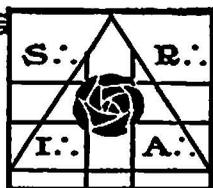


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Authorized Instruction in Rosicrucian Philosophy.

By Fr. K. X^o.

Number Eleven.

Formative Processes in Man.

**The Cell; its Development and Amplification; Transitional, Vestigial Remains,
Basic Structure of Protoplasm, Organisms.**

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Humanity is Divinity Thinking Itself Into Manifestation.

It has been said that "Humanity is Divinity thinking itself into manifestation." It might be corrected to read, "thinking itself into concrete expression." This is a true concept, and in its light we may regard all the creative and formative processes noted in the foregoing Instructions as stages in the progressional development of the Divine Mind itself, for even Divinity must be in a state of progression, otherwise there would be an ultimate terminus to all progress.

Evolutional Interim Between the Mineral and Human Stages.

Referring to the Kingdom of Life in general, Involution may be said to have terminated at the Mineral stage. Referring to the Homo, it may be said to have terminated with the indrawing of the Ego into full possession and occupancy of its vehicles. Between the arrival at the Mineral stage of the Life Kingdom and the status of the true Homo multitudinous transitional and transmutative processes have been accomplished.

How the Mineral Spirit Adjusts Itself.

We find on referring to Instruction No. 4, that "the Mineral spirit being so confined by the process of Crystallization adjusts itself to the geometric and purely mathematic form of crystals, remaining inert until acted upon by exterior forces."

Assimilation by Vegetable, Animal and Human Spirits.

Next, we find that the Vegetable Spirits assimilate the crystallized elements, transmuting them into crystalloids which are in turn assimilated by the Spirits of the Animal and Human Kingdoms, transmuted into cells and compounded into organs. Above all we must remember that—

LIVING MATTER DISPLAYS THE ENERGY OF COLLOIDAL AND THE PLAN OF CRYSTALLOIDAL MATTER.

Progressional Development of the Primal Cell.

With this in mind then, we must regard the evolution of living matter from the mineral stage to the human, as the progressional development of the primal cell into and through complex forms. For the motif of such progressional development we may refer to the Instruction

wherein we found that a Creating God vivifies each individual and inseparable atom of Cosmic Root Substance in the spatial locale for a solar system WITH HIS OWN LIFE OR UNIVERSAL PRINCIPLE. (Instr. No. 1.)

Cell Intelligence.

If this is the case with the primal atoms, then it is easy to understand that their resultant combinations in mass must also be vivified with that Divine Life which includes the Divine Intelligence in modicum, and that therefore, every cell of the earliest form of vegetable substance has its own allotment of the Divine Intelligence, and the aggregate intelligence of a given mass is the aggregate intelligence of the cells composing that mass. We may even use the term "consciousness" remembering that either term used must be held in mind as applying only in evolutionary process.

The Cell and the Egg.

The gradual manifestation and concretion of the vehicles of the Ego was, as has been so often stated, a process of crystallization from within, outward. This is also true of the cell, and the composition of the cell therefore, and the Egg, which is a good illustration on a large scale, should be studied with their analogies and correspondences to the human vehicles.

Physical Correspondences.

Physically speaking,

- Mass corresponds to the Physical Vehicle.
- Molecules correspond to the Etheric Vehicle.
- Atomic Structure corresponds to the Astral Vehicle.
- Elektrons correspond to the Mental Vehicles.
- Ions,—pure Electricity, Light, or God, to the EGO, or Essence.

Cell Correspondences.

In regard to the cell, the

- Cell Wall Corresponds to the Physical Body.
- Inner Lining (Membrana Pellucida) Corresponds to the Etheric Body.
- Protoplasm Corresponds to the Astral Body.
- Nucleus Corresponds to the Mental Sheath.
- Nucleolus Corresponds to the EGO.

Sayings of Albert Hubbard, No. 22.

"It some men had not questioned the justice of the law and defied the law, there would be today no such thing as freedom."

Egg Correspondences.

Similarly with the Egg, the Shell

- corresponds to the Physical Body.
- Shell Lining corresponds to the Etheric Body.
- White of the Egg corresponds to the Astral Body.
- Yolk of the Egg corresponds to the Mental Sheath.
- Germ-Speck or Kernel corresponds to the Ego.

Simple as they may appear to those uninformed in biological and zoological science, nevertheless the births and deaths and the countless progressional combinations and developments of the simple protoplasmic cells accomplish the miracles of evolutionary life.

Twenty Six Stages in Descent of Humanity.

Haeckel has traced the descent of the human race in twenty six stages from organisms like the Monera, (simple, structureless masses of protoplasm with hardly recognizable nuclei), the Amoebae, ("simple protoplasmic bodies with distinct nuclei and nucleolei, effecting movement by extending parts of the body into finger-like pseudopodia"), the Mollusca, Crustacea Radiata and all the other earlier forms of protozoic life, up to the present.

The charts given in "Rosicrucian Symbology" show comparative developments of foetal Chick, Tortoise, Dog and Man, and the progressional development of the foetal human brain in strict analogy to the evolutionary development of animal life.

Every Homo Recapitulates Earlier Forms of Being.

The student will see from these charts, that every human being in the course of its foetal life and gestation recapitulates all the earlier stages of its evolution, being in due course, invertebrate, vertebrate, fish, bird, reptile and mammal; and is it not clear that such being the case, we preserve throughout each and every incarnation in our cosmic memory, the knowledge of our earlier forms of existence? This fact is what makes it possible for us, if we make it a special study, to reconstruct with exactitude the extinct forms of bygone ages, and the unconscious development of this cosmic memory enables archaeologists and palaeontologists to accomplish their seeming wonders.

Origin of Selective Power.

Man, born of an egg exactly as are all the other higher forms of life, is the epitome of cell development and extension. The Divine Intelligence implanted in the Cosmic Root Atom is inherited by the cell and multiplied and amplified therein by affinity and association. It reaches still greater expansion in the organ of which that given cell forms a part, and gives to the organ the selective power to assimilate its own immediate and exact requirements from nourishment provided for the entire vehicle of which that organ is but a single part.

Cell Consciousness Inferior to Life Spirit Consciousness.

This cell consciousness is the inner cause and reason for the marvelous selective powers exhibited in so many departments of Nature. In each Life Kingdom the individual cell consciousness is under the direct control of the phase of the Consciousness pertaining to the Life-Spirit wave of that Kingdom. Thus in the Vegetable Kingdom, the individual cell consciousness or intelligence is absorbed in the Dreamless Sleep Consciousness of that Kingdom; in the Animal Kingdom by the Dream Sleep Consciousness of that Kingdom, and in the Human it finally rises to greater activity and power in obedience to the dominant control of the Ego.

Present Human Form Not Final.

There can be no fixed visualization in the mind of the Absolute as to the ultimate form of evolving humanity. As the Absolute through the Supreme Being and the Creative Gods is slowly thinking itself into manifestation or concrete expression, gradually producing a better

Humanity, so Humanity, as made up of the Egos who have learned to build their vehicles apart from the guidance of Celestial Lords, is slowly building better bodies.

Cast Off Human Models.

As man of today is vastly different in appearance as well as attainment from the earliest known types, so man of an equal time hence will differ as radically. The shores of time in the long interim between the Mineral Kingdom and present Humanity are strewn with the debris of cast off and defunct human models, just as the inventor having proved that his idea is practicable builds and discards model after model in perfecting and improving the expression of that idea. And sometimes the last model is such a great advance over the first, that it requires some stretch of the imagination to conceive that the one was the parent or ancestor of the other.

Ontogeny, Phylogeny, Epigenesis Defined.

These evidences of Man's age-long career are revealed to us through the science of Ontogeny or the history of the development of the individual usually called Embryology. With this must be coupled the science of Phylogeny or the history of the palaeontological development of organisms. The ability of the Homo in his advance, to cast off obsolete forms and build under his prerogative of free-will better and more improved forms, is called Epigenesis.

Degenerate Forms.

The study of these sciences reveals many misconceptions. We have already explained that man is not descended from the monkey, but that the monkey is the degeneration of man, more properly speaking the degeneration of the obsolete FORMS of early man. This is also seen in the other Life Kingdoms. Coal, some fossils and petrifications are the degeneration of the Vegetable Kingdom, as witnessed by the "Petrified Forest" of Arizona. Arctic moss and rock fungi, are also degenerations of the same Kingdom. Polyps are degenerations of the mammalia, and various minerals show the presence of early vegetal forms.

Vestigial or Rudimentary Organs.

Skull Theory.

Chief among the evidences of human debris revealed by ontogenical study, are what are commonly known as "vestigial organs" or "rudimentary organs." Those pertaining to the head and skull show the transitional period from the Animal to the Human Kingdom since the acceptance of the vertebral theory of the skull set forth by Goethe. This fact is, that the skulls of humans and all other vertebrate animals are but the transformation and amplification of the topmost portion of the vertebral columns. Through the understanding of this important truth, the transition from the horizontal to the upright spinal column takes on greater importance.

Ascent of the Spiritual Currents.

This greater importance means that although the animals have skulls and cerebral systems, the Ego could not indraw until, by the upright position, the development of the last vertebra should assume a form which would give to all portions of the brain the power to function the full waking consciousness necessary to the human Ego. This was accomplished by the ASCENT of the spiritual currents UP the spinal column, away from the earth plane instead of parallel to it.

Examples of the Rudimentary Organs.

In Animals and Whales.

We will now note some of the so-called rudimentary organs. Among the animals we find in the mid-bone of the upper jaw, fore-teeth or incisors, which never fully develop and therefore serve no useful purpose. Whale embryos are noted, possessing teeth, which are afterward lost and whalebone substituted.

Ear Lobes, Human.

In man, the ear lobes are no longer under his control as they still are with the animals. Although the muscles exist, he is for the most part unable to exercise them. They can be developed by exercise and will power but they are "imperfect organs on the road to complete disappearance."

Third Eye-lid, Human.

There is also the third eyelid, the tiny crescent shaped fold in the inner corner of the eye near the root of the nose. It is known as the "plica semilunaris." As far back as the silurian times the primitive fishes possessed this, and it is seen in active use among cats, dogs and other mammals as well as among the birds and reptiles. There are also the eyes that do not see, found among those fishes that make caves and subterranean streams their habitat? Also in many invertebrate animals.

Among Reptiles.

Among the reptiles we find the defunct hind legs, still observable in the hinder portion of the giant serpents, boas, etc.

Among Plants.

Among the plants we often find the rudimentary organs in the blossoms, for instance in the Lablatae we frequently find only two of the stamens or male organs developed, the others aborted.

Mid-jaw Bone Man.

Goethe's discovery of the mid jaw bone in man, which can be seen in human embryos, was another startling evidence of Man's transitional progress.

Tails, Human.

Origin of the Mammary Glands.

Rudimentary human tails are seen in the three, four or five tail vertebrae, (vertebrae coccygeae) as aborted organs. In man the mammary glands of the breasts are rudimentary. The mammary glands are of especial interest as they are the evidences of the chief cause of the origin of mammals out of reptile-like forms. The process was as follows: due to change of activity of the skin glands on the reptilian belly side instead of continuing as perspiration and fatty glands they gradually transformed into milk secreting glands. The cause that led to this change was the habit of the new born of the species licking the ventral skin of the mother. The irritating stimulus thus caused, led quantitatively to the enlargement of the glands and qualitatively to the development of the important mammary glands and the various problems of the female bosom may be thus phylogenetically traced back to this primal basis.

Gill-clefts.

Cable-Tow.

The gill-clefts of amphibians, some of the reptilia, and those seen in human embryos come under the head of rudimentary organs but are of great antiquity as they are a persistence from the Moon-Period of evolution. These gill-clefts constituted the apparatus through which the pioneers of the life-wave of Virgin Spirits breathed the hot, vaporous fire-mist of the Moon Period. These beings were then animal-like but not in the semblance of any known animals of today, and instead of inhabiting the earth's surface, they existed in suspension just above it by cords analogous to the umbilici. This fact in symbolized by the modern "Cable-Tow" of exoteric initiations.

Prostate and Clitoris.

The prostate of man is the rudiment of the female uterus, while in woman the clitoris is the rudimentary masculine organ. The evidences of rudimentary beards and mustaches on many women are common to all observers. By some, the vermiform appendix is considered a rudimentary organ.

Urschleim or "Original Slime."

Infusoria and Cell Theory.

The preceding paragraph brings up another phase of man's evolutionary progress and process, that of sex. Oken's theory that all phenomena of organic life proceeded from a common chemical substance or simple vital substance which he designated "Urschleim" or "original slime," gave to science the first real clue to the phenomena of generation. Now we use the term "Protoplasm" in lieu of "original slime," in the sense of cell-substance. In 1809 Oken asserted that "the primitive slime produced in the sea by spontaneous generation, at once assumed the form of microscopically small bladders

which he termed "Mile" or "Infusoria." Organic nature has for its basis an infinity of such vesicles." Substituting for bladder or infusorium the word cell, and we come at once to the cell theory, one of the greatest discoveries of the century.

Cuvier, Linnaeus and Agassiz.

Each Cell a Creative Thought.

That great trio of scientists, Cuvier, Linnaeus and Agassiz, while differing on many points regarding the evolution of organic species agreed on one point which effectually undermined the assertion of the Church regarding the individual creation of Man as a distinct type. Agassiz summed up this agreement in the words, that he (man) is the "embodied creative thought of God." And Oken asserted that "Man has been developed, not created." These two statements agree in the Rosicrucian philosophy perfectly. We have stated previously in this Instruction that each cell embodies a modicum of the Divine Intelligence, EACH CELL IS A CREATIVE THOUGHT OF GOD in manifestation, and what scientist can tell whether that cell will develop into a predicted form or not? From the creative thought develops the higher and more complex organism.

Sexual Differentiation.

Passing from the reproduction of simple cells by fission, to the higher forms of reproduction and propagation in the Human Kingdom, Rosicrucian science states three distinct states of sexual differentiation,—

- 1 Hermaphroditismus,
Both sexes in same individual.
- 2 Gonochorismus,
Union of two different individuals.
- 3 Parthenogenesis,
Virginal reproduction.

Hermaphroditism in the Kingdoms.

Transition to Sexual Separation.

The first form is still common in the Vegetable Kingdom, less so in the Animal Kingdom and rare in the Human, although instances have been authentically noted therein. The garden snail produces in one part of its sexual glands eggs, and in another part sperm. In some human hermaphrodites self fructification has been possible; in others copulation and reciprocal fructification of both hermaphrodites has been necessary for causing the development of the eggs. THIS LATTER PHASE IS THE TRANSITION TO SEXUAL SEPARATION, now complete in the Human Kingdom.

The Luciferians.

Fall of Man.

Temptation of Adam and Eve.

Man was hermaphroditic while human propagation was carried on under the guidance of the Hierarchies; it became separate when the Luciferian Spirits, stragglers from the Moon Period who did not become Angels but were far in advance of present Humanity, "opened Man's eyes to the knowledge of good and evil. The Angels who advanced work downwards on Man through the power of Creative Love. The Luciferians who, not being Angels, yet unable to use a Physical Body, required a physical brain for exterior contact, work upwards through the Creative Sex force. Thus they influenced Man to utilize his Sex powers for Creative purposes independently of the higher guidance. From this has arisen the tradition of the temptation of Adam and Eve, and the assurance of the Tempter that they should become as Gods, knowing both good and evil.

But the Luciferians were also "Light Bringers" to Man, for with out this knowledge Man would have lived a painless but aimless existence, lacking progress.

Salvation and Redemption.

In the exercise of his free-will, in the use of his sense and sex powers for propagation, Man has also given way to sense and sex dissipation and sensuality, and his SALVATION will consist in his REDEMPTION of his Creative Powers from their present low estate, and their transmutation to the higher forms of mental creative activity. MAN WILL AGAIN BECOME

HERMAPHRODITIC, and the process is even now under way.

Transformation of Sex.

In the great American Museum of Natural History, in New York City, may be seen an exhibit that demonstrates this truth to the thoughtful student. Therein are specimens of common fowl in which experiments in the transformation of sex have been carried on, and which scientists the world over are carefully watching. In this exhibit, the ovaries of a common hen have been transferred to the cock, which transference has caused the latter to develop the plumage of the female and lose his comb. Similarly, the removal of the ovaries of the female has caused the bird to put on the plumage and spurs of the male.

Importance of the Experiment.

Now the significant truth in this experiment is, that such a process begun and maintained artificially would in time develop a distinct species characteristic, resulting ultimately in an hermaphroditic product. Such experiments begun with the simpler organisms and continued through higher forms, ultimately in the Human, indicate the return path to Man's original estate under conditions and exercise of free-will.

Psychic and Mental Indications.

The psychic and mental indications of the transition, the accomplishment of which is, needless to say, aeons distant, are also evident. First: the teaching of a higher creative estate by multitudinous schools of "new" Thought, and the exercise of the mental creative faculties; secondly, the desire for motherhood by thousands of women who will not pay the penalty of becoming the human chattels of men for the privilege, yet who insist upon the recognition of their inherent right to become mothers. And both these forces are becoming powerful levers in the present unsettled state of domestic relationships.

Gonochorismus.

Gonochorismus or sexual separation, requiring reciprocal relations between the divided sexes, is the universal method of propagation among the higher animals and Humans. In this form, every individual produces only one form of generative substance. The females produce eggs, egg-cells or ova. The males produce the fructifying sperma, which, like that of the Cryptogama, consists of floating, vibratile cells actively moving in a fluid, the zoosperms, spermatozoa, or sperm cells.

Parthenogenesis.

Parthenogenesis or virginal reproduction is the interesting form of transition from sexual reproduction to the non-sexual formation of germ cells and occurs among many Insects. In this case, cells, become capable of developing themselves into new individuals without requiring the fructifying seed. The phenomenon has been noted even in the case of Humans, and has been well attested.

Every Being Has a Male and Female Nature.

From his original hermaphroditic estate, man has preserved the dual nature, male and female, internally. That is, every man and every woman retains physiologically and psychologically some evidence of the opposite sex, not only in the rudimentary organs but in temperament, intuitive faculties and mental traits. There is so much of the female in every man, and so much of the male in every female, that it has actually been reduced to specific law, as given by C. G. Leland, "THAT IN PROPORTION TO MALE DEVELOPMENTS IN WOMAN, OR THE FEMALE IN MAN, THERE IS A CORRESPONDING MASCULINE OR FEMININE DEGREE OF MENTALITY."

Alternation of Incarnations.

Effeminacy.

This is more readily understood by Rosicrucian students when the alternation, exact or comparative, of sex polarities in succeeding incarnations is recalled. In the light of that truth, it may be seen not only how we preserve the dual nature, but how it is apt to preponderate according to the previous incarnation.

A woman, say, who for the purpose of accomplishing a definite work, has had several successive incarnations as a female, on incarnating as a male, will manifest to a marked degree the feminine nature, which is ordinarily termed "effeminacy." Vice versa, masculinity is also noted in many women.

Sexual Secondary Characteristics.

Besides the sexual secondary characteristics, such as the antlers of the stag, the mane of the lion, tail of the peacock, spurs of the cock, and beard of the man; the developed breasts and lactatory glands of the female as distinguishing features of sexual separation, we may note in passing the gradual abortion or deletion of the little toes of both sexes, the deletion of bodily hair or hirsute coverings, except as sexual characteristics, and the differentiation between the combative and the creative instincts, selective and protective in both sexes.

How the Homo is Differentiated.

'At-One-Ment.

The Human being is differentiated principally by sexual separation. Woman or Womb-Man is woman only through her ovaries. Man is man only through his testes. Humanity is at present Divinity in diversity. The return to hermaphroditism will mean the At-One-Ment of Humanity with itself and its At-One-Ment with Divinity, or complete Unity.

How One Species Reacts Upon Another.

The differentiation and even the extinction of species is often caused by the smallest incidents. For instance, in Paraguay, the horse and ox nearly became extinct due to the laying of eggs by flies in the navels of newly born calves and foals, thus causing umbilical infection. Thus one department of nature can react powerfully upon a totally distinct and separate division.

Protective Conditions.

In studying the Kingdoms, we must not omit to observe that while Man is now left to devise his own protective conditions through the exercise of his creative faculties and free-will, Nature through the Group Spirits is still attentive to the requirements of her multitudinous children. Examples of this protective care are seen in the formation and colorings adapted to environment and habitat. An illustration of this is shown in the case of the Indian Kalima Butterfly which, when its wings are closed, can hardly be distinguished from the leaves of the tree it frequents.

The Porcupine Family.

As a persistence from the reptilian age, we have albinism and again, in the famous Lambert family of London in the last century, the perpetuation of scales. This family was commonly known as the "porcupine family." Edward Lambert, born 1717 was remarkable for his monstrous skin formation. His whole body was covered with "a horny substance, about an inch thick, which rose in the shape of numerous thorn-shaped and scale like processes, more than an inch long." This formation was transmitted to his sons and grandsons, but not to his granddaughters.

God Is Evolution.

In considering the vestigial remains of past evolution, we must not forget that the evidences of present and future progress are equally notable. For "God Himself is Evolution, embracing all things, especially Himself, the self-evolved, ever working in mysterious ways His wonders to perform--the Maker and the Made."

Awed, But Not Terrified.

Solar Eruptions and Vulcanism.

We may be awed but not terrified by the tremendous operations of nature constantly going on about us. We may view with interest but not fear, the solar eruptions such as those of 1878, the ascent of which were at the rate of 400,000 miles an hour, sending enormous jets of incandescent and metallic vapors hundreds of thousands of miles out into space, at a temperature of 1700 Degrees. The magnetic waves of that eruption and of recent activities are known to have revived apparently extinct volcanoes and increased the activities of others.

This was effected by the magnetic waves penetrating the gas pockets beneath the volcanos, inaugurating electrical activity which expands the gas, causing it to force its way through the crater core.

Human Mind Stuff Evolving. Measurements of the Atom and the Elektron.

The Human Mind stuff through which the Ego can understand and explain such phenomena is constantly developing towards a true vehicle, and Man will ever be in the forefront of evolutionary processes and develop the intelligence required to meet the exigencies of nature's activities, be they what they may. The power of the Divine Intelligence operating through the Human Ego enabling it to understand the magnitude of celestial operations, and reversely to measure the Atom at 300,000,000 to the inch and the Elektron at 30,000,000,000,000 to the inch, may be safely relied upon to maintain man's supremacy in the gradually increasing control of the nature forces, which in some eon distant age will be completely his to command, so far as our limited solar system is concerned. Yet the comparative insignificance of our solar system may be understood when we realize that a cube whose sides were equal to the distance across the nebula near Vega would hold hundreds of millions of similar solar systems.

Area of Our Solar System.

Yet our own solar system with its sun, eight planets, twenty-seven moons and eight hundred asteroids occupies an area whose diameter is approximately 6,000,000,000 miles, and "the power developed by a million Niagaras in a million years would not equal the energy expended by the earth in a single second as it circles around the sun."

Our Atmosphere.

As part of the Earth-aura, our atmosphere extends upwards of 40 miles and more and is the great protection against too rapid loss of earth's heat by radiation.

Human Evolutional Evidences.

Humanity is progressing, is in a state of continuous change and transition. Physical indications are not wanting. The differentiation between hands and feet in Man is pronounced. The hands are able to perform the most delicate manipulations, but in his advance from earlier types man has lost the power to flex his toes to the same degree of faculty. Man can join his thumb and little finger, but the Orano Utang with the same bones and muscles cannot do so. An examination of human skeletons shows that thumb and little finger, but the Orang Utang the first seven pairs of ribs join the breast bone whereas all of them once did. The finger and toe nails are the refined evolutionary resultant of the claws with which man once tore his food. Human teeth are the modified placoid scales still found in sharks. The canine teeth are the oldest survivals and are a reminder of the day when all teeth were "sharp-pointed, hold-fast organs." The development of the molars and incisors is the result of the gradually refined process of mastication.

Teeth.

Formerly man had, as do the sharks, row after row of teeth in reserve. Now he has but one replacement, the "permanent" teeth which replace the so-called "milk-teeth." The late appearance of the wisdom teeth and sometimes their failure to appear at all may be an evidence that in continuance of this deleting phase of evolution, future man may be toothless. At least when he ceases to be carnivorous he may expect great modifications in his teeth. It is also interesting to note that the vertebrae of the spinal column decrease with age and growth. A baby has thirty-three or four while in young manhood they are reduced to twenty-six.

Skull.

The skull always furnishes most interest to the student. The diagram outlines its development from the fish stage. Bones grow principally by being broken down, and this furnishes the greatest opportunity for evolving man to effect the necessary changes in his Physical

Body, as he builds and rebuilds from Incarnation to incarnation. The jaw of the baby, for instance, does not grow by simply being added to. "On the contrary, all the material of which it is composed is gradually broken down little by little and reassembled before the adult jawbone is formed.

Osteoblastic Cells.

This reassembling of the bone tissue is performed by cells designated as osteoblasts, and the breaking down by cells called osteoclasts. When the activities of the latter predominate, the bones shrink, and this we see exemplified in extreme old age when chin and nose sometimes almost seem to meet, especially if the teeth are gone. Besides this, we have the complete renewal of the Physical Body every seven years.

Blood Cells.

This process is especially interesting when we consider the purpose of the bones besides that of support. This purpose is the production of red blood cells in their marrow tissue. The number of these red blood cells, exclusive of the white corpuscles produced and the number regulated by the spleen, is about 25,000,000,000. Each cell is known to live but ten days and therefore a new supply must be constantly coming from the bone marrow. The chief purpose of the white corpuscles, it may be explained, is to fight disease.

Natural and Artificial Light.

Another evolutionary phase which ordinarily goes unnoticed is man's adaptation to the use of artificial light, thus lengthening the hours of his activity and productiveness; while the animals and vegetable life forms are still obedient to primal conditions and regulate their activities by the rising and the setting of the sun.

Additional Evolutionary Reminders.

A reminder of our great progress that also remains overlooked is the thickness of the skin on the soles of our feet. This is not due, as ordinarily supposed, to the constant pressure upon them of the weight of the body, but is a persistence of one of the amphibian forms of man in his ascent, called the "Mud-puppy," which had thickened soles. Our feet have changed in shape, but have never fully relinquished the thickness of skin for the delicacy which the other parts of the body have attained. The fact that man has hair on the chest but not on the back is a result of his earlier life when the chest muscles and arms required full play, while the back needed to be covered for protection. This subject of the human hair is exceedingly important for it gives many clues to man's ancestry, prominent among which is the fact, for instance, that the hair on the arm runs from shoulder to elbow, while from the wrist it runs to the elbow, similar to the course noted on the anthropoids.

Pre-historic Man, Grand Gulch, Utah.

Nature is persistent in her evolutionary urge, and yet extremely reticent in relinquishing any well established forms. The study of the skulls and remains of the pre-historic race recently discovered in Grand Gulch, southeastern Utah, antedating even the cliff-dwellers, proves to a great extent man's evolution not from the monkey, but independently from a high order of aboriginal anthropoids. The Cro-Magnon men of the Cro-Magnon races found in Europe were fully equal to the highest existing human races so far as skull development and cranial possibilities are concerned, while the Neanderthal men, also found in Europe, were lower than any existing human races. Both were of the Pleistocene.

Our world is growing bigger and better, Man is advancing, and all the lower Kingdoms are in close pursuit. Our world has an area of about 200,000,000 square miles. On this target are being thrown planetary fragments, exclusive of the planetary dust, amounting to the enormous number of 146,000,000,000 per annum. Little by little this accumulation with its psychometric values is exercising a definite influence upon our environment, imperceptible now, but later on bringing into our mental sphere the aura of other worlds. Man is improving, perfecting, discarding the obsolete, developing the newer and better forms and mental characteristics.

Man Leads and Prepares the Way.

Man has prepared the way for the lower Kingdoms to progress much more rapidly. What he has accomplished through incredible time periods, lower forms are already attaining. In the micro-organism *Freia-elegans*, a ciliated infusory of the family of Stentoines, Claparede and Lachmann have described a visual organ or eye, "immediately behind the point of truncation" in "a lunate spot of intense black." This is the exact manner in which sight was first developed between the Lemurians and early Atlanteans.

Man Repeats the Activities of the Lower Cells.

Man repeats on a large scale the activities of the cells that compose his substance. The male seeks the female in copulation. The female is actuated by two sets of motor impulses, one to receive the advances of the male, the other to repel them, although the latter is more seeming than real. The male seeks energetically. So likewise do the cellular elements in creative activity. "The spermatozoid and the ovule. . . . repeat on a small scale what the two individuals perform in their larger sphere. Thus, it is the spermatozoid that, in its capacity of male element, goes in quest of the female. It possesses, in view of the journeys it has to make, organs of locomotion that are lacking in the female and useless to it. The spermatozoid of man and of a great number of mammals is equipped with a long tail, the end of which describes a circular conical movement, which together with its rotation about its axis, determines the forward movement of the spermatozoid. (In search of the egg). The same mode of progression is seen in the zoospores of Algae and in Mastigophores, which are armed with flagella."

Importance of Cell Activities.

Basis of Organic Life in Protoplasm.

In spite of possible concepts to the contrary, we have not laid too much stress on the importance of cell activity nor of reproductive processes in these Instructions, for the Basis of Organic Life activities in manifestation or concrete expression are embodied therein. Science has made great advances in its knowledge of the composition of protoplasm. Dr. MacDougal has found that the living matter of plants was composed of three principal substances, "the Pentoses of mucilages, the albumens or their derivatives and some fatty substances. The protoplasm of most plants is composed largely of the first named group of substances, of which a common example is gum arabic. These three main components do not dissolve or diffuse into each other, and hence exist simply as finely divided particles intimately mixed, and the surfaces between the particles of different kinds of matter give opportunity for the play of molecular forces which constitute the essential energy of protoplasm.

Not a Universal Formula.

Protoplasm made up in this way is sometimes miscible or soluble in water, and at other times not. . . . It is not to be taken for granted that this is a universal formula. Specialized organs, or cells, eggs, spores, pollen cells, etc., may have a protoplasm in which the protein material may make up almost the entire solid matter."

What Rosicrucians Teach.

It is the Rosicrucian teaching that protoplasm will be found to be the material basis of life, all its component parts being differentiations of the primal substance, with Heredity-Chromatin Energy as the motive power, and the Cell as the vehicle, that form the key to the mysteries of Manifested Organic Life.

Adherence to PLAN of Crystalloidal Matter.

Diatomaceae.

No organisms better illustrate the adherence to the plan of crystalloidal matter mentioned on page one of this Instruction, and previously, than the low types known as diatoms, or the diatomaceae. The diatomaceae are microscopic unicellular algae inhabiting fresh and salt water.

Each individual or frustule consists of two more or less symmetrical silicified halves.

Where Found.

Diatoms, radiolarians and sponges "have skeletons composed of hydrated silica, mineralogically opal, and are found principally in the environment of granitic and other igneous rocks, the essential constituents of these rocks being the lime-soda feld-spars from which the sodium of the ocean has since been leached. Waters issuing from such rocks are, as a rule, relatively richer in Silica than waters issuing from modern sedimentary areas."

What They Indicate.

Small as they are, these diatoms and other micro-organisms indicate how man has utilized all the gradually accreting chemical compounds in his ascent from "original slime," for to imagine the earth in its primitive, exoterically lifeless state we must, as Prof. Osborn says, "subtract all those portions of mineral deposits which as they exist today are mainly of organic origin, such as the organic carbonates and phosphates of lime, the carbonaceous shales, as well as the carbonaceous limestones, the graphites derived from carbon, the silicates derived from diatoms, the iron deposits made by bacteria, the humus of the soil containing organic acids, the soil derived from the rocks which are broken up by the bacteria, and even the ooze from the ocean floor, both calcareous and silicious, formed from the shells of forminifera and the skeletons of diatoms."

Earth's Surface Primitively Different.

"Thus, before the appearance of bacteria, of algae, of forminifera, and of the lower plants and lowly derived invertebrates, the surface of the earth was totally different from what it is at present; and thus the present chemical composition of terrestrial matter, of the sea, and of the air. . . . is by no means the same as its primordial composition 80,000,000 years ago.

Ocean Originally Fresh.

Volume of Salt and Origin.

Assuming on the consensus of best authority that the ocean, primitively a fresh-water body, is less than 100,000,000 years old, and that it has received approximately 63,000,000 tons of sodium yearly, which has united with its equivalent of chlorine to form the salt (NaCl) of the sea, we may understand how the ocean itself has been no slight contributory to the evolutionary processes and the liberation of the Mineral Spirits. Analyses of ocean water and the body fluid of the highest animals, the blood serum, shows interesting comparisons. The table is appended:

Table of Comparisons Between Sea-Water and Blood Serum.

CHEMICAL COMPOSITION OF SEA WATER AND BLOOD SERUM.

Life Elements	Sea Water	Blood Serum
Sodium	30.59	39.0
Magnesium	3.79	0.4
Calcium	1.20	1.0
Potassium	1.11	2.7
Chlorine	55.27	45.0
Si4 (Sulphur Tetroxide)	7.66
CO3 (Carbon Trioxide)	0.21	12.0
Bromine	0.19
P2.5 (Phosphorus Pentoxide)	0.4

What Rosicrucianism Emphasizes.

Many excellent occult writers assume to deal intimately with vast time periods in creative and evolutionary progress, but ignore the minutiae and detail. Rosicrucianism is actively interested in all such time periods, world planes or regions, regional sub-divisions, etc., but while it realizes the importance of recognizing in the Sun the parent of our solar system it also emphasizes the necessity for an accurate knowledge of all forms of life upon our own planet as the immediate, definite, tangible basis of our knowledge of Man's true ancestry.

Importance of the Algae.

Carbon and Crust Formers.

Therefore in the study of man's evolutionary progress as an organic being comprehending within himself both material and spiritual na-

tures and elements, Rosicrucianism invites the student to contemplate—not so much his lofty position as a human being, but the simple Algae of which mention has already been made. They, with the diatoms and bacteria as carbon-formers, anticipated the animal world as factors in the actual formation of the earth's crust.

Primordial Seas.

The surface of primordial continental seas was literally covered with minute algae which served principally as food for the floating protozoa, while the diatoms, minute, floating plants "especially characteristic of the cooler seas," formed the siliceous ooze of the sea bottoms.

First Forms of Life Upon Our Planet.

The answer to the query, "what was the first form of life found upon our planet?" is answered by the study of the algae. Prof. Loeb states that "In 1883 the small island of Krakataua was destroyed by the most violent volcanic eruption on record. A visit to the island two months after the eruption showed that the three islands were covered with pumice and layers of ash reaching on an average a thickness of thirty metres, and frequently sixty metres. Of course all life on the islands was extinct. When Treub in 1886 first visited the island, he found that the blue-green algae were the first colonists on the pumice and on the exposed blocks of rock in the ravines on the mountain slopes. Investigations made during subsequent expeditions demonstrated the association of diatoms and bacteria (with the algae)."

"The algae referred to were, according to Euler, of the nostoc type. Nostoc does not require sugar, since it can produce that compound from the CO₂ of the air by the activity of its chlorophyll. This organism possesses also the power of assimilating the free nitrogen of the air. From these observations and because the Nostocaceae generally appear as the first settlers on sand the conclusion has been drawn that they or the group of Schizophyceae to which they belong FORMED THE FIRST SETTLERS OF OUR PLANET."

Prof. Loeb's Explanation.

Referring once more to our statement that "living matter displays the energy of colloidal and the plan of crystalloidal matter" and realizing that man is the epitome of differentiation between living and non-living matter, we may accept the explanation of Prof. Loeb, that "the essential difference between living and non-living matter consists then in this: the living cell synthesizes its own complicated specific material from indifferent or non-specific simple compounds of the surrounding medium, while the crystal simply adds the molecules found in its supersaturated solution. This synthetic power of transforming small "building stones" into the complicated compounds specific for each organism is the "secret of life," or rather one of the "secrets of life."

Man Becomes Proud, Then Humble.

Man may view with pride his present lofty position in the evolutionary status of life; he may view with pride the really marvellous products of his brain and hand co-operating, but he becomes humble when he realizes through a study of earlier forms from the most minute, through the most gigantic, that his present form, composition and mental status is resultant only upon the destruction and abolition of incalculable myriads of previous types or models.

Archetypes Only, Are Prepared in the Inner Worlds.

Many students of occult science have come to believe themselves so close to the "inner worlds" that they look with disdain on the salient facts and truths, stranger than any fiction, of the physical world. It is a popularly accepted belief among many students of Rosicrucian and Theosophic literature, that all the work of building new types, forms and human bodies is done while in the archetypal regions of the inner worlds.

Their Realization is the Function of the Physical World.

The belief just referred to is founded on misconception of all the conditions involved. The archetypes of new forms, types, and better vehicles, physical and otherwise, ARE devised and instituted in the appropriate region therefor in the inner worlds, but the tangible realization or accomplishment of them IS CARRIED OUT IN THE PHYSICAL WORLD.

New Bodies Come Only By Evolutionary Process.

Because Egos who are now in the spiritual regions may be studying how to build better bodies for a future incarnation, it does not mean that they will be able in that incarnation to construct exactly the vehicle they now devise or think out. Before them are set, by the Hierarchies, examples of highly developed bodies that will be the types extant in future ages, BUT THE ATTAINMENT OF THOSE TYPES WILL HAVE TO BE WORKED OUT BY THE SLOW PROCESS OF EVOLUTION IN AGES TO COME, just as we have worked up to our present status through ages past and through countless primary forms and types.

Our Ancestor, the Shark.

Man may learn of his future by studying his past, and it is for this reason that the Rosicrucian philosophy lays such stress on the importance of knowledge of our earlier and evolutionary form. Man laughs with amusement when he is told by science that the common hen is a first cousin to the alligator, but he is apt to resent the idea that he, in common with the hen, has inherited definite characteristics, cerebral and anatomical, from the shark. Yet this dreaded amphibian is the primordial ancestor from whom much of the present organic life has inherited well defined features.

Ears and Movable Jaws.

To the shark we owe our ears and movable jaws. The real beginnings of the true brain as such go back to the worm Amphioxus, while in the common ancestors of the shark and man two structural developments of great importance appear. The first, as stated, is the development of ears, the shark being the only fish with true ears. Secondly the development of the hinged jaw, movable at will and PERMITTING THE DEVELOPMENT OF SPEECH. The leverage power of the human jaw is estimated at 10 lbs. That of the shark is 162 times greater.

Tuatara. Pineal or Third Eye.

Men smile with condescension at the idea of a "third eye" when informed as to past functions of the Pineal Gland. Yet in the American Museum of National History, New York, in 1916, there were two specimens of the rare and almost extinct Tuatara, or "Sphenodon punctatum," of New Zealand, looking exactly as did its ancestors of 6,000,000 years ago in Jurassic times.

Pineal Eye and Third Optic Nerve.

In this little "monster" of about two feet in length, the Pineal Eye was quite prominent, situated at the union of neck and body; a round protuberance of approximately the size of a homeopathic pill, grayish in color and covered with translucent skin. In every animal with a backbone there is a third optic nerve, and the modern discoveries concerning the importance of the Pineal Gland in Man show his inheritance from the past, of powerful, potent faculties, NOW DORMANT.

The Trilobite.

An example of the myriad processes and types through which the Life Wave has worked its way in evolutionary progress is shown by the Insecta. The forms, types and species are almost innumerable, yet in the Trilobite, we have the Father of all the insects of to-day.

Van Maanen's Discovery.

As a confirmation of our statement that the ultimate destiny of each planet is to become a true sun, we have the discovery of Van Maanen of a dwarf sun of planetary size from two to three hundred per cent hotter than our sun, yet with a diameter only one-one hundredth as great,

situated only thirteen light years from our earth, and therefore one of our nearest stellar neighbors.

Nature is at least consistent. The multitudinous phases of evolutionary process through which the lower forms up to the human have progressed are illustrated in every classification. We have shown examples of the Insecta, Reptilian and Amphibian forms. The same is illustrated in the evolution of the horse. From the "Dawn Horse" of Wyoming, known as the "Eohippus," no larger than a small fox ter-

Evolution of the Horse. Eohippus.

rior, and with four toes, to the splendid companion of man of today is at least 3,000,000 years. Evolution is a slow process but sure, and the differentiation both as to size, anatomical development and intelligence in the case of the horse, is paralleled by the similar evolution of man from pre-historic times to his present attainment. From both of these examples we may assume equal differentiation in as many ages to come, and therefore to a development, expansion, mental and intellectual growth beyond our present imagination.

Principle, underlies everything.

The examples and instances cited in these Instructions are not presented for the purpose of furnishing interesting reading, but to emphasize the importance of one thing—PRINCIPLE. In

this case, it is the Principle underlying all the transitional forms, types and species which have contributed to give the homo his present place "in the sun." Principle is everything, underlies everything; "therefore, if we study the principle which is the foundation of the universal law, we shall understand man's relationships to the universe. Study of Principle leads to comprehension OF DETAIL, BECAUSE DETAIL IS BUT THE WORKING OUT OF PRINCIPLE, IN ALL THE VARIED PHASES OF LIFE MANIFESTATION."

Catching Vibrations from Nature's Thought Waves.

Matter and Energy being considered as two phases of the same condition, we may say that Nature, or the Expression of the Divine Intelligence, has vibrated from original Matter or Cosmic Root Substance, everything into being, from the condensation of atomic nebulae to suns and planets. And when our individual comprehension becomes attuned to the higher phases of being, the scientific-spiritual state of consciousness, we may catch vibrations from Nature's "infinite thought waves" and then shall we truly know that all Life is related, not bound by earthly or material laws or limitations, and our thoughts may penetrate the realms of the universe and solve the sublime mystery of its at present unknown laws.

Additional Matter re Crookes' Table.

In a letter dated February 10th, 1920, Fr. Prescott Hall, (C. of O.) Boston, Mass., sends us some amplifications of the Table of Vibrations by Prof. Crookes, which appeared in Mercury, Vol. 5, No. 3. We are very glad to publish these amplifications and observations herewith.

Octaves.

Sound covers

4-15 (not 5-15)

4 is lowest audible not.

Further 4-15 covers some electricity:

13 battery circuit vibrations 8192 (Fedderson).

14 (16.384) = oscillations in Leyden jar with electric alternator and turbine (Ewing).

15-20 marked "unknown" by Crookes' but

18 (262.144) Leyden battery circuit (Fedderson).

35-45 marked "unknown" by Crookes' but

The report of the Vernal Consistory held on March 21st, will appear in the next issue of Mercury.

35-40 according to Dr. F. F. Strong, nerve currents in the human body.

46-50 according to Crookes are heat and light but

44 = Heat rays from substances below 100°C lowest observed (Langley).

51 unknown according to Crookes, but

51 = ultraviolet photographic limit in vacuo 3×10^{15} (Schumann).

50 called chemical rays by Crookes, but

50 = photo limit of solar spectrum 1.053×10^{15} per second in the Corona.

Yours respectfully, HALL

Directory.

The One Hundred and Nineteenth Stated Convocation of Metropolitan College S. R. L. A., will be held in the Adytum, 310 Lenox Avenue

Between 125th. and 126th. Streets, opposite 125th. Street station, Lenox Ave. Subway.

Friday Evening, March 26, 1920, at 8.00 P. M. precisely

Work:

Neophytes' Class Instructor V. Wor. Fr. Reficio IX°

Elementary Rosicrucian Philosophy, No. 10,

Subject: "FORMATIVE PROCESSES IN MAN."

This Class will meet at 8 P.M., on Wednesday, March 31, in Room 1429 Masonic Temple, 24th St. Take Elevators from 24th Street entrance.

Junior Hermetic Class.....Instructor, Rt. Wor. Fr. Paracelsus IX°

Subject: No. 9, "PURIFICATIO."

Senior Class.Instructor, Fr. K.

Subject: "THE RED MAN AND THE WHITE WOMAN."

The Theological Class

Convenes on the 1st and 3rd Thursdays of the month at 712 West 180th Street at 8:30 P.M. April 1,—COMPARATIVE AND HARMONIC STUDY OF THE FOUR GOSPELS.

Astrological Class.

Sr. Progressia 9°-2°.

2nd and 4th Tuesdays. 712 West 180th Street.

CLASS CONVENES AT 8:00 P. M. PRECISELY, PLEASE BE PROMPT.

Masonic Notices.

THE TWENTY-NINTH REGULAR VOYAGE AND DINNER OF METROPOLITAN LODGE, NO. 1, ARK MARINER MASONS, will be held at the Au Coq Gaulois, 32 West 57th Street, Manhattan, at 7:30 o'clock on a date to be furnished by the Secretary Bro. Grover.

Declaratio Obsequii.

Metropolitan College acknowledges allegiance to the Magi and Officers of the High Council of the Societas Rosicruciana In America and Affiliated Councils, as the Sovereign Source of the Rosicrucian Art in the United States of America. The House of the S. . S. . of this Obedience is at present situate in the the City of New York.