

## PHOSPHOR

EDWARD WHITMONT, M.D.

*Phosphor*, in its active yellow form, exhibits a phenomenon which is unique among the non-radioactive substances. It produces light without heat independently of any exogenous irradiation. This luminescence is not incidental to a disintegration of the particles of matter but to the synthesis of a more complex compound, the oxide. Whereas the disintegration-products of radioactivity are rather inimical to vital functioning, the oxidation products of *Phosphor* are more closely related to living activities and actively participate in metabolism and cell structure. Unlike radioactivity, the *Phosphor* luminescence appears positively integrated into the cycles of life-functioning.

The oxidation of *Phosphor* is furthermore characterized by its gradual and slow pace. Rapid oxidation leads to loss of luminescence by rapid consumption in burning, while heat without oxygen abolishes the luminescence by converting the yellow phosphorus into the red, inactive modification. Thus, even in the most elementary form, the light activity is distinctly defined as different from heat processes.

Within the living organism the luminescence of ingested material can still be demonstrated, even after days, by the Mitscherlich process as used in forensic medicine. In spite of being exposed to the tremendous oxidizing power of the blood, *Phosphor* thus maintains its own independent autonomous pace and rhythm within the organism. We are justified in assuming that what is so readily demonstrated in the gross, material process would not necessarily be abolished in the finer state of colloidal dispersion where, as yet, we lack the proper means for direct identification. Moreover, that which is a physical phenomenon in the crude substance becomes a dynamic tendency in the potentized

intramolecular functioning, the probable basis for all coordinated life-functioning.

Herewith is set forth a preliminary hypothesis of an autonomous "inner light" regulation, or metabolism, analogous to the autonomous inner heat regulation. Just as the autonomous heat regulation depends upon the variations of outer warmth in its response, so may the regulation of our "inner light" depend upon the interplay with outer light, yet in its own sphere be self-regulating.\*

In order to test the validity of our hypothesis our first step will be a survey of what is known about the function of light in relation to our psychosomatic unit.

Starting our investigation with the evaluation of the psychological aspect, we at once note the interesting fact that the word, "Phosphor," translated from the Greek, means "carrier," or "conveyor of light." The identical meaning is encountered in the Latin word, "Lucifer." Phosphor—Lucifer is the angel who rebelled against the Godhead and conveyed the light of reasoning to men so that they "shall be as gods, knowing good and evil (Gen. 3:5).

Carl G. Jung points out that these allegoric and picturesque tales of biblical, mythological and gnostic or alchemistic intuition convey actual and real insight of the soul into unconscious creative realms which are presented to our consciousness in the form of symbol-images. The treasure of wisdom from this material far transcends what slow evidence our gradual conscious research has been able to gather. None of it need be accepted at face value, but it may indicate new directions for research which will enrich our knowledge providing we can find confirmatory evidence.

\* The postulate of a light "metabolism" where no light at all can be seen directly within the body may at first appear strange. Yet even this difficulty may resolve itself in view of recent discoveries concerning the regulation of physical functions by radiation-like phenomena arising within the organism. It may only be a limitation of our present techniques which prevents us from direct "visualization" of such radiant microphenomena.—  
E. W.

According to the psychoanalytical experience of Jung, light, as a symbol or image of a transcendental force-principle, represents the "inner spiritual man," as well as the qualities of consciousness, wisdom and intellect. This meaning becomes clearer when contrasted with the symbol of darkness which stands for the realm of the unconscious psyche. Of particular interest to us is the concept of the "dark light," which appears in an alchemistic source and would be analogous to our postulated invisible, internal light activity of *Phosphor*. In this alchemistic "dark light" we can discover a similarity to the light that "shineth in the darkness; and the darkness comprehended it not" (St. John 1:5). As a matter of fact, in this alchemistic source the "dark light," as inner light, is identified with the "monogenes" which means the "only begotten one," the "Son of Man," the "Light of the World." Thus the inner light, as a conceptual mental entity in the image of Lucifer, the materialistic intellect, arouses men from a state of child-like, paradisaical, unconscious innocence and exalts itself in the "Son of Man" to represent the highest and sublimest force-principle of universal and personal consciousness.

Upon further scrutiny of the symbol material we encounter the principle of inner light as "logos" or "nous" (insight) identified with "pneuma", meaning soul, but also breath. Thus Adam, of whom the book of Genesis records that "God breathed into his nostrils the breath of life; and man became a living soul" (Genesis 2:7), has in gnosis the given name of "light" which is to indicate his inner spiritual entity. Lucifer, the representative of the intellect, is depicted as an air spirit.

Another representation of the light-carrier is Prometheus who, according to the Greek legend, seized the fire from the heavens for man and was bound by Zeus to Mt. Caucasus to have a vulture daily consume his liver. Prometheus, whose name literally translated means "forthinker", is also called the "light man" or "inner man" in the gnosis.

The vulture who devours his physical liver again symbolizes thought and intellectualism.

In the Paracelsian and alchemistic language the terms *Phosphor* and *Sulphur* indicate the tendencies which are sublimating, dissolving and etherizing as contrasted to the concentrating, crystallising tendencies expressed by *Sal*. Also here, *Phosphor* is associated with light, *Sulphur* being linked with heat. *Phosphor*, *Sal* and the balancing *Mercur* are to be found as dynamic principles everywhere in nature, according to the alchemistic concept. In the plant, for instance, *Sal* represents the root, *Phosphor* the blossom. On the human level the *Sal* force would mold an introverted character, *Phosphor* an extroverted one.

Jung also refers to the blossom as the symbol of the spiritual self, thus confirming the uniformity, throughout, of the meaning of the Phosphor-light symbol as the representation of spiritual consciousness.

To summarize, we may state that the force-principle, called *Phosphor*, has to do with inner spiritual light, insight, intellect and ego-control. As flower, it reflects the spirit of the spheres, refining and etherizing. As "pneuma", it expresses itself in breath or respiration (Homer still has his heroes think in their diaphragm) and, as vulture, it destroys the liver. The main directions of the clinical *Phosphor* effects already stand out. If this all appears utterly fantastic, we must remember that Jung's analytical methods have stood the acid test of clinical confirmation and are already now accepted as a sound scientific approach. If we can draw enlightenment for our problems from the same source, if we can confirm our hypothesis with the available clinical and experimental evidence and succeed in explaining hitherto unexplainable facts, the postulates of unbiased and exact clinical investigation are satisfied.

We turn now to the biologic effects of light.

Plants kept in complete darkness do not grow. A small, insufficient amount of light produces stooping or creeping overgrowth; an excess of substance is produced at the

expense of stamina and colour (compare mushroom and fungus growth). Conversely, mountain and desert plants, exposed to a super-abundance of light, develop extremely short but sturdy stems (even when sheltered from wind) with particularly bright, beautifully coloured blossoms.

In the animal organism, strongly growing, embryonal organs have an increased radiosensitivity. Purely vegetative growth is sensitive to over-radiation.

On the human organism the effect of light is described as generally vitalizing and strengthening, stimulating perception and the ability to think. Finsen especially stresses the fact that this effect is not merely psychological but takes place on the biochemical level. So profound and basic is this awakening effect that it abolishes the soporific, depressing, central nervous effect of anaesthetics and intoxicants; in order to induce anaesthesia in high altitude, a greater concentration of anaesthetic is required, not only in the alveolar air (which could be explained as due to the lessened air pressure), but in the bloodstream itself. A greater awareness of the nerve centres has to be overcome. Similarly, a higher concentration of alcohol is required in the bloodstream to cause intoxication. A basic antagonism is indicated here between light and the consciousness-depressing effect of anaesthetics and alcohol; this antagonism appears not limited to the functional sphere only, but effects also the organic physiologic level. The fact that light stabilizes an overexcited nervous system points in the same direction (excitation is similar to the primary effect of alcohol and anaesthetics). The sympathetic tonus is reduced and the blood pressure decreased. Thyroid disturbances are favourably affected.

An analogy to the increase of stamina and firmness in plants can be found in the skeletal effects of light. It prevents and cures rickets and promotes the healing of bone fractures, as well as of wounds in general. In Swiss experiments a marked statistical difference is shown between

patients in well-lighted rooms and those in darker rooms in the time required for the union of bone fractures.

Light increases the blood calcium level, stimulates motor activity and circulation, favourably affects the coronaries, and raises the minute volume of the heart. The erythrocyte count is increased.

Finally, there is a definite effect upon the respiratory system: Light increases the ventilation of the lungs and the depth of breathing. Pulmonary tuberculosis is favourably affected by small amounts, yet extremely sensitive to strong light radiation, while the nonpulmonary Tb. responds favourably to any degree of radiation (here we already may note the close similarity to the sensitivity to *Phosphor dosage*). Trivial respiratory infections vanish most rapidly in the intense radiation of high altitudes.

There is a general anti-infectious effect of light which is probably due to increased resistance as well as to antibacterial action. Over-radiation on the other hand promotes local as well as general inflammatory response with increased protein breakdown and febrile reaction.

Summarizing, we have:

1. A mental direction of the light effects, in enhancing and stabilizing the functions of consciousness and in its antagonism to the action of anæsthetics.
2. A general effect, regulating growth and enhancing general vitality and resistance, as well as the firmness of the physical structure.

These two, the mental and general, effects provide the key to the whole pathology, as we shall see, and determine the effects upon particular organs, namely the respiratory, circulatory and locomotor systems.

So far, this exposition of the light physiology seems already to agree surprisingly well with the main directions suggested by the symbolical meaning of light as "nous", insight, and "pneuma", breath.

How does all this relate to the more detailed symptomatology of *Phosphorus*?

According to our hypothesis a normal state of *Phosphor*-functioning would consist in the undisturbed action of the inner light. Since a complete paralysis of this function, absolute darkness as it were, probably would be incompatible with life, we might liken the clinical *Phosphor* disturbance to a state of inner twilight. How would such a twilight state be expected to express itself?

In our analysis, we may well enough follow the classification arrived at in the summary of the light pathology:

1. Effect upon the consciousness as opposed to the effects of anæsthetics and intoxicants.

The gradual ascendance of conscious and cerebral control represents a relatively recent achievement of the gradual evolution of man. If this full light of consciousness is weakened, impulses will come to the fore which are normally relegated to the dark pool of the unconscious. A relapse occurs into an earlier, more instinctive, or comparatively infantile state. Atavistic reactions like *clairvoyance*,\* *clairaudience* or *ecstasy* may occur, *apparitions* may be seen, unaccounted for and consequently disturbing and threatening to the patient (*fanciful and imaginary notions, faces grinning out of every corner, as if something would creep out of every corner, etc.*).

When the borderline between the accustomed daily reality and the assumed unreality of the unconscious weakens, when the unconscious invades the upper stratum of conscious reality, the response is always *terror* and *fear* (Jung). *Phosphor* has *fear of being alone*, since the presence of people helps to assure the physical reality against the invasion from the darker strata, *fear that something may happen, of death, fear of the darkness, of evening, night* and, characteristically enough, of the *twilight* which is the outward projection of the inner psychological state and

\* Symptoms directly quoted from the Homœopathic Materia Medica are in italics.—E. W.

consequently aggravates the total psychosomatic state. There is also a striking similarity of these symptoms to the infantile fear pattern.

However, the classical picture of what happens when the inner light acting in our moral consciousness is dimmed is provided experimentally by the observation of drunkenness and anæsthesia. Here the conscious and cerebral control is removed and the individual allows himself to revert to a quasi-infantile state in which the instincts hold free sway. Light was found to be directly antagonistic to the action of alcohol and anæsthetics. Moreover, the symptoms and organic changes caused by the aliphatic lipoidsoluble anæsthetics (alcohol, ether and chloroform) which resemble one another in their main actions, when considered together, show a most striking similarity to the *Phosphor* pathogenesis, thus suggesting the actual relevance of this material for our purpose (for brevity alcohol, ether and chloroform, when not especially differentiated, will be referred to simply as anæsthetics).

The effect of intoxication, which resembles also the beginning of anæsthesia, is described as follows:

It depresses the central nervous system, especially the higher functions. It simulates stimulation, chiefly by lowering the normal restraining functions . . . resulting in euphoria, comfort and enjoyment, to elation and vivacity; then downward through loquacity, garrulity, emotionalism, either affectionate or quarrelsome or both, to violence, then hebetude, stupor and finally coma.

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This pattern is most closely duplicated in the *Phosphor* pathogenesis. The provings show a polarity of *excitability and ecstasy* with lowered inhibitions followed by *indifference, stupor and exhaustion*. The *Phosphor* patient resembles the devotee of Bacchus in being *pleasant, sympathetic, of sanguine temperament, changeable disposition or quarrelsome and easily angered, craving company, loquacious, amative, easily enthused* but unreliable, without perseverance, *impressionable and very susceptible to external influences with quick perception, increased flow of thoughts which rush through his mind* (stimulative phase), subject to states of *mania of grandeur* yet quickly given to *exhaustion and fatigue* (depressive phase), *unable to stand mental tax, unable to think and worse from mental exertion, becoming hyposensitive, apathetic and indifferent with failing memory and concentration, aversion to work ending in stupor and coma*.

Emotionally, the loss of inhibitions makes him *easily excited, getting beside himself with anger, vehement, perspiring from excitement* (as does the drinker and the anaesthetized patient), *fearful, cowardly, sad, hysterical, alternately laughing and crying, or just tearful and gloomy, weary of life, and misanthropic*.

An extreme loss of moral inhibitions results in the ascendance of the most animalistic impulses: *lasciviousness, uncovers his person, seeks to gratify his sex instincts no matter on whom, erotic mania, sex excitement and shamelessness*.

Obviously, the similarity between the *Phosphor* picture and anaesthesia (the somatic sphere of which will be discussed later) holds therapeutic implications. *Mania-a-potu*,

*delirium tremens*, ill effects of ether and chloroform are clinical Phosphor indications.

2. Effect on growth-regulation and general vitality and resistance.

The lack of stamina within the mental personality is paralleled by a loss of stamina in the physical sphere. We may compare this with the analogous disturbance of plants with insufficient light exposure. Such plants show over-growth, with long, stooping, pale, weakly stems, or the abundant over-production of soft material as found in mushrooms and fungi. Extremest light privation, of course, leads to stunted growth.

The materia medica of Phosphor lists: *Feeble constitutions, born sick, grown up slender, young people who grow too rapidly, stooping, bad posture, stunted growth; chlorotic girls who grow too rapidly and have suddenly taken on weakness, pallor and green sickness* (Kent). The failure to form chlorophyll in the pale, lightless plants or mushrooms has its counterpart in the deficient formation of hæmoglobin; moreover we remember that light increases the red cell count. Anæmia thus becomes an obvious finding in a state of disturbed light-functioning. In analogy to the lack of the generally vitalizing effect of light, the inner twilight state of Phosphor has the typical *adynamia; mentally and physically exhausted, always tired, need of rest; easily weakened by loss of vital fluids; empty, all gone sensation in chest* (the chest, the seat of the "pneuma", being particularly under the light-Phosphor influence), *lack of vital heat*. The exhaustion which follows the mental over-excitation (see above) is augmented by this constitutional physical lack of resilience. *Emaciation* and *marasmus* are the final states of the extreme mental and physical exhaustion.

Progressive adynamia is commonly associated with failure of the adrenal glands, and, actually, Phosphor poisoning depresses the adrenals. In turn we are led to assume

a close association of the adrenals to our postulated inner light-metabolism by the fact that they regulate the formation of melanin, the dark pigment in skin, hair, retina, etc., which is the organism's response to light. The *Phosphor* type with its lessened light activity and reduced adrenal functioning is more often found to be *blond, soft-haired* (also, the hair growth, as such, is under adrenal control) and *light-complexioned*.

The adrenal disturbance also explains the circulatory and cardiac weakness with lowered sympatheticus tonus (adrenalin is the sympatheticus hormone), as well as the peculiar modality of the *craving for salt* (Addison's disease has sometimes been favourably affected by massive salt doses).

While younger people furnish the analogy to the overgrown stouping plant, the fungus- or mushroom-like tendency of abounding growth is found where a longitudinal expansion no longer is possible. Since the normal channel of growth is blocked, the dammed up tendency expresses itself in tumour growth. It is not by chance that tumour cells resemble embryonal cells and that both have an increased radiosensitivity as the expression of a more precarious light balance. The pathogenesis of *Phosphor* includes *cancer* and *fibroids*.

The personality described so far, devoid of mental firmness as well as of vital stamina, is bound to be a drifting straw, an almost helpless victim of outer influences and inner emotions. The provings account for this by eliciting *oversensitivity* to almost any outer and inner factor (viz., *light, noise, odours, touch, electricity, thunderstorms, changing weather, dampness, etc.; mind too impressionable, excitable, etc.*).

Finding no source of strength within himself, he must look for support from without thus always depending and leaning upon others: *desire for company, fear of being alone, desire for and better from rubbing, massaging and mesmerisation*.

When the symptoms are confined only to potential tendencies, rather than the extremer manifestations which we described, the average well-known *Phosphor* type results:

A sociable, sympathetic, pleasant person of rather sanguine temperament, very adaptable, enthusiastic but unreliable, with but little perseverance and strength of character, drifting with the current; probably quite artistic, given to day dreaming and romance, sensitive and easily influenced; he looks tall, slender, narrow chested with fair, transparent skin, soft hair and delicate eyelashes, is easily exhausted and has but little physical strength and staying power.

All in all he is a truly flower- or butterfly-like being, thriving in the sunshine of favourable circumstances but wilting in the darkness and coldness of adversity.

If we contrast this *Phosphor* blossom with the slow, steady, persevering, introverted *Natrum mur.* type which typifies the alchemistic "sal", or root principle, we have an impressive example of the deep intuitive insight into the secret workings of nature as expressed in this symbol terminology.

The remaining "particulars", symptoms referred to specific organs, unfold themselves out of the same two main directions of light:

A—The mental effect upon consciousness as opposed by anaesthetics leads to the action upon the

1. Nervous and muscular systems and lipoid metabolism
2. Digestive system
3. Circulation and respiration
4. Oxidation mechanism

B—The general effect upon growth, general resistance and stamina explains the action of *Phosphor* upon the skeleton and the calcium metabolism.

(To be Continued)

much straining with pain in back. All symptoms worse 4 to 8 p.m.; this remedy will prove curative.

Dose: 3 pilules of the 12c potency every morning and evening.

*Sabal serrulata*. This remedy is useful in the acute stages of inflammation and hypertrophy. The gland is hot, painful and swollen. Difficulty in passing urine with burning pain on passing.

Dose: 3 pilules of the 3x potency every 2-4 hours.

*Thuja*. Frequent pressing to urinate with small discharge, patient strains much. Urinary stream split and small. Sensation of trickling after urinating. Stitches from rectum to bladder. Discharge of prostatic fluid in the morning on wakening. Desire sudden and urgent; but cannot be controlled.

Dose: 3 pilules of the 3c potency every 4 hours.

—*Heal Thyself, July, 1949.*

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A—The close similarity between the mental symptoms of *Phosphorus* and the lipoid-soluble anæsthetics, which, as we shall see, is paralleled by almost identical physical effects, signifies a fundamental basic correlation between *Phosphor* and the anæsthetics. We are entitled to the conclusion that those physical symptoms which are common to both of them, express the organic changes which result from a reduced state of consciousness and ego-control, the weakened inner "light man."

1. Anæsthetics paralyze the central nervous system by virtue of their lipoid affinity and solubility. Apparently,

as one result of this selective lipoid toxicity, lipoid and fat infiltration occurs in various organs (liver, heart, muscle, etc.).

The lipoid affinity of *Phosphor* is well enough known: *Phosphor* occurs in the serum almost exclusively in the form of phosphor lipids, which are considered important structural as well as functional elements of the nervous system. Subsequent to the loss of control of the higher centres, as described, organic nervous disorders will occur as the result of the disturbance of the lipoid metabolism. The modality, *worse from rising*, finds its explanation in the fact that in the upright (awake) position the conscious cerebral control is supposed to prevail, while the horizontal position corresponds to the function of lower centres during sleep as well as to the animalic (with horizontal spine), instinctive level. The many organic nervous symptoms need not be enumerated here in detail.

Also, the muscular apparatus with its close functional association to nerve and bone (see later) will participate in the *Phosphor*-induced disturbance (the muscle function depends upon hexose phosphoric acid as intermediary product for its function).

The lipoid infiltration of anæsthetics is duplicated in the fatty degeneration of liver, heart and other organs which occurs in *Phosphor* poisoning. Of special interest to us is a symptom consisting of muscle degeneration with simultaneous fat infiltration, the *muscular pseudohypertrophy*, a leading clinical *Phosphor* indication.

It is of interest to remember that the childhood state is characterized by a relative abundance of fat deposits. Mentally and emotionally, the child, with its undeveloped sense of responsibility and ego-control, seems to represent a quasi-physiological *Phosphor* state (growing organisms, of course, are particularly sensitive to *Phosphor* instabilities merely by virtue of their growing). The tendency to fat deposits, shared alike by child and chronic alcoholic, thus presents itself as a characteristic somatic feature of the

childish, careless frame of mind. We may recall the intuitive recognition of this fact in art, as expressed in the immortal Falstaff, and Caesar's words: "Let me have men about me that are fat . . ." (Shakespeare, *Julius Caesar*, Act 1, Scene II).

2. Anæsthetics cause gastrointestinal irritation (alcoholic gastritis, nausea and vomiting of alcohol, ether, chloroform). *Phosphor* shows a correspondingly similar irritative tendency leading to its long list of clinical indications in this sphere. Of special interest to us are the modalities of the *craving for salt and spices* and the *desire for ice-cold water which is vomited as soon as it gets warm in the stomach*. These symptoms of *Phosphor* are quite characteristic for the disturbance of the drinker, as well (salt herring for the morning after, etc.). An empty stomach makes us light-headed and faint, eating restores us to ourselves. Similarly, eating counteracts the effects of intoxicating spirits and the light-headed *Phosphor* patient is *better from eating*.

The similarity between the *Phosphor* hepatitis and the acute yellow atrophy with fat infiltration of the chloroform liver has been referred to already. Moreover, *Phosphor* causes liver cirrhosis, thus paralleling the cirrhosis of alcohol. Recently, this alcohol cirrhosis has been associated with a protein deficiency; *Phosphor* poisoning which leads to an increased loss due to breakdown of the protein bears out even this detail.

The intimate relationship between liver function and synthesis of Vitamin K and fibrinogen, along with the influence of the disturbed calcium balance (see later), explain the hæmorrhagic tendency of *Phosphor* which is duplicated again by ether.

Anæsthetics cause hyperglycæmia and glycosuria. So does *Phosphor* by inhibiting the synthesis of glycogen in the liver. Diabetes frequently occurs in constitutional types who appear not firmly rooted within themselves but are of a rather soft, dreamy type, very susceptible to the disinte-

grating effect of emotional shocks which so often were found to have caused diabetes.

Thus the general metabolic effect of *Phosphor* fits into the pattern of the disturbed or, if we use our symbol picture, shackled "light man" who suffers the vulture daily to destroy the liver.

3. Anæsthetics impair the respiratory and circulatory apparatus: bronchitis, pneumonia of ether, heart failure of chloroform, fatty heart of alcohol, chronic alcoholism predisposing to pneumonia. *Phosphor*, likewise, is one of the outstanding remedies in those very conditions. The paramount position of the respiratory and, to a somewhat lesser extent, of the circulatory sphere within the pathogenesis of *Phosphor* and anæsthetics draws our attention again to the identification of "nous" with "pneuma", mind with breath, in the analytical symbol interpretation. Yet, how, exactly, would our consciousness reflect itself in our physical breathing? Since the question probably never arose in any research work, only few facts are available to us for attempting an answer. Respiration and pulse rate differ during sleep and wakefulness, but also during a state of strained attention. Forced overventilation produces tetany, not unlike the convulsive state caused by overdoses of stimulants (tetrazol). In the Yogi training breathing exercises seem to play a part in helping to bring about a change of consciousness.

Breathing and circulation as active functions arise first at the very point of evolution which is characterized by the transition of the merely living, soulless plant to the perceiving animal. Breathing appears to be nearer to our conscious functioning than circulation which responds more to emotional impulses (all respiratory muscles are subject to voluntary innervation). This is in accord with the fact that in the development of the species as well as of the individual (biogenetic law) a circulation is established long before lung breathing appears. Thus the lung breathing



actually seems to be related to an evolutionary, relatively further advanced level of mental development.

Light which enhances consciousness was also found to strengthen the respiratory system.

For a full explanation we are still at loss. However, these facts may make us less unwilling to take into serious consideration for further research the likelihood, at least, of the association of mind and breath, "nous" and "pneuma", as two phases of the metamorphosis of the light principle.

4. Anæsthetics lower the oxygen consumption of the tissue cells, poisoning resulting in oxygen starvation. *Phosphor* seems to have a balancing or gently stimulating effect upon cellular oxidation analogous to the slow, but steady in vitro oxidation which maintains its luminescence (larger doses paralyze, small *Phosphor* doses stimulate cellular oxidation). A bridge is thrown to the disturbed growth process by the fact that tumour tissue is characterized by lessened cellular respiration. *Phosphor*, when curative in tumour cases, would thus change the anoxybiotic respiration of the tumour cells back to the normal oxybiotic type.

A correlation may exist between this anoxybiotic type of cell metabolism and the increased protein breakdown which is common to toxic doses of light, anæsthetics, and *Phosphor*. As the bloodstream becomes overloaded with the toxic intermediary metabolic products, the tendency to fevers, infections and septic states arises. The protein loss accounts for the clinical symptom of emaciation. The more permanent, chronic, constitutional state of this type is found in the *phthisical, consumptive* condition.

5. Very revealing is the fact that ether or chloroform hasten the blooming of flowers. A stimulative action reveals its selective affinity to just the blossom part of the plant. As outlined before, the alchemistic term, *Phosphor*, refers to the etherizing tendency expressed in the blossom; in our characterisation of the *Phosphor* personality we were led to liken him to a blossom or butterfly, because of his delicate

over-refinement and lightness. Of the whole plant the blossom part shows the greatest dependence upon light as revealed in its response with colours. Moreover, the blossom, when intensified in fragrance and perfumes, exhibits a somewhat narcotic tendency itself, mildly benumbing to the mind and stimulative to the sexual instincts. Characteristically, the *Phosphor* patient is *over-sensitive* to and *aggravated* by the *odour of flowers* and *perfumes* which strike an over-responsive chord in him.

B—Growth and firmness of the physical frame are reflected in the condition of the osseous skeleton; the calcium metabolism shows a close physiological interdependence with *Phosphor*.

Light activates ergosterol (which characteristically is also a member of the lipoid family) into Vitamin D, the antirachitic factor. Lack of light causes not only rickets but also lowers the resistance against infections and predisposes to tuberculosis. The dependence of bone repair and wound healing upon light was referred to before. The wide range of *Phosphor* indications in disorders of the skeleton (rickets, osteoporosis, osteomyelitis, osseous tuberculosis, etc.) requires no further elaboration.

The nature of the association of *Calcium* with *Phosphorus* deserves our attention, however. A parallelism seems to exist between calcification and firmness of the skeletal frame and a properly evolving mind. Calcium deficiency reduces the ability for mental performance, and experimentally causes stupidity. In sections with endemic osteomalacia there is a higher incidence of mental disorders during pregnancy which so greatly increases the *Calcium* requirements; in mental patients a *Calcium* deficiency with osteoporosis is a common finding. Late closure of the fontanelles and rickets are often associated with slower mental development (in these cases *Phosphor*, like *Calcium*, will have a special *affinity to the bones of the skull*). The transition from childhood to adult life with its mental maturity

is marked by completed calcification and epiphyseal closure. The pseudo-infantile state of old age, again, has a tendency to osteoporosis.

Thus the proper firmness and integration of the physical frame appear to be paramount factors upon which a mental development is conditioned. It becomes understandable that the force-principle of light, commissioned, as it were, with the task of developing our ego, consciousness and personal responsibility also must be concerned with the solidification of the physical frame which is to be the vehicle and instrument of our mind.

An energy complex which encompasses the very forces of personality with the vital and regenerative abilities, the resistance to infections, liver function and protein metabolism, as well as the bones themselves, cannot fail to have a most profound influence upon the very essence of our life, the blood. Light increases the red cell count; over-radiation of the higher wave length (X Ray) profoundly disturbs the bone marrow. The *Phosphor* pathogenesis includes *anaemia*, as well as *polycythaemia*, *haemorrhagic* and *haemolytic* conditions, as well as *leucaemia*.

Before closing we should consider one more important general modality. The *Phosphor* illness shows an outspokenly selective tendency to the *left side*. We know that the function of the two different sides is deeply interwoven with problems of the total personality (mental problems of lefthandedness) and the action of brain centres.

For the average righthanded individual the whole right side of his body is under much more conscious nerve control than the left, the more unconscious and automatic side.

The paramount general reality of this fact is confirmed by the analytic symbol-interpretation and has found its expression even in the often intuitive understanding of our language. Left symbolizes the unconscious, and therefore is the sinister (Latin *sinistra*, threatening evil) side. The

opposite side is the "right" (good, correct) one because it is representative of our conscious actions.

Since the stage of our activities is also the battlefield upon which we receive our (often self-inflicted) wounds, the more active side seems also to be the side more liable to pathology. Thus the illness which emerges from the psychosomatic totality of an overintellectual and overconscientious *Lycopodium* type is rightsided, while the *Phosphor* sufferer, who has reverted to the more instinctive unconscious levels in his psychophysical expressions, presents us with leftsided pathology.

Based on the hypothetical assumption of an inner autonomous light regulation or light metabolism, we have set out to investigate the available material in its relation to the pathogenesis of *Phosphorus*. The interpretation of the symbol material as presented by the analytical psychology of Jung has offered us the suggestion to seek in this material the expression of a metamorphosis of the dynamic principle of light, manifesting in the forces of the higher personality, through intellect and breath down to the function of liver and metabolic organs. It furnished the framework into which we fitted our material evidence. Much of the hitherto disconnected material of mental and physical symptoms and modalities along with experimental, toxicologic and clinical features has thereby revealed a logical coherence as parts of one basic, immanent pattern. By circumstantial evidence, as it were, we have also confirmed the probable correctness of our assumption of an autonomous inner light balance, as well as the great informative value of the analytical symbol material.

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