man living in the jungle, a car can be regarded as God, as a toy, as a storehouse, a shelter, an enemy, or whatever else; but certainly not as a car. Inversely, for someone who knows the real nature of the object

-its value, and its use- it is a means of transportation.

In the same way, Chromotherapy can be a fashion, a display, an eccentricity, a toy, etc. ***But only if is used properly***, will Chromotherapy become a limitless source of energy and benefit.

Thus, if for any reason you have difficulty in following one of our instructions, ***do not improvise***. Contact us and we will help you. If you make an undetermined and unscheduled use of colour, you will not achieve any of the benefits offered by Chromotherapy. There are no side effects. There are no negative reactions. Quite simply, there will be no benefit if it is not used correctly. If you do not know how to start a complex machine, no matter how hard you try pushing its buttons, moving its levers, and how busy you become with it, nothing is going to happen. To put it simply, if you don't use it the way it should be used, you will lose the opportunity of benefiting from its potentials.


CHROMOTHERAPY
COLOUR SELECTION
COLOUR APPLICATION
PREPARATION
MAIN CHOICE
SPONTANEOUS
AUTOANALYTICAL

Chapter 11

PRACTICAL CHROMOTHERAPY

Practical Chromotherapy

A guiding list of cases is given below where Chromotherapy is directly indicated as a means of Preventive Medicine. The terms used are based on the terminology of Applied Psychology.

PHOBIAS

Psychic (of the soul) feelings that are related to existing or imaginary threats. Normally, fear is a mechanism which mobilizes the defensive abilities of the organism. It becomes pathologic if it continues beyond the removal of the menacing, fear-inducing factors.

YELLOW
(E) INDIGO
(7) BLUE

ANXIETY

A psychic feeling of great internal agony and apprehension which leads to the disorganization and the dissolution of the personality. It creates many somatic equivalents resulting in neurovegetative disturbances.

VIOLET
(B) YELLOW
(7) BLUE

ANGER - RAGE

It is the psychic reaction which is induced when vital needs for mental or biological expression can not find an outlet or they are suppressed. Like anxiety, it can give rise to disorganization in the personality.

GREEN
(7) BLUE

TIMIDITY

A psychic feeling originating from an erroneous appraisal of ourselves, with regards to our strengths or our abilities against some adversity that appears exceedingly great to us.

(1) RED
(A) ORANGE
GREEN

GUILTS

Guilts spring from the antithesis of our super-ego to our ego. The super-ego sets forth all the established habitual tendencies, the taboos, and social ideas. The ego expresses our absolute personality, our propensities and tendencies, and the disposition for activity beyond limitations and restrictions. When the super-ego clashes with the ego, the result is guilt.

VIOLET
(A) ORANGE
(7) BLUE

GRUMBLING - PSYCHIC MISERY

This condition is lively described by the popular expression: "even his clothes bother him". It is a curious psychic feeling, something like, "everything and nothing bothers me".

(1) RED
(Γ) GREEN

CYCLOTHYMIA (alternating mood)

An emotional instability with steep and sudden elevated moods and depressions. (instability of the Thymic, ancient Greek word meaning the emotional world). The well known "UPS" and "DOWNS".

UP: GREEN
(Δ) BLUE
(E) INDIGO

DOWN: (1) ORANGE
(A) RED

ATTACHMENTS

A great social calamity owed mainly to our lack of faith in ourselves or to psychic indolence and expediency.

(7) INDIGO
(A) RED

JEALOUSY

An exhausting psychic feeling derived from a real or imaginary loss of our psychic "acquisitions" or material "possessions", as a result of competition from some rival.

GREEN
(Δ) BLUE
(Ζ) VIOLET

DISAPPOINTMENT

A common and, almost, daily feeling. It appears when our expectations of other people or situations are not fulfilled.

(E) INDIGO
(1) VIOLET

SUPPRESSION

It is an unbearable and exhausting psychic feeling that appears when the personal expression and freedom are hindered. In our age many people complain unjustly of suppresion; while others, who are in fact suppressed, overcome it by developing secondary psychic defense mechanisms. Suppression is not developed when we place restrictions on ourselves for some higher purpose. It is developed when another person(s) places restrictions on our personal freedom.

(1) ORANGE
(Γ) GREEN

OBSESSIONS

A psychic condition that appears when an idea has "stuck" in our minds. As a result it governs and determines our daily activities.

(E) INDIGO
(A) RED

PESSIMISM

Pessimism is usually preceeded by various negative experiences which influence our psychic attitude and prevent us from seeing the ever present positive side of things.

YELLOW
(A) RED
ORANGE

HATRED

An unbearable feeling that coexists with an explosive, destructive mood which is sometimes expressed, and other times not.

The main mechanisms of hatred are the perversion of the natural functioning of the emotions and the counter-replacement of the subject to which our sentiments are addressed.

ORANGE
BLUE
INDIGO
GREEN

MELANCHOLY

A psychic "cloudiness" with emotional "droplets". If this condition is allowed to get worse it could lead to depression.

(1) RED
YELLOW
(Z) VIOLET

INDIGNATION

An explosive feeling stemming from the violation of our rights.

GREEN
(A) ORANGE

LAZINESS

A very annoyning sensation of disinclination to work or activity. It can be physical, intellectual, or both.

RED
ORANGE
VIOLET

ABSENT - MINDEDNESS

A condition which often owes itself to the mind's inability to live the present, directly.

(A) ORANGE
GREEN

GREED

An excessive desire for acquiring physical or psychological and mental properties. It is related to the lack of, or underfunctioning of the feeling of contentment, fulfilment, and satiation. It is often related to subconscious insecurities.

YELLOW
BLUE

DISCONTENTMENT

An inner feeling of emptiness caused by the inequality between our expectations and the offered good. Often this inequality is subjective instead of objective, because the offered good has not been rationally and correctly evaluated.

RED
YELLOW

CLAUSTROPHOBIA

A fear creating a feeling of suffocation and chocking which urges the individual, when found in a restricted, closed area, to escape by any means available.

YELLOW
INDIGO
GREEN

IMPATIENCE

A psychic condition related to our subjective perception of the fleetness of time. Since time is eternal, without beginning or end, impatience is caused by a "ghost" which we ourselves create and then chase.

(7) BLUE
(Γ) GREEN

NERVOUSNESS

A feeling of inner tension springing from the excessive use of the Ego, the defense mechanisms associated with repulsion and transference.

GREEN
VIOLET

MENTAL FATIGUE

Almost all "mentally working" people are familiar with this condition. Especially today, when the burden of information in various fields is so great.

(7) VIOLET
(A) RED
ORANGE
(B) YELLOW

DISTRUSTFULNESS

A feeling which is connected to the individual's inability to comprehend his own capabilities or those of others. It could also be connected to an associated reflex which developed from some significant or insignificant failures. It also springs from the individual's inability to comprehend that failure can very often be turned into success, when his general abilities and capabilities are properly mobilized. (This is a quantitative mobilization, since the qualitative is already included in the definition of capability).

GREEN
ORANGE

OVERSENSITIVITY

A condition which was more characteristic at past times. Today it tends to be extinguished by the impersonal dailiness of life, which leads to other deeper disorders.

VIOLET
(Γ) GREEN

IRRESOLUTION

In our present world of duality, we come to the crossroad of "Virtue" and "Malice" almost every day. Two opposite directions. The psychic instability which hinders our decision making process, actually creates the indecisiveness.

VIOLET
(B) YELLOW

VINDICTIVENESS

This is related to the mobilization of the individual's mechanisms of action, when he is under the influence of hatred or other negative emotions.

ORANGE
(7) BLUE
GREEN
VIOLET

LACK OF WILL

A lack of will is associated with a curious inner feeling of laziness. Very often it is expressing inhibitions and a strong proneness to suggestions.

(A) ORANGE
INDIGO

COMPLEX

When one of our physical or psycho-mental characteristics differs considerably from the average, an antithesis develops. When this contrast is over-emphasized, it leads to a complex which can be either of superiority or inferiority, positive or negative.

INDIGO
ORANGE
(Γ) GREEN

" ...Teach people to live with colours, to give them the opportunity to learn nature...."

ALISTON

Chapter 12

CHROMATICS IN EDUCATION

Chromatics in Education

Almost two decades ago, black colour was replaced by green on school blackboards. This was due to the fact that research psychologists proved that green has a more balancing and calming effect, while black induces boredom, idleness, and an aversion to the lesson.

A group of psychologists in New York performed a study in a kindergarten, using a system of three rooms containing educational toys. The rooms were painted blue, yellow, and pink, respectively. The children who had difficulties in adjusting to kindergarten were passed successively through each of the rooms, staying in each for a short while to play with the toys. After leaving the third room, the children were found to be more tranquil, and had a greater understanding and disposition towards learning.

Chromatics can play a very significant role in the educational system. Except for the green colour of chalkboards and desks; the rest of the students' school environment today is not very conducive to learning. Different shades of grey, and in a few instances ochre, are the predominant colours in the overwhelming majority of schools. These shades, however, encourage results which are completely different

from the ones every educational system aspires to achieve. Thus, the students develop a feeling of being coerced and flattened. Students though are in that special period of life where they are full of vitality. (which does not find proper outlets) This comes in conflict with the school environment, where they spend the greater part of their day. Consequently the students develop a feeling of repulsion. As a result of all this, the educational process is hindered tremendously, and the level of education itself, as well as its effects are reduced. A proper chromatic change in the school environment could offer an invaluable help to overcoming a problem of national importance.

Chromatics does not confine its help only to students. It can also make the work of the educator -one of the hardest today- much easier. Aside from the overall calmness, discipline, and inclination towards learning on the part of the student, an educator needs inspiration, intellectual clarity, readiness, and a great ability in communicating ideas. All this, plus much more, can be achieved with the appropriate choice of colours in the school environment.

It is clear from the above that the school environment can be properly arranged in order to be more attractive, more inducive to developing the inspiration and disposition towards learning, and not tiresome. Chromatics is also used in other sectors of the educational system. Special Chromatic tests and toys are used to increase the psychological and mental capacity. Chromatic toys accompany the child almost from infancy,

up to the end of the first stages of educational learning. The toys increase in complexity as the child grows and matures, and eventually are transformed into specially designed tests for the higher learning stages. Thus, as the child is growing and maturing, it is accepting easily and willingly -without the feeling of being forced, which would otherwise impede its progress- the help of Chromatics in developing higher intellect, and increasing its learning ability, assimilation, retention, and concatenation of ideas. With this type of preparation, it is obvious how perfect the students will become, and how much the goal of education is aided by the methods of Chromatics.

Chromatics is not limited to school and academic education only. It can be used to create an environment conducive to greater communication and also reduce the friction between various types of individuals which have to follow some predetermined program. Thus, it can be applied to professional training, irregardless of the age of the trainees.

Chromatic instruction concerns every type of professional who is seeking new horizons of applications, or a more complete awareness within his field. Chromatics is addressed to cosmeticians, graphic designers, decorators, advertisers, managers and professional consultants, doctors, physiotherapists, etc.

The use of the methods of Chromatics leads to completely different -infinitely more pleasing and productive- work conditions in every and any profession.

"...In every serious philosophical issue uncertainty reaches down to the roots of the problem. One must always be ready to learn something completely new...."

WITTGENSTEIN

Chapter 13

CHROMATICS AND MAN'S ENERGY HYPOSTASIS

Chromatics in Relation to Man's Energy Hypostasis

Many scientists, at various times, have referred to man's Energy Hypostasis. Superior minds like Heracletus, Hippocrates, Da Vinci, Goethe etc., have spoken of it. Today famous scientists are studying the unexplored field of man's Energy Hypostasis, and trying to bring its wisdom back into light. Amongst these scientists, Dr .W. J. Kilner, a physician, is a personality whose efforts are worth mentioning more.

In 1869, Dr. Kilner began working at St. Thomas Hospital, in London as a surgeon. At the same time he was researching electrotherapy as he was in charge of the newly established radiology department of the same hospital. His research revolved around the radiation of man's body -its Aura.

Around 1897 he learned about the studies of Baron Von Reichenbach and Dr. E. Babbitt, with regard to the "Personal Power Drive" as Reichenbach called the "bright radiation of the body". In parallel he learned of the announcements of clairvoyant individuals regarding the existence of a vivid luminous radiation around the human body. But Kilner wanted to keep his research purely within a

scientific framework. So he ignored the non-scientific sources of information until he had completed his examination and study of 60 different cases. He considered that number to be sufficient for determining the objectivity of his method. As he himself said, when he made his work public for the first time in 1910:

"... it must definitely be emphasized that we are not invoking clairvoyance in the least, nor are we occultists. We want to emphasize to our readers that our research was completely scientific, and can be repeated by anyone who has enough interest in the subject".

The results of Kilner's researches were more than shocking and impressive. By using special substances, he constructed a special screen,"Kilner's screen", with which he succeeded in making the mechanism of chromatic vision sensitive to the radiation close to ultraviolet light. In this way, he was able to see - literally- something which at first appeared as an "obscure greyish cloud which surrounded the patient, and whose characteristics differed from one patient to another, according to his state of health and other idiosyncratic features".

After many experiments, he succeeded in distinguishing at least three parts of the aura, and in giving their description. A synopsis of which is as follows, (for healthy individuals):

a. The inner part of aura, having a width of approximately 0.5-1cm, appears as a dark area without any morphological characteristics, and with, almost always, constant dimensions.

b. The middle part of the aura, whose dimension is again least changeable, starts at the end of the first section and extends outward. It can reach a distance of 10 - 12 cm.

c. The outer part of the aura begins at the end of the mid-section and extends to a different length, depending on the constitution of the particular individual at the precise moment he is being observed.

d. Under favourable conditions, a "continuation" of the outer layer of aura can be observed of undetermined length and limits.

e. The appearance of all the above mentioned layers of the aura depends upon -at least- the state of health of the individual under observation.

"Kilner's Miracle", however, did not stop there. In his effort to scientifically codify the vast amount of knowledge he had acquired, he observed the aura of patients who had undergone a thorough and detailed medical examination. Thus, he reached the point where he was able to correspond a sufficient number of the aura's morphological features with a number of diseases. Indeed, in continuing to prove the truthfulness of his conclusions, he even used the opposite approach. Characteristically, he refers to the case of a pregnant woman in which he had diagnosed the death of the foetus. His diagnosis was later verified by a classical medical examination.

More recent studies showed that the specific

health state of the individual is pictured in his aura. In essence that means, each organ of the organism corresponds to a part in the aura. Thus, if a particular organ at some point begins to function improperly, it will be depicted in the corresponding part of the aura. As a matter of fact, scientists maintain that the abnormalities in the functioning of various organs -the diseases- are depicted in the aura, much sooner than they are revealed in the physical body. One can consider for a moment, the effect "the reading" of the aura will have on preventive medicine, in public and personal hygiene.

The individual's state of health, however, is not the only thing depicted in the aura. Its form and texture are affected by mental states, thoughts, emotions, etc. All of these are very clearly pictured in the aura. Their depiction in the aura does not alter only the aura's design, it is also concerned with the aura's colour. For example, an individual with great intellectual abilities, bright, educated, etc. will have an aura in which blue is the most predominant colour. A vigorously spiritual man will produce a bright yellow-gold aura. Have you ever wondered why the halos of saints are painted in that exact colour? The instant an individual becomes governed by anger, his aura immediately turns to vibrant red.

If an individual develops problems in retention, this will appear in his mental aura in a specific manner. If someone develops mental fatigue, this will also become evident in his mental aura, as it will produce certain

particular characteristics. If someone develops an anxiety neurosis, his aura will have a special form and corresponding colour. If someone suffers from phobias, his "psychic" aura will be flooded by the specific colour which represents the existence of the chronic fear. It will also have a particular arrangement.

It appears then, that aura is distinguished into "physical", "mental", and "psychic" corresponding to the functions of the organism it is related to. The aura can provide a wealth of information. It becomes evident that the study of the aura's behaviour and changes can open new horizons in Psychology and Psychoanalysis. In general, it can help us to better understand the way the human mind functions.

However, the possibilities offered by the study of man's aura do not stop there. Experiments, which have been performed by the Institute for Human Evolution (INHE), and other similar organizations and institutes, on an international scale, have proven the fact that the influence of a colour on man brings about significant morphological changes in his aura. Whether we photograph, film or simply observe an individual's aura at the time he is being focused upon with a monochromatic light, it becomes evident how his aura immediately begins to vibrate, to change colour, form etc. The fact that coloured light influences the human aura and changes it, proves once again how direct is the influence Chromotherapy, and in general Chromatics, exert on man.

ABSTRACT

This book in hand is a treatise on colour. As such, everything it contains has already been tested and proved in the field of science. International computer data on the latest scientific research reports has been used, to ensure integrated, up-to-date and valid information. The most important pieces of these data, are presented -along with clarifying comments- in two separate chapters.

The purpose of this treatise, is to inform the reader -be it him who posesses scientific knowledge, or the unspecialized one- about the role colour can play in everyday life. There are two main goals: at first, a scientific approach, presentation and documentation of the latest breakthrough in scientific research about colour. Worldwide computer data are gathered and presented along with clarifying comments. The primary concern here, has been to present the available data in a scientific fashion, as well as in a way that would make it easily comprehensible by the layman.

The second goal is of both enhanced practical value and great scientific interest. It concerns the application of the conclusions scientists were led to, in fields of everyday life. The way colour is being used in a sufficient nunber of cases -ranging from medicine and education to commercial advertisement and games- is being

examined. Recently, studied, more subtle properties of colour are examined too. Under the light of such properties, new ways of using colour are recommended.

The importance of colour in fields like medicine, psychology, biology, folklor and religious tradition, policy, entertainment, education, advertising, decoration, cultivations, animal-breeding, and traffic regulation, is examined. Then, some elements of physics, physiology and psychology of colour and colour perception are given, in attempt to familiarize the unspecialized reader with certain useful terms. Following, the first group of scientific report is given. References are made to doctors: Burmer, Norwood, Ananthaswamy, Fisher, Cohen, Neff, Brown, Damas, Gustafson, Hagelin, Janson, Parver, Natarajan, Van Zeelenad, Verdgaal, Philips, Hunter, Fraikin and Rubin.

Definition of Chromatics and a detailed description of its fields, follows. The part of Chromatics which enables any user to achieve self-adjusting, as well as, self-organizing (baring the title Chromotherapy), is discussed in detail. The second group of scientific reports, follows. References are made to: Dyer, Morton, Chambers, Luscher, Clydesdale, Jacobs, Suess, Pellegrini, Schauss, Birk, Peretti, Bauer, Berlin, Kay and the Institute for Human Evolution (IN..H.E).

References to the subtle, inherent properties of the seven primary colours of the visible spectrum, follow. Most interesting pieces of information are given, being actually the

quintessence of all the latest international research programms. An attempt is then being made to analyze the factors -conscious or not- that guide a chromatic preferance. The influence from the environment, the fashion, the conditioned reflexes, the indirect obligations and the established culture are established and discussed. In the description of the method of Chromotherapy, which follows, a way is being given to help the reader overcome all these obstacles and find his real Crhomatic Identity.

Finally, a list of cases for which Chromotherapy is indicated is given, followed by a list of fields in which Chromatics can be applied. An epilogue and an invitation to the readers, close this elaborate book.

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