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SIDERIAL EVOLUTION,

OR

A NEW COSMOLOGY,

BEING

An Explanation of the Principles that pertain to Universal Life Force and its Expressions in Form.

SCIENTIFIC SERIES.

BY THE AUTHOR OF "PLANETARY EVOLUTION."

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PREFACE.

The book upon planetary evolution has met with so much favor, that this work was written to extend the same principles into the solution of the problems of Universal Cosmology. Whether the ideas are of that character that will commend themselves to our rational consideration or not, they evidently belong to the sphere of world building on a grand scale, and are in harmony with the principles that pertain to Evolution upon the planes amenable to our inspection.

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DEFINITIONS.

"ATOM."—The most minute form of material in existence.

"COMET."—A sun in the first stages of cosmic conception and gestation.

"CRYSTALLIZATION."—The arrangement of the elements in solid form.

"ETERNAL INTELLIGENCE."—The principle that pervades the universal cosmos.

"EVOLUTION."—The unfolding of the life forces stored in the form.

"GOD."—The common term for the source of the unknown.

"LIFE ENERGY."—The grade of power that pertains to planetary life.

"NATURAL LAW."—The methods of creative processes in producing form and its resultants.

"PLANETARY GOD."—An intelligent personality that controls a planet.

"SIDERIAL SYSTEM."—The sun and its planets.

"SPIRIT."—The radiant state of matter improperly designated.

"SPIRITUAL BEINGS."—Intelligent entities that exist in the radiant state of the elements after physical death.

"SUPERSTITION."—A false estimate of the causes of planetary phenomena.

"SUPREME WISDOM."—The wisdom that pertains to perfected life.

"REVELATION."—The reception of ideas previously unknown to the recipient.

"UNIVERSAL COSMOS."—All the siderial systems in the universe.

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INTRODUCTORY.

In writing of the principles whereby planetary systems are evolved from the primitive elements, I must ask the reader to go with me into a new field of chemical exploration, which, although briefly touched by the spectroscopist, can hardly be analyzed by merely external observation.

Chemical principles lie at the foundation of world building, and are definitely expressed through planetary evolution; but as worlds are only individual expressions of eternal forces, so solar systems and universal creative manifestations are only collective combinations of individual worlds. The principles that govern one system are essentially the same that govern all, and the knowledge of the processes that enable one world to be, is the key whereby humanity can open the door that leads into the realm of causative power which is expressed through the construction of a universe. Therefore, I ask the reader to go with me into the sphere of solar and siderial systems, that we may there witness the wonder-working power that, through the countless cycles of being, has wrought out in majesty and grandeur the purposes of Eternal Intelligence.

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It is with no feelings of irreverent carelessness or superstitious regard that the student of cosmical science enters this field; but in self conscious appreciation of the magnitude of the interests involved, he pursues his pathway, in wonder and gratitude that the mind of man has in itself the ability to ascertain how worlds are made; and also the assurance that the time may come when man shall become intelligent and powerful enough to be able to make a world or control its forces to express his own will and purposes.

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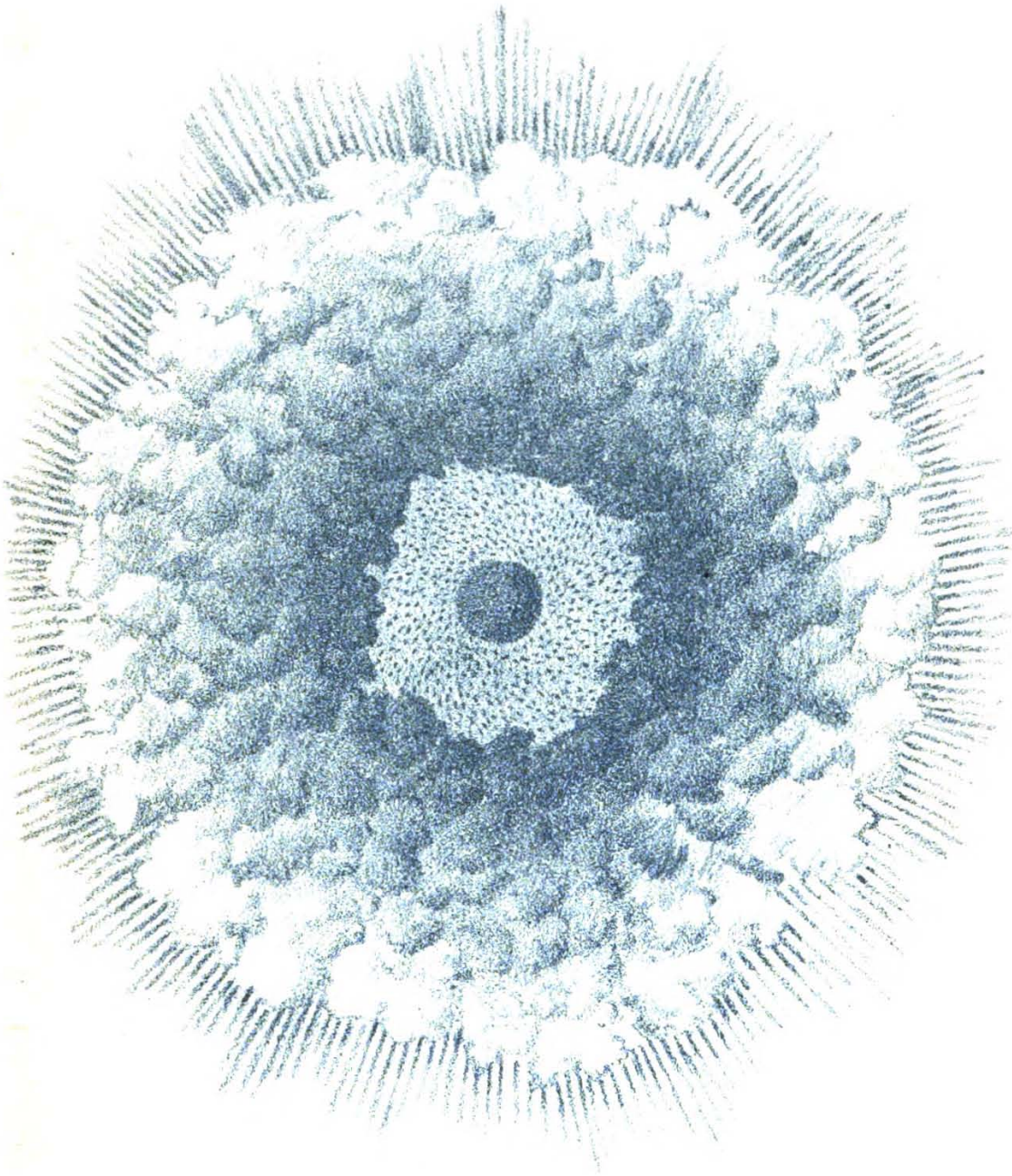

A PLANET IN THE GERM OR SOLAR STAGE.

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CHAPTER I.

THE NATURE OF COSMIC LIGHT.

In the literature that has descended to the Western nations from the Ancient Chaldean astronomy, we have the expression, "In the beginning the gods created the heavens and the earth; and the earth was without form and void, and darkness was upon the face of the deep. And the gods said, let there be light, and there was light."

From this paragraph, that has been preserved with almost superstitious reverence, the world of religious thought has constructed its theories of causative power, briefly changing the number of the deities that were concerned in the work of solar creation to one, thus seriously mutilating the sense of the paragraph; for, in all Oriental expressions of ideas, metaphor is a favorite method of conveying knowledge.

As the translators of this paragraph have been quite free in changing the idiom of the natural thought embodied, it has reached the modern mind in a distinctly modified form; and while it indeed had a meaning that was not entirely unscientific then, it sounds strange in this age of the world to hear it quoted as having the sacred character of a divine revelation.

"In the beginning the God created the heavens and the earth," is the postulate of modern theological definition of Creative Energy; in the beginning force and matter existed from eternity, is the axiom of scientific

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formula of this age. Between these two expressions can there be any reconciliation or any common ground of agreement? or is one the irreconcilable antagonist of the other?*

In considering the beginning of anything, we are first to examine the nature of the powers expressed through its construction, and this opens the pathway into the realms of causation, whereby force and form find expression through the relations of creative power.

In the beginning of all new expressions of creative energy, we indeed find that "darkness is upon the face of the deep," and that mystery enshrouds the subject of form as well as force, until there is the influx of light, which reveals the existence of the form that is generated and born in darkness. Therefore, we ask the reader to go with us into the sphere of light, where we can observe the processes of creative power after the embodied forces have taken form to express certain relations of their native and inherent energy.

To enter this realm, we must leave the sphere of physical expression to some extent, and with the wings of intuitive perception soar into that vast and nearly unexplored region of chemical forces that lies at the basis of planets, suns and systems, where we find Eternal Intelligence working out new manifestations

* The conflict of science and religious dogma has its inception in the theory that Creative Intelligence has embodied in language the principles of celestial cosmogony as a fiat of Supreme Will. In the ancient scriptural writings the interposition of Deific power in the affairs of earth has quite a marked position, and later on we shall see where this idea may have had its inception, although it failed to express completely the method whereby creation of form had its origin.

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of form, as well as expressions of power, that are as much beyond the sphere of physical force as witnessed in organic form as the latter is higher in the grade above the primitive crystalline bases of all worlds and systems.

When we enter the realm of interstellar space, we find that matter in the elementary relations literally fills all the regions that imagination can conceive or realization can express. The atomic theory of Dalton, which Democritus,* of Greece, expressed in essence more than two thousand years ago, is found to be not a theory merely but a demonstrable postulate in solar evolution.

Suns exist because atoms are (not may be), and worlds are generated and born because the atomic relations of the elements in space are mathematical in power and amenable to mental manipulation. The chemist that is able to analyze or combine the primitive atoms by intelligence and skillful substitution becomes the incipient world builder, that in time or eternity can have his full evolution, and as he becomes the master builder in the realm of material forces, so his mental ability will be the natural channel whereby creative power and constructive thought will work harmoniously throughout eternity in the construction of worlds, and also in raising the grade of mental power to the appre-

* Democritus, an ancient Greek philosopher, seemed to be the only mind of his time that fathomed the depths of material science, and by a broad construction of his ideality conceived that the heavens and the earth, as well as gods and men, all had their origin in the same basic principles that we at this age call material forces. That he was substantially correct, many experiments in the scientific world practically demonstrate as well as indorse.

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ciation of the principles that make worlds and systems intelligible indices of the nature and power of mind.

"AND THE GODS SAID, LET THERE BE LIGHT, AND THERE WAS LIGHT."

If we send a ray of sunlight through a prism, we find, in place of a homogeneous color, seven distinct grades of color, shading off from the brilliant red to the dark blue or violet tinge; and if on this spectrum we place a chemical preparation of sufficiently delicate equilibrium, we find these different colors have each a specific power over the chemicals that they may touch.

Some of these rays act as decomposing agents and seriously disturb the chemical balance, while others do not affect it at all; but each ray, or color, has a distinctive power, that enables it to be measured as to its disintegrating effect upon the chemicals. We call this action of sunlight the actinic power of the solar ray, and measure it by its ability to decompose, or rather reconstruct, the elements in the form into new relations of expression. I might safely say, that in that power lies the solution of the problems involved in cosmic light; for the passing of the solar ray through the prism is really only the arrest or changing of the vibratory force of the atoms along the line of its axial radius by the interposition of a medium of different degrees of density. The various colors are produced by changing the vibratory force of the atomic waves to different degrees of motion, when they are brought to uniform arrest upon the screen or wall, and those reflex waves upon the optic nerve give the different colors of the spectrum, not because they are different substances in the light waves, but because the rate of

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atomic vibration has been changed from a uniform rate to divergent and different grades of motion.*

Now, when we apply this principle to the nature of cosmic light, we find that any substance raised to the degree of atomic activity that corresponds with the wave motion of the spectral colors gives the same spectra, and that cosmic light is only the elements in space vibrating upon a plane of action that produces sensations that disturb the optic nerve, or in the field of chemical forces that unlock the more delicately balanced compounds, letting them go free, and causing new relations to arise among the elements in space, whereby new combinations are made possible, or old ones changed and modified by its power.†

Whenever the elements in space are in any degree

*Here is the key to the principle of combinatory powers of the elements; for all that is necessary to effect any change in form is to change the rates of the atomic motion in the compound, and by so doing we can form or dissipate a planet as easily as a compound of the elements in the planet. It only needs a direction of power upon the primitive elements in space to cause them to combine or to dissolve at will, and this is the problem for this age to solve, viz.: What power is it?

† This puts the nature of light far beyond the sphere of incandescence, as manifest in suns and stars. In fact, the etherean relations of matter would be brilliantly radiant, because of the intensity of the rapidity of the atoms; and as all substances vanish from our vision when they reach a certain grade of rapidity, we can perceive how much more brilliant they must be when accelerated by transfer to the realm of radiant matter. There would be atomic waves that would be so rapid that transparency of form would be a necessity from sheer inability of the elements in the form to be still enough to produce a structure sufficiently dense to change the rates to correspond with cosmic light, in which our present vision has its evolution.

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lowered in their atomic vibratory rates below the transparent relation, then the combination so formed begins to transmit light of the cosmic order, and upon the plane of fluidic or gaseous relations often becomes a body that generates quite freely the power of incandescence. The gaseous relation manifests this power more easily, but the fluidic and solidifying mass of planetary structures all give more or less evidence of the property of incandescence.

The flaming corona of the sun during an eclipse shows how powerfully the gaseous envelope of the central body is agitated, and that the pulsations of power which distinguish the gaseous aura of that forming* planet belong to the primitive formatory results that pertain to all planets ere they arrive at the opaque condition that precedes the evolution of plant and animal life.

When we penetrate the sphere of aural emanations of all incandescent bodies, we are struck with the positive evidence that atomic motion is the key to the problems involved in all the relations whereby cosmic light becomes a matter of speculative study; for proportionate to the rapidity of the moving atoms is the degree of light itself perceptible to the senses. The intensity of the light is graded by the rapidity of the

*That the sun is but a planetary body undergoing its first stages of evolution, is not only highly probable, but almost irresistible in its evidence of planetary power. It is the latest born of its system, but it follows a law of all planets, being subject to the influence of the elements in its form, and sending out through space the transmissions of energy which the elements in the gaseous state generate in their transition to the crystalline forms. The sun follows in the path of its predecessors in this, and registers the same processes.

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moving atoms, and in the varying degrees of color manifested in the electric arc light we have a good index of the power exerted to change the atoms of the carbon points from opaque solidity to solar intensity; for the colors of the spectum are all observable in the fluctuating prismatic tints that come from one element (carbon), thus proving, conclusively, that it is the degree of power in the moving atoms and their effect upon the ethereal waves, rather than the substance itself, that gives off the colors, which has been the basis of the spectrum analysis.*

This fact, coupled with the possible effect of transmission of light through the atmospheric lens that envelops the planet, causes us to halt for a time in our study of the principles of solar evolution, and to consider whether we have not after all to retrace our steps or reconsider some of the conclusions that have been formed from a superficial view of the subject, where external evidence alone has been all that could be depended upon to give us knowledge of causes through observing results.

It is one of the fortunate premises of all chemical problems, that there is no haphazard guess work in their methods of procedure, and it is equally certain that mathematical formulas lie at the basis of all tangible or occult processes whereby results are possible. Now,

*If the reader will closely observe the colors given by the arc light, and see how they correspond with the rapidity or slow motion of the generator of the electric current, he can easily ascertain the exact connection of the elements in form and the elements in the radiant state. It is only in these, transferred from one to the other, that the prismatic tints become manifest, from opaque blackness to dazzling whiteness, rivaling the sun in brilliancy, although only one element is subject to the force.

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in the application of this postulate to the question of cosmic light, we have the foundation of an intelligible explanation of its source, for all light belongs to the realm of all measureable forces; and in the simple return of the elements from opacity to incandescence, we can measure the degrees of power requisite to reduce the elements from incandescence to opacity in the reverse order. The law of balance in each is the same, and all the forming bodies in space, that manifest both luminous qualities as well as those of opaque form, reflect the essential properties of the elements that by chemical manipulation upon a small scale can be transferred from one condition to the other.

Cosmic light, therefore, is only that degree of atomic transfer of molecular activity from the forming world in space to the more subtle elements that are affected by it, and proportionate to the degree of activity among the forming molecules that are coming into cosmic balance will the body be luminous or opaque.

Generally, during the first stages of planetary formation, the light generated will be pure white or intensely brilliant, as the elements then are but a few degrees lowered in their vibratory motion from the status of transparent activity; for above a certain grade of motion the atoms of all the elements are beyond the scope of spectrum analysis; but as the atomic arrest of the elements which precedes visible form takes place, the molecular combination approaches the plane of cosmic light, and the forming body in space exhibits the nebulous property of cloud-like flame, brilliantly shining forth, heralding to the innumerable suns and systems that a new world is in process of formation, which, in due time, will be added to the mighty host of visible manifestat-

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ions of Creative Energy, and which may be, as the earth has been, the prolific parent of myriads of intelligences that shall exist as long as the elements from which they are organized shall endure.

The planet from which the present generation has its evolution was once a flaming nebula in space. It glowed and blazed with all the intensity of the comet, or even the sun, which now is the center of its orbicular pathway. It shone with the brilliancy of the stars of the first magnitude, and even yet it shines with the beauty of a Mars or a Venus.* Its aural emanations, crossed by the lines of force radiating from the electric pulsations of the sun, cause it to appear in space like a great electric light, and as all the planets shine forth in the heavens, each having an intensity of its own, so does the earth blaze out in the depth of space, radiating the aural rays of red and yellow, which even now are as distinct to the possible inhabitants of Mars or Jupiter as are their brilliant emanations to us.

Cosmic light has not yet become extinct, neither may we expect it will be as long as the atmosphere which envelops its opaque nucleus responds to the main pulsations of power that proceed from the forming planet that is the present center of our solar system. The great chemical and electrical powers that lie at the

*All the planets in the solar system shine by a reflected light from their aural envelope that still holds its environment of the central nuclei. Their crystalline atmospheric lens permits the sun's rays to pass freely through its substance, converging the solar forces upon the central form, and stimulating the elements in the planet to a greater or less degree of induced action, thus laying the foundation of that secondary formative power that causes the planet itself to change the grades of form that it is able to evolve from the primitive forces in its own structure.

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foundation of all grades of form are ample to preserve and protect the planets in their courses, and worlds, suns and systems will be born from their action long after all the puerile ideas and childish speculations of undeveloped man are buried in oblivion.

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CHAPTER II.

THE NATURE OF THE ATOM.

In all the attempts to formulate theories of a chemical character, the atom is the basic premise of form, and its power to produce phenomena is the axiomatic postulate of science. Like the point in geometry, it is the primal source of explanatory deductions, and without its aid, theories seem to have no substantial basis whatever.

The atom may be cursorily defined as the condition of absolute potentiality of all substance, and its power of entering into combination, as the basis of all expressions of power in form. Whether it precedes force, or is contemporaneous with it in nature, has been a source of problematic speculation by the ablest teachers of physical science, but the probability is that each has a distinct province in the realm of creative energy.

The atom as a distinct factor in the creation of form seems to be the direct agent of force, that imbues it with properties of a strictly mathematical character, and enters into combinations of a compound that can be accurately defined. This would seem to be sufficient to determine the subordination of the atom to the will of intelligent direction; but as it enters into compounds of a complex character, and also shifts position from one combination to another, with a certainty that denotes some peculiar relation that betokens a positive position in the province of force, it seems that its nature is of the creative rather than created province of form.

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Still, the atom itself must have form, however minute its structure may be; for, as all molecular combinations are but accretions of atoms, that reflect to a very marked degree the lines of direction in which the atoms moving are brought to arrest, and as the arrested atom lies at the basis of visible form, the form itself is only the reflection of the arrested motion of existent particles, rather than a result of a transformation of motion or force into substance of a material character.

The atom may therefore be regarded as the basis of all material existence, whether in the invisible realm of sublimated essence or the crude combinations of concrete form that lie at the foundation of all planetary structure.

Whether it be primate substance out of which all elementary conditions arise, or whether the elements as such are reducible to the atomic relations, each as atoms retaining its distinct nature, is an unsolved problem; but so far as analysis can determine, the latter seems to be more demonstrable to the power of human manipulation, and at present it is safer to regard the elements as primates rather than secondary relations of the primordial substance.*

The atom and molecule seem to be amenable to measureable force, and limited in their manifestations only

*The theory of a possible transmutation of one primate to another has ever been a favorite speculation of chemical science. From the time when gold was sought by transferring the baser metals to their highest form, the alchemists have ever been on the watch to detect the ultimate nature of the metals, and, if possible, to manipulate them at will. However, so far, the law of chemical equivalents seems to interpose a rigid barrier to this result, and the element remains unchanged, while the atom shifts its posi-

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by the power or degree of their activity, which ought to give proof as to power of transmutation from one element to another, if the elements were only different manifestations of the same primordial substance; for separation and combination are amenable to human endeavor within the lines of primitive forces, but outside of those lines there is no power yet known that can effect any change in the nature of the elements or their relations. Therefore the chemist at present is limited by the inherent properties of the atomic relations of the elements, and, however marvelous his manipulation and creation of new forms may be, he is unable to work outside of the primitive forces that inhere in the atomic relations of all substances.

There is extant in the field of theoretical speculation an idea that atomic relations are interchangeable to an illimitable degree, and that transmutation of elements is a possibility even as in the days of alchemistic superstitions; but the fact that change of form does not imply a change of nature of the elements composing the form puts an effectual veto upon practical attempts to change the elements through atomic manipulation, and they still remain as in the primitive ages, beyond the province of the most skillful chemist to solve the secret of their existence.

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tion by inexorable law, which is the only way by which the elements take on the secondary form or enter into the varied structures. This places the atomic relation as the supreme power of the element, and in it we must look for the solution of the problems of force and form. Beyond this, it seems impossible to proceed at present, and the world awaits a new revelation of the nature of matter ere it can abandon the primate powers, upon which all form exists.

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Some knowledge, however, of their powers of transfer enables us to judge of their probable nature, which we now proceed to examine and record for future deductions. Atoms, in all primitive forms of the planetary stages, move in lines of definite measurement. In the primitive star dust or fire mist they follow the law of acute angles that belongs to prismatic crystallization. The tiny molecules that form these minute crystals are themselves the result of the primitive atoms of the different elements moving in space, adjusting their axes of motion to a uniform line, which in turn crossed by other atoms, moving at a different rate or in different directions, gives the cloud-like nebulæ, in which the moving molecules cross and recross each other's pathway, until they become adjusted to an approximate uniformity of motion in mass.

During this process the atoms in the radius of the forming body shift position and cross and recross the pathway of the molecules, forming upon a gaseous plane a pulsating mass of cloud-like nebulæ or a gigantic thunder cloud, in which the flashings of the lightning only illuminate the dense darkness that envelops the mass in its center.

During this period there occurs a strange phenomenon to the external vision, for the intensity of the atomic motion of the mass gives its external surface the appearance of white light, while its internal center is subject to that grade of atomic arrest that would produce the blackness of darkness until the atoms in the mass come into that state whereby, as a solidifying form, they become incandescent; but even then the clouds lying nearest the center are so dense that the light from the

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glowing planet could hardly penetrate the dense gloom that hangs above the incandescent surface.*

When we observe the forming nimbus clouds in the atmosphere, and especially the cumulus of a thunder storm, we see a good representation of the transfer of the primitive elements in the space from the atomic relations of the gaseous states to the fluidic and solidifying conditions that precede planetary form, and the falling rain or the glistening hail is the register at this age of the planet of the process whereby the primitive atoms formed the solar systems of the universe.

There naturally arises the question, whether the atom in its powers of transference from one state to another follows the law of any external will, or whether it is imbued with blind forces which impel it upon its course without direction? Upon this question the antagonism that is supposed to exist between the religious and

* The difficulty that astronomers find in penetrating the aural envelope of the sun proceeds from this cause, as the condensing elements which are surrounding the nucleus are probably as dark as the external gaseous envelope is bright and radiant. As the crystals from a snow cloud drift toward a common center, so the elements in the radii of the sun's envelope, as they come into the crystalline status forming the fire mist, would slowly settle toward a solid mass, around which the lightnings would flash and the elements roll in cloud-like storms far more dense and dark than the blackest thunder cloud which now casts its shadow of gloom over the storm center of some portion of our planet for a brief period.

The fiery drift of the primitive crystals, which we see so plainly registered in the ragged peaks of the great mountain chains of the earth, is steadily going forward in the forming suns of the universe, and in time will be read by their inhabitants as we read the records of the rocks which still remain as they were in form, when the foundations of the earth were laid.

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scientific schools of thought has its origin, and the disciples of each have stood in hostile array ever since the theory of an evolutionary origin of the world was proposed in place of the hypothesis of special creation.

For the benefit of disputants of either class, we would observe that atoms, in their ability to shift from one form to another always follow the law of definite proportions, and in obedience to that law are amenable to the will of intelligent manipulation, but outside of the operation of this law they are incapable of being controlled by any known mentality in existence.

This would seem to place them beyond the category of mind power, and to some extent superior to it in their nature, for the mentality of the wisest of earth is deficient in ability to create new laws, although it can avail itself of the primate forces to construct forms in almost numberless variety.

Can it therefore be inferred that the nature of the atom is capable of comprehension by the human intellect, and is there, in any expression of its powers, a clue to lead one to an intelligible explanation of its nature?

In answer we would say, that the atom centers in itself the properties of all forms and conditions of existence. It is the central point from which all creative energy proceeds, and it is the basis of all power that manifests form or force. It is indestructible in its nature or properties, and it holds in itself the key to unlock the portals of eternal existence, for it is eternal by nature. It goes and comes by definite and fixed laws, and all the forms into which it enters are held in existence as forms by the inherent energy of the atoms composing them, being balanced upon a more or less

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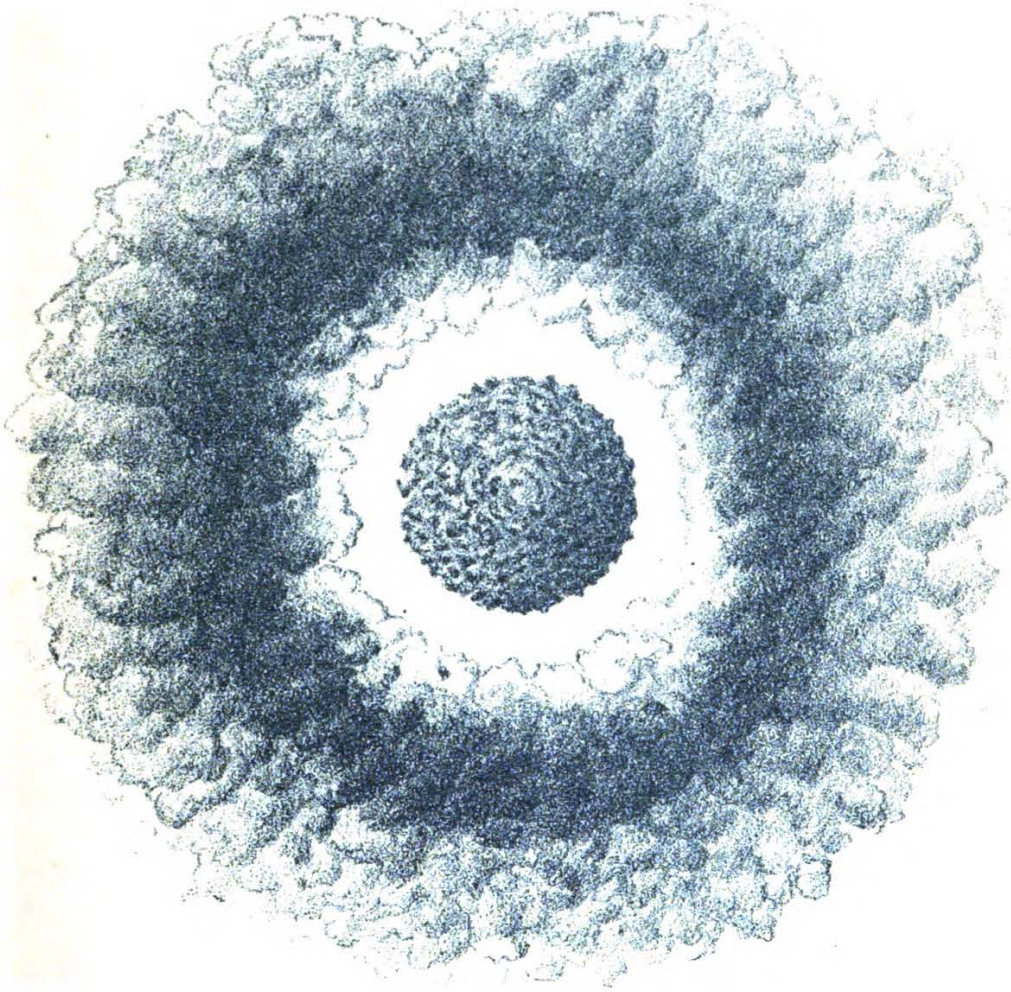

A PLANET IN THE DARK AGE.

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perfect equipoise of the different elements in the structure.

The atom of each element in its ability to grade upon a chemical equilibrium with the others gives form, and the ability to move upon the lines of definite directions gives the necessary balance to create the diversified forms that belong to the department of universal or diversified nature.

The form of the atom is of little consequence compared with its functions in the economy of world building, but it has to have form or it could not create form. It probably varies in structural appearance in the different elements, but its great work is done in the lines of its forces which arrest the moving atomic forms in space, through the same principle whereby two or more bodies meeting with uniform or different velocities respond in motion to the impelling force, giving a different result in either case, but always proportionate to the balance of the forces in each.*

* Crystallization has been the subject of much discussion among many scientific schools, but the theory of atomic arrest upon convergent lines seems to be the most satisfactory of any yet advanced. By the exercise of this power upon a grand scale, all the elements are capable of being factors in planetary form, and it seems axiomatic that crystals are themselves indices of the directions in which the atoms are moving at the time of arrest. By the mighty impulses of planetary forces crowding the crystalline depositions toward a common center, we have the best explanation of the phenomenon of planetary accretion ever given, and at the same time it accounts for the varied appearances that pertain to the planet in its different periods of formation. Crystallization can hardly be said to ever cease its operation in the sphere of planetary form until the planet itself loses its vitality and the elements in it are chemically unlocked by the lapse of time or the reception of external forces.

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So in space the moving atoms meet each other and come into the relations that make planets and suns a possibility, and creative powers and processes are eternally at work. Upon one plane or another, the atom must be manifesting its eternal energy, and as a consequence the realms of space respond with the wonders of visible and invisible existences.

Out of the darkness of the realms of chaos and night blaze forth the beacon lights that illuminate the boundaries of eternal space, and, wheeling and circling through the trackless void for countless ages, the suns and systems proceed upon their courses, obedient to the laws of balance that the tiny atoms of which they are composed have imposed upon them. Go where they may, they never pass beyond the sphere of atomic forces, and do what they will, they are ever subject to that subtle but intangible power that directs and controls their movements with masterly vigor throughout the cycles of eternal being.

Whether in their evolutionary processes from the primitive fire mist, or during the periods when they bear the harvest of immortal satellites, they are within the province of that power which the atom has to enter or depart from a world or its inhabitants.

The atom alone has the claim to eternal duration of form, for it alone has the power to enter and dominate all other forms. It exercises this power without any master except force, and to force alone is it amenable or subject. Whether force precedes it or is contemporaneous with it may not be certainly asserted by the wisdom of man, but probably force, which impels the atom upon its course with unerring precision, may precede it in the province of creative evolution. It is pos-

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sible that beyond the atom is an intelligence that has imbued it with these properties and powers, but if so, it is so much beyond the province of human mentality as to be outside the range of definite thought, and it remains for human ignorance to be silent in its presence.*

If the world is a resultant of this intelligent creative power, then it becomes amenable to analysis, and possibly comprehensible by intelligence of the evolutionary type, for that only needs increase of mentality to raise the intellectual powers of man above the plane of directed forces; and in that progressive evolution of intellect whereby the human race has already attained supremacy over the mechanical forces that pertain to the mineral world, we see a possible attainment of mind which itself shall become creative in power, and able to manipulate the elements in the atomic relations at will. Hence the Oriental expression, "God spake and it was done," is not so unscientific, provided the mind of a God is sufficient to control the movements of the atoms by the power of the will.

*The sublime egotism with which theologians delineate the character of creative power is in marked contrast with this idea, for, to the scientist dealing with the works of creative energy, there is always a feeling of helpless and well nigh hopeless inability to measure its powers or understand its purposes. Not so with this class of superficial thinkers, who can hardly analyze a drop of water. They can glibly propound theories of creation and destruction, which they ascribe to the Supreme Creator, as if the latter had nothing to do but create and destroy worlds for amusement. It is enough to say, that the deductions of all schools of theology that represent creative energy as acting in the lines of deliberate purpose to create and destroy animate form for pleasure, are probably as wide of the mark as to the true source of existence as the fabulous tales of the Oriental world.

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The definition of that great English chemist Michael Faraday of the nature of the atom, viz., that it was the point of force, has never been transcended by any of his modern disciples, and with instinctive insight he seems to have struck the key note of modern science when he gave it that definition. If he had added, it is the basis of all form as well as the center of all manifestation of force, the correlative would have been complete; but as it was a question whether the atom was a tangible entity, he wisely limited his definition to that department that belonged to the province of demonstrated power.

Upon the plane of chemical balance, there seems to be no known limit to the range of power which the atom can traverse, and in the worlds of space it ranges with the will of almost Omnipotent energy. In its activity, we have the visible relations of the elements coming and going with the eternal changes of form as the only certain resultant of its marvelous powers.

Suns blaze forth in all the splendor of celestial radiance, to give place to the dull, opaque planets that teem with the myriad hosts of sentient life. Planets go their courses through the cycles of ages, yielding a harvest of beings that reflect in varied degrees the forces that govern planetary forms, and they in turn pass to the invisible realms where all force is stored, it may be to reflect again the glories of another plane of existence beyond the gradation that belongs to the visible form.

It has been the dream of the alchemist to so manipulate the elements as to cause one to be transmuted into another, but the nature of the atom has proven an insurmountable barrier so far in that province of chem-

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ical science. Were the hypothesis of the unity of primordial substance correct, this ought not to be so difficult of accomplishment, but the law of definite proportions has proven to be an impassible barrier to the successful transmutation of any element to the province of another. The atom refuses to obey the will of the manipulator when he desires it to change the elements from one primate form to another. In all the compounds it obeys readily enough, but beyond that sphere it seems obstinate beyond explanation. It either is bound by the power of an Omnipotent force to move in certain fixed lines to form the primate, or the primate is a reflection of that diversified yet positive will that is expressed through the infinite forms in which the atom enters as the chief factor.

Whether the primate will ever be resolved into constituents or not by the power of man, it certainly reflects to a great degree the enduring properties of matter which lie at the basis of planetary systems, and whether they be manifest in the visible relations of siderial systems or as the invisible ether that fills all space, they witness to the existence and power of an Eternal Intelligence, to whom alone they are as yet amenable.

Man feebly exhibits the image of that wisdom, and boastingly asserts his intellectual superiority over the rest of visible creation, but he is ever subject to the powers vested in the atom, and only as he reflects the activity of the elements in his own structure, is he able to rise to an intellectual status whereby he can comprehend the more simple manifestations of constructive energy. How little, then, can he know of the greater and more complex exhibitions which belong to the planes of atomic relations that are above the realm of physical

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life. If he is ignorant of the first principles, he attempts to build upon a false foundation, and substitutes the imaginative conceptions of the immaturely developed mind for the actual manifestations of powers that belong to the universal processes of nature, and that act in obedience to absolute and eternal law.

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CHAPTER III.

THE NATURE OF FORCE.

Behind all the transmutations and exhibitions of the elements lies the inscrutable agent whereby the changes of relationship between the primates and their resultants is effected. Force and matter are the basic postulates of science, and the question as to priority is yet undetermined in the archives of scientific discovery.

If we examine carefully the inner workings of the elements that finally result in form, we are struck with the absolute nature of the power whereby resultants of a specific character are assured, and upon this basis we are able to measure approximately the force requisite to produce the result attained.

By this process we establish the evidence involved in the problems of correlation and conservation of force, and determine wherein the latter may be assuredly verified by demonstration.

In this process we find that force is measured by the degrees of motion that form manifests, and that proportionate to the mobility of form is the activity of force, for with the gradation of force in the form does the form itself reflect the power of motion. Here is the key to the solution of the nature of force; for in that power of self activity of form is it able to rise in the grade of sentient power, and as it ascends to the higher planes of action it acquires mastery of all the lower planes by virtue of its superior activity.

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This again places the question of the nature of force at a still more remote distance from the province of form, or rather it gives rise to the question as to the limits to which force may assume form or control it, and, as in the realm of radiant matter, where visible form apparently ceases to exist, force is still predominant, the student of forces is often obliged to conclude that force proceeds from and is superior to those relations of the elements that manifest form.

This conclusion opens a vast realm of unexplored territory in the sphere of physical science, and places the question of creative energy almost entirely in the realm of forces which, through physical evolution, are working out the problems involved in a universal cosmogony. If we enter that realm, we must do so through the gateway of chemical knowledge, for in chemistry alone do the elements descend to the plane of inspection of physical science.

In chemical formulas for the production of new forms, there is a general law of proportions that never varies in its results save when the forces in the elements are acting upon different grades of atomic activity, in which cases the resultant forms vary as in isomerism; but in all these different relations of the elements in the form, the primitive forces are never beyond inspection, and proportionate to their manifestation through the atomic relations does the form respond in the different relations that form can exhibit; and while the primate elements are limited in number, their combinations in form through the different degrees of atomic forces seem to be without limitation.*

* Here the reader will perceive that a new evolution of the mental powers is necessary, and that we must look beyond form as the

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The creative energy of the elements seems to be resident in the combinatory properties of the elements, and these in turn seem to be dependent upon the impelling forces that cause the atomic relations to harmonize in form, and, by inference, we seem to be justified in the conclusion that force is antecedent to form, and superior to the atoms which it controls with resistless energy.

Can force be analyzed to its primate expression, as form is amenable to disintegration, through the manipulation of the elements in its composition?

This question throws us back in the process of analytical reasoning to the consideration of the first cause of all exhibitions of creative power, and, if it can be correctly answered, opens up to human comprehension the nature of force.

At present there seems to be but one answer to this question, viz., through the application of principles all creative power is manifest; but the existence of the principles by which the universe exists seems at present to be beyond the province of the human mind in its present state of evolution to explain. At best, it can perceive their existence and also their external workings; but until it can be raised in perceptive power to observe the internal action of the elements as they organize into the varied forms, it cannot correctly determine what

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only field in which to study force. Further on it will be perceived that form follows a definite law of mental properties, and that the elements do not enter into new forms so readily as when intelligence directs them. Unintelligent action of the elements gives crude forms, or, as we see, distorted relations which, while reflecting the existence of the forces in the elements, does not bring them into anything but the more crude relations.

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degrees of power are requisite to produce the results of the universal cosmos.

It must rise in the grades of a supersensitive evolution of conception ere it can determine how a world is made, and to that power must be added an almost divine conception of the nature of force which by the exercise of the will can direct the elements in their interrelations so as to produce the symmetrical results that belong to the perfected forms which reflect the exercise of intelligent purpose in creation. For despite the ignorant and crude speculations of humanity concerning the nature of infinite power, the universe reflects in its chemical relations the certainty of intelligence as well as law in all the exhibitions of force that it manifests. Behind the primitive rocks lies chemical power; under the first forms of life are the principles that pertain to all life; and in the circling planets and wheeling suns resides a force that controls all intelligently, or at least with positive and inexorable determination.*

Man imitates this creative power upon a limited scale in the sphere of constructive energy, but man is limited in his efforts by the original forces inherent in the elements or imposed upon them by the primitive source of all power. He can manipulate them at will

* The recognition of intelligence as being the motive power of universal creation must not be confounded with the so-called theological definitions of that power. The universe has in itself a primal power that covers all subordinate manifestations of force, and the inability of human mentality to either comprehend or explain it is no proof of its absence or nonexistence. The human mind itself is so low in its evolution that it rarely ever goes above the animal plane of rationality, and of course its definitions of the creative intelligence must ever be crude and vague as long as it is in the first stages of growth.

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subject to their primitive principles, and, as he rises in the scale of intelligence, can master them by manipulation. Because he can do this on a small scale, it is not unscientific to infer that when his mentality reaches a sufficient degree of development he can obtain a knowledge of primitive forces, as now he has mastered some of the problems of the subordinate manifestations of them.

When this status is reached, he becomes capable of analyzing forces and tracing them to their primitive source, but until then it seems that the mind must be content with mastering the knowledge of the combinatory processes whereby creative power manifests its workings upon the planes amenable to human comprehension.

There is, however, a type of human development that relegates all ultimate knowledge of force to One Supreme Mind or will and there leaves it as unknown and unknowable; but this conclusion is based upon the theory that the mentality of the race is to be forever confined to the plane of the physical senses, and incapable of exploration beyond their boundaries; but this is only to confess that evolution ends with the physical life, and that the great law of correlation and conservation of force is inoperative upon other planes —planes of conscious existence — which thereby limits the field of scientific exploration to the plane of physical evolution only.

That this is a rational deduction from the premises of physical science is true, but not from the facts that pertain to the sphere of mental forces; for the latter, while intimately connected with the sphere of the physical forces, are superior to them, being able to make them

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subservient to their will proportionate to the intelligence that mentality has acquired. Hence, the deduction that anything unknown is necessarily unknowable is questionable; for everything that is known becomes so by the growth of the mental powers upon the plane of evolutionary development, and the mind of one age, or even of one individual, is no criterion of the possible attainments of the mentality of subsequent ages or other personalities.

We speak of this latent power of mentality to enlarge the field of knowledge, for upon it depends the possibility of exploration of the nature of the primate forces that make siderial evolution a subject of scientific analysis. In the creation of suns and systems of planets, whereby the mental powers become evolved to the plane of conscious intelligence from the apparently blind forces of physical existence, lies the solution of the greater problems, whereby mentality, of some degree, has been able to control the original conditions to form a world or a system of worlds from the primates.

We say mentality of some degree of development, for the marvelous accuracy with which the elements are marshaled into the different types of form is an axiomatic postulate in our scientific exploration of final causation, and we feel justified in asserting that the force that controls the atoms in their movements, as well as their resultant forms is not beyond analytical comprehension, nor does it work without intelligent purpose in its production of the wonders of physical and mental phenomena.

It is intelligence of the highest order of life itself and it works out its purposes with unerring accuracy of design, nor do the different exhibitions of its powers

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exhibit weakness of purpose or inability to reflect perfect accomplishment of its aims. It should not be regarded as impotent, because in physical exhibitions it seems to be crude, for we should remember that it has an eternity to carry on its labors, and that planetary forms are only incidental steps in the pathway of a never-ending series of evolutionary processes.

Therefore we speak confidently of the certainty of the Wisdom and Benevolence that forms and directs the conditions of planetary systems, and in the evolution of types of a similar order upon them, we see that humanity reflects, dimly it may be, the principles and purposes of an Infinite Intelligence that is the ultimate source of all force which is manifest upon the plane of physical or mental expression.

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CHAPTER IV.

THE RELATIONS OF FORCE TO PLANETARY EVOLUTION.

We have seen that, as the ultimate of cosmic analysis, all planets have their origin in the inter-correlation of the elements in space as they come into chemical balance from the different ratios of their atomic relations. We have also determined that in the planetary forms of the elements the atoms grade in power proportionate to their activity or silence in the form, and the question naturally arises as to the ultimate source of the motion by which the atoms are originally endowed with their primitive rates.

In treating this question, we are necessarily thrown backward into the realm of forces from which proceed all the transfers of primitive to secondary manifestations of matter, so that again we are forced to trace out, by principles that can be analyzed through processes, the ultimate source of planetary causation.

In this process, we have but little to go by save mental perception; for in the process of world building, through the crystalline and cell structures of form from the primitive elements, we have to keep the mind alert all the way; but luckily we do have, in the application of the microscope to solving the mysteries of primitive form, a very efficient ally to the mental vision.

If we examine the most minute fragments of primitive rock through a powerful magnifier, we see that the

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first crystalline structure, however minute, is but a prototype of the agglomerated mass, and that the primitive rock basis of planetary form is but an aggregation of the minute crystals that have come from the fire mist, seeking to balance around a common center, which gives a globe form to all planets.*

The most massive rocks visible to inspection all testify to this fact, and the revelations of the telescope about the structure of the moon † show that the basis of planetary formation is in the principle of crystallization that is open to an inspection, and hence we assert that planets form first as solids in space through this principle of crystalline arrest, and by the same transfer of atomic motion that we witness in the falling

* The evolution of a planet from the crystalline solidification of the primates is the first step in the process of planetary formative power, but it seems to have been overlooked by many of the students of evolution. The accretion of enough of these minute structures in space is the basis of all planets, and their steady production by elementary combination seems to be the ceaseless process whereby planets are sustained in their visible form. Through this power of atomic combination they hold their way through the long ages of the planetary stages, until the forces in them are raised to a higher rate, when the form vanishes and the force departs to new relations. The question of the duration of planets will be discussed further on; but that all planets may be said to be subject to this law of growth and decay may be said to be axiomatic, and no possible escape from this process is either probable or rational. The quenching of the light from some of the fixed stars, as well as the flashing out of new ones, are the evidences of the changes that must be going on in the universal cosmos because of these principles that underlie all planetary forms.

† Planetary satellites owe their origin chiefly to two causes. When the elements, in passing from the solar to the planetary state, are more active in some portions of the photosphere than in

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snow or burning, fiery meteoric forms that now and then touch the earth's orbit and tell us what nature is doing upon a grand scale in the realm of invisible material.*

In the transfer of the atomic forces to the planetary form through crystallization, we are struck with the positive relations that force bears to form, for the elements in this transfer lose no power, but rather seem to have gained new expressions of vigor; and we wonder whether after all the atom has not become the exponent of a more useful manifestation than when it was winging its way through space silent and alone, without any apparent aim or purpose. This specula-

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others, a precipitation of the crystals toward a cyclonic center results in the formation of a secondary satellite, which, being within the radius of the outer orbit of the cloud envelope that conceals the inner planet, acquires a motion of its own around the central planet and ever keeps it company. It cannot fall toward it because it has the same equal attraction toward its own center that the main planet has; so it remains in space, a partly formed satellite, but rarely ever able to become a full-grown planet. That is why the moon presents the rough and rugged appearance it does, and why it has no life, or ever had, as the central planet took all the forces in that stage. The moon got to the crystalline condensation, but after that it kept on in its orbit, while the clouds precipitated their waters upon the earth rather than upon the moon, although it may have had at one period its time of moisture, but it was so remote that it did not last long enough to essentially change its surface or make it habitable.

* The student of cosmic form, as it is manifest in the sphere of the crystalline results of the elements in space, is often amazed at the transfer of the invisible elements to the solid form. The idea that nature is dependent entirely upon this method for the accumulation of a gigantic orb in space, and that it can have no other source of being, seems almost beyond belief, but the primitive rocks have registered the process beyond the province of controversy.

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tive thought is the precursor of another very important query as to the necessity of a directing intelligence, which was briefly alluded to in a preceding chapter; for while the atom or the element is in the condition of a self-poised potency in space, it does not seem to be of that value that it afterward assumes when it has become a constituent factor of planetary form or sentient life, and the outcome of its mission in the economy of existence seems to be attained only when it has arrived at the position that it has become a constituent factor of an eternal being of an intelligent order.

In the planetary forms, it can hardly be said to have reached this status, for they all pass through the stages of birth, life and death, and the atomic relations follow other lines of force than those which pertain to these relations. Nevertheless the primitive forces that reside in them and which have once marshaled them into form have not receded in power in any degree, and if the form does perish the force cannot, and holds its own course somewhere in the vast universe of material existence.

For materiality is not bounded by the limitations of physical sense, nor can the narrow range of physical or undeveloped mental vision be safely considered to be a barrier to the existence of material existence.* The

*Here again is a principle of nature that has been blindly overlooked or perverted through the ignorance of the race. When form vanishes force is supposed to be dissipated, and to the majority of minds no form can exist that is not palpable to some of the physical senses. The idea of ethereal forms is often scouted because they cannot be measured by the relations of the elements in the visible relations; but while the elements in the radiant state

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microscope and the telescope both contradict the conclusions of ignorant speculation here, and when to them we add chemical analysis as the basis of exploration into the worlds invisible, we find that of all errors by which the mind of man has been dwarfed that is the greatest which has taught that matter belongs to the world of only three dimensions of space. The fourth dimension out of which the others come is paramount, and in it reside the primitive forces which make the world of three dimensions a possibility.*

From the realm of matter in the fourth dimensional capacity, we must seek the immediate causative principles that govern matter in the relations of length, breadth and thickness, for in that department of nature belong the primitive elements out of which the visible world proceeds.

As entities, the elements there are superior in some respects to the analytical processes of the third dimensional state, but they are not beyond our recognizance, for the electric force in nature is the great agent whereby the elements in all states may be measured and controlled. Through its adaptibility to the shifting of

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may be atomized, they also may be as subject to form power as in the denser relations, as clouds as well as crystals form from them by change of atomic velocity.

*The former definition of matter as having only three dimensions has been a serious hindrance to the reception of the idea of the existence of the elements in the radiant state or in the fourth dimension so ably presented by Professors Crookes and Zollner. While many scientists still cling to the traditional idea of the three dimensions, the continual influx of powers pertaining to the fourth sphere sets the question at rest upon a basis of absolute demonstration that cannot be questioned. (See Zollner on Transcendental Physics.)

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the elements from one form to another, we get the first insight into the nature of cosmic forces, for, by the intelligent manipulation of it the cosmic combinations can be dispersed at will, and could there be the same processes employed by reversing the course of its action, the elements in the world invisible could be made to assume form as well as to lose form in the visible by the skill of the operator.

However, except in the lower states of fluidic solvency, the electric force is not available to call form from the invisible realm at will, but in the lower state of solution the elements seem to be perfectly amenable to intelligent will and skill.

This brings us at once to the consideration of the possibility of intelligent power behind the operations of the elements in the fourth dimensional state, and if construction of the suns and systems that belong to the universe are the resultants of blind mechanical powers or the fruitage of deliberate and determinate purpose. To the external observation, there seems to be no evidence that anything save mechanical power pertains to the first stages of planetary form; and it is only when we apply the principles of chemical analysis to the solution of the production of mechanical forces, that we see that the links of causative evidence are perfect all the way from the realm of atomic matter to the production of visible form.

The proof seems to be positive that the elements in their transmutations from one realm of existence to another obey the will of some type of intelligence, although they do not always appear to follow the same grade of wisdom that belongs to the type of human development. They do, however, reflect a wisdom that adapts

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them to the end sought, for they exhibit the evident design of a long existent purpose as well as a perpetual source of increasing sentient powers.

It has been flippantly asserted that the outcome of scientific discovery is or would be the annihilation of respect for the idea of a Supreme Creative Intelligence, but this is hardly just to the hard working students in this department of the mental world. To stand face to face with the great forces of nature as they work out the problems of Eternal Intelligence, and observe how absolute are the results, is well calculated to impress the student of cosmic forces with a proper respect for the Power that has established the laws which dominate the material world; and although the intelligent scientist is inclined to smile at the declarations of ecclesiastical dogma concerning the nature and attributes of the Supreme Power, yet he hardly fails to see and appreciate as few others can the infinite wisdom and beneficence of the Architect of the Universe. Even more than this: he is inclined to concede that, behind all these exhibitions of the mechanical forces that result from the perfect arrangement of the chemical relations of the elements, the will of a master mind directs the elements in space to the formation of suns and systems, as the will of a skillful chemist extracts the precious metals from the crude ores by the application of a counter balancing force to overcome the crude combinations that belong to primitive form. This brings us to the point of an analysis of the forces that make planets and systems a possibility in the realm of siderial evolution, and why it is that in space the elements are perpetually forming worlds upon worlds, as well as, upon some of them, propagating

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myriads of intelligent beings of all grades of life, that reflect in greater or less degree the infinite varieties of force and form that pertain to the planetary state.

It evidently is not blind aggregation of molecular combinations that produces all of planetary forms, nor is it probable that the evolution of intelligent beings upon the planets is a result of fortuitous combinations of the atoms. There must be some occult power that directs forces to the accomplishment of specific purposes, or the purposes could not be accomplished. The evolution of a planet from the invisible realm may be ages in accomplishment, but its ultimate is assured if intelligence directs the movement by which it becomes existent as a planet; but if it should be otherwise, it is liable to the fate of the meteoric bodies in space that follow the law of mechanical or chemical forces only, and while they float on for ages with no outcome of result, are nevertheless instructive witnesses of the methods whereby the elements without specific direction perform their mission in the sphere of world building. It is a startling suggestion, and one worthy of more consideration than is usually given to it, that worlds are built by subordinate intelligences, while the universe is governed by the Supreme Wisdom, whose knowledge transcends the highest conceptions of the world builders in space.*

This idea, which once held great influence in the

* Regarding the grade of intelligence necessary to form a planet, it may be said that it should be high enough to control the forces inherent in the elements, to direct them to accomplish specific objects. When we speak of planetary gods, we mean to be understood to say that the grade of knowledge that can do this may be attainable by developed human minds. We do not, however,

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ancient world, although veiled in Oriental language, throws some light upon the literature of the so-called sacred order which represents the god of the world speaking from the whirlwind, and asking the patriarch Job, "Where wast thou when I laid the foundations of the earth? When I made the cloud the garment thereof, and the thick darkness a swaddling band for it?"

While here is a literal representation of the primitive powers of planetary evolution, yet had the patriarch the wisdom that belongs to this age he could have truthfully answered, "I was in the elements awaiting my time, and like thee, O Lord, I, too, am immortal, although, as yet, wanting in thy wisdom. It may be thou art the creator of the world which my eyes behold, but as thou art only one of the intelligences immortal that have power to create worlds, boast not over me as though thou excellest in wisdom by virtue of any inherent power of thy own. Thou askest, 'Who hast laid the measure thereof, or canst thou send the lightnings that they may go and say, Here we are?' yet I say unto thee, O Lord of the world, that weak as man is to answer thee now, the time will come when he shall answer thee truly, and even the gates of death shall in no wise bar him from that knowledge that pertains to the eternal world. For, O God of the world, thou, too, art but a spirit that excels in intelli-

by this wish to be understood to say that such gods are self-creative, but that their ability to control planetary forces lies in their knowledge and skill. To go back of them to the primitive world builders, is to go further back in the province of the mind realm than we here may be able yet to do; but we think that the popular idea of a Supreme Diety directly manufacturing worlds to please himself is erroneous.

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gence, and thou createst only by thy attained wisdom, which enables thee to call the elements in space to fulfill thy designs and reflect the glory of thy purposes. Man shall attain unto thy wisdom in the ages to come, and become gods in power to do as thou hast done."

If such an answer had been made and recorded in the ancient scriptures, it would have been hailed with the wildest enthusiasm by the religious devotees of this age as evidence of prophetic wisdom, yet it might have been truthfully recorded, for in the domain of modern science all these questions have been intelligently answered.

The very God who asked them has receded from the mental supremacy of a spiritual tyrant to a subordinate position in the world of evolutionary thought, as only one of the more crude minds of the eternal world, whose handiwork yet is incomplete and whose planet has to undergo ages of growth ere it is able to produce a more perfect fruitage.

To the reader, the foregoing may seem to be fanciful speculation, but a more familiar acquaintance with the ideas of the ancient Chaldean astronomy will explain better the nature of the sacred writings and the mystical references to the gods who are ascribed to the different planets, as well as to the astrological influences they were supposed to exert upon the inhabitants of earth.

While it is desirable to divest ourselves of all superstitious reverence for the unseen powers of nature, and as far as possible to avoid all ignorant devotion to them, we must admit that the evolutionary powers of this, and probably all other worlds, are subject to modification by the exercise of intelligence, and that

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intelligence as a factor in solar or planetary evolution must not be discounted in advance by the intelligent scientist. The world does not reflect blind force alone in its own evolutionary development. It has a continual reproduction of its previous conditions, but it also has an additional development of new powers, that reflect more and more positively the exercise of intelligence that belongs to a higher order than physical life, which serves to lift the race to a higher plane, and places the individual upon a more lofty platform for intellectual observation.

When this is fully accomplished, the mental powers begin to take cognizance of the play of forces from the invisible realm upon the evolution of planetary forms, and as the mentality increases in perceptive power it perceives that planetary evolution is almost the direct result of intellectual manipulation of the chemical and mechanical forces to produce forms that shall reflect an infinite variety of powers.

It is so palpable that one almost feels inclined to think that the old Greek and Persian sages were right in their multiplicity of subordinate gods who had control of the lower grades of physical expressions of force.*

But whether they dimly sensed the intrusion of modifying powers upon the physical world or not, they

*There is in the ancient ideality of cosmic thought a wonderful under current of evolutionary procedure. Our modern scholarship is bringing to light the real thought of the ancient cosmogony, and while it is expressed in metaphor, there is a world of wisdom in some of its properly translated expressions. While it may not be wise to embody them in our modern science, yet they are destined to have a great influence when understood in their real significance.

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certainly had good reason to attribute much of the (to them mysterious) operations of nature to the influence of the gods, for there were ever coming before them evidences of the power of the invisible world, modifying the external, as there is now; and while superstition may and probably did have much to do with the conceptions of the sages concerning the nature of physical existence, yet they saw quite clearly what the highest attainment of modern science has been able to demonstrate relative to the nature of force and matter in its relations to both spheres of being. Democritus touched the key note of evolution when he announced the material nature of the universal cosmos, and that gods and men were subject to its dominion, and the wisest minds of this age have not excelled, if they have equaled, his conceptions of the true source of sentient existence.

It is for this reason, therefore, that in forming conclusions of the modifications of planetary conditions by unseen forces, we are obliged to take into serious consideration the existence of invisible intelligences that understand how to manipulate the forces that pertain to planetary evolution. That they exist, certain phenomena absolutely demonstrate beyond power of question. That they understand how to affect planetary forces in form, is neither absurd nor chimerical, for we upon a lower plane can do likewise. It is only the degree of intelligence that limits our power to manipulate the elements at will within a certain sphere of physical conditions. There we are gods and do what we will; give us time to perfect our knowledge of the higher planes of power, and we can make a world as easily as

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we now fashion a machine to manipulate the mechanical forces of the world.*

Our evolution may be slow or rapid, according to the degree of power we can develop and maintain while in physical life, but the great forces of planetary existence are ever at our disposal, and we can go forward upon the plane of earthly or heavenly life regardless of the powers of craft or the opposition of ignorance.

As we ascend in the scale of conscious intelligence, the universe naturally opens to our mental vision, and the vast suns and systems of space become amenable to observation and analysis; and with the basis of a scientific conception of the powers that underlie the physical universe, we will now proceed to explore the realms of infinite space, to observe what the creative powers are doing in the way of expressing the accumulated wisdom and experiences of world building through the ages of eternal being.

* The steady increase of mental growth among the civilized nations is a marvelous proof of the possibilities latent in the human race to attain to a complete mastery of the mechanical forces of nature. From the purely animal functions of life, we perceive the mental powers rising in the grade until the forces of nature yield themselves to do their bidding. Men become as gods in this way and no limit seems to be placed upon their ability to grasp and solve the problems of all life.

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CHAPTER V.

THE GESTATION AND BIRTH OF A PLANET IN SPACE.

If we turn the telescopic vision upon the nucleus of a comet or the nebulæ in the heavens, we behold an exhibition upon a grand scale of the gestation of planetary form from the ethereal relations of the elements in space. The atoms moving in the orbit of the nebulæ or comet have changed their primitive rates sufficiently to become within the grade of motion that pertains to cosmic light, and they transmit the vibratory pulsations upon the elements beyond their immediate range sufficiently to register to our vision the evidence that a world is being conceived and is to be gestated in the great domain of invisible matter.

We can watch the coming and going of the luminous masses with some degree of perceptive power through the telescope, but in these stages the process is very slow, and ages may elapse ere the forming planet is amenable to our direct inspection. Still, in the realm of chemical forces, we can inspect the processes of the incipient world; for as the precipitation of visible matter occurs by the perfect balance of two or more elements held in solution in our lesser experiments, so upon a grand scale nature is precipitating the elements of a world in space by the application of this same law of chemical balance. When the grade is low enough to emit light, then the fire mist shines forth with glowing radiance to announce to the inhabitants of other worlds

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the coming of a new member in the great family of planetary forms.*

Out of this fiery mass of radiant material the primitive crystalline forms first begin their precipitation toward a common center, and as age after age elapses the opaque form of a planet begins to float in space, self-centered and self-sustained by the combined efforts of the elements composing it to balance themselves equally in all directions.

In the first stages the form of the nuclei is far from perfect. The crystalline spiculæ fall upon it in irregular masses, and the whirlwinds of force drive them in huge drifts, that in places resemble the irregular piles of snow, which at this day witness to the methods by which nature builds form out of the invisible material in space.†

The central mass in the fiery cloud naturally takes

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*The first evolution of the nebulæ from the fire mist follows the line of arrested molecular action by aggregation. The elements in this relation come toward each other by the perfectly natural law of molecular balance, as the molecules themselves were the result of atomic arrest. The gradual arrangement of the molecules to the crystal form gives the latter no alternative but to again seek equilibrium with each other, which gives the planet its basis of rock structure. There is but one general law all the way down from the fire mist, and the planets all observe it.

† The recorded forms of the primitive crystalline drifts may be seen in the massive outlines of the great mountain ranges of the earth. While storm and flood have served to crumble some of their more severe outlines, yet the primitive forms stand out in their rugged simplicity as when they emerged from the first stages of planetary accretion. With all the upheavals that have occurred since then, they remain substantially the same as when, in the dawn of planetary form, they came into visible relation from the radiant fire mist.

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the form of a sphere or globe, and the impetus of the falling hail of mineral material upon its surface naturally imparts to it a motion that responds to the direction of the strongest force.

In cometary bodies, we see that they wander at will throughout space, with no definite orbit; but in all planetary forms of a fairly perfected degree of growth the orbit is distinct and well-defined. The comet probably has not come into that perfect balance which gives it stability, or makes it subject to the law of mechanical balance with the more solid bodies in space, but when it does arrive at that stage it will then become the part of some solar system nearest its own range, as it arrives at that stage of planetary birth.

The first stages of planetary form must necessarily be of the luminous order, but when the elements have settled down into solidity, the glow of incandescence will then appear only in the gaseous envelope that pertains to the new-born world. It may shine and scintillate in space for countless ages, but the time will come when its light will grow dim and finally fade out; for when its work is perfected the elements in its envelope will be largely absorbed in the form itself, and the world will slowly resolve itself back toward the primitive relations from which it first emanated.

The question naturally arises here, how the planetary mass looks in the incipient stages of the evolution from the fire mist, and there is much speculation concerning it; but as all planetary forms are aggregations of crystalline spiculæ, the shifting of the elements from the fire mist to the form would naturally follow the same course that vapor pursues in changing from the floating state of the molecular arrest of the atoms to the crys-

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talline structure, and the gestation of a planet in space would necessarily be effected whenever the spiculæ had crossed each others' lines of motion sufficiently to form a common center of mechanical forces; and as their crossing of each others' lines would be at right angles, giving the cube form to the mass in the center, the natural motion of the mass in form, as it grew, would be the sum of the individual forces in the molecules transferred to the forming body, across a common center, which gives the rotary motion to the mass in form. As a result of this motion, the planet would rapidly take the form of a globe, and the molecules moving toward its center would pile themselves in masses around the axial revolution. Therefore, all planets would have and do have an axial revolution as a resultant of the combined powers of the molecular activity of the elements composing them.*

One of the cardinal errors of the age is the supposition that planetary formation, or the laws governing it, ceases at any known state of the planet itself. The chemical forces in space are never at rest, and all the planets are subject to their direct or indirect activity. In certain stages, the planet is nothing but a gaseous mass of incandescent material. At a subsequent period, it is a mass of solidifying rock enveloped in dense

* All the known planets have an axial revolution, and the solar center is not exempt. There is much speculation why this is so, but the silent forces of the elements in space probably have no slight influence in determining this. As all the elements move in direct lines to or from a common center, their arrest of each other through the meeting of the atoms at intersecting angles naturally gives the mass a revolutionary motion around a common center, which, of course creates an axial motion when the body has attained any great growth.

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clouds of vaporous fluids. It is then in its dark age, and if it is not within the range of a powerful luminous body like the sun, it is invisible to the vision, although to the expert observer through the telescope it might appear as a dark cloud floating in space. It is doubtful, however, if it could be discerned at any great distance from the earth with any instrument yet devised; for having no inherent luminous power, and the cloud like envelopes being lower than the rate of atomic vibration that gives the spectrum colors, it would not be discerned as being in existence until it had thrown off its envelope or taken on its transparent atmosphere, which might then shine forth with the luster of reflected light that belongs to a full born planet.

During the stages of planetary gestation, there must be some marvelous exhibitions of the chemistry of nature upon a grand scale. Even now the sun* presents, in the flaming convulsions of the luminous ether surrounding the opaque center, the primitive stages of planetary form, and the gigantic energy with which the elements surge and flash forth in the efforts to come into a perfect balance must present a magnificent spectacle to the close observer. Its pulsations of power through transmitted energy beat upon the shores of all the planets within its siderial system, giving rise to the varied electrical phenomena of space as

*As for the sun being in the state of a forming planet, all that can be said of it is, that it is following the law of all other planetary bodies. It will have its orbit around a center in due time, and as it recedes farther and farther from the center of the ellipse, it will be a world unto itself. The evidence of this is imperfect, although by no means to be rejected, for the law of growth is the same in all, and the chemical laws are at the basis of the universe.

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one result of its activity, and the earth responds with the production of myriads of forms that reflect to a greater or lesser degree its power; but the sun, although a great factor in the production of planetary forms of the secondary orders, should not be regarded as the true source of planetary existence. The old theory of La Place must give way to the later discoveries of science, and the sun take its place as the last instead of the first of the planets. He is the last born among many brethren, and the time may come when he, too, will have to take his position as the home of planetary life, and be dependent upon a sun yet to be born from the teeming powers in space, for this is the order of all planetary systems. What is the sun at one period of solar ages is the subordinate world at another, and when its time is full it must be born as a planet and fulfill the mission of one, as all its previous ancestors have been forced to do in the economy of planetary evolution.* This is no fanciful theory of the processes or outcome of planetary existence. The earth, which is one of the comparatively imperfect planets, has been producing its fruit for unknown ages, yet the evidence of its previous stages of elementary formation are registered in its bosom with scrupulous fidelity.

* The author would call special attention to this great fact in solar evolution. As all the worlds are the resultants of chemical powers acting in obedience to definite laws, so the sun, being one of these bodies, cannot escape from conformity to them or evade their requirements. The accepted theory of La Place, that it once occupied the extreme limits of the siderial system, and that planets were born from it by tractile energy, is seen to be but another of the misconceptions of mind, judging from external conditions instead of in accord with chemical principles.

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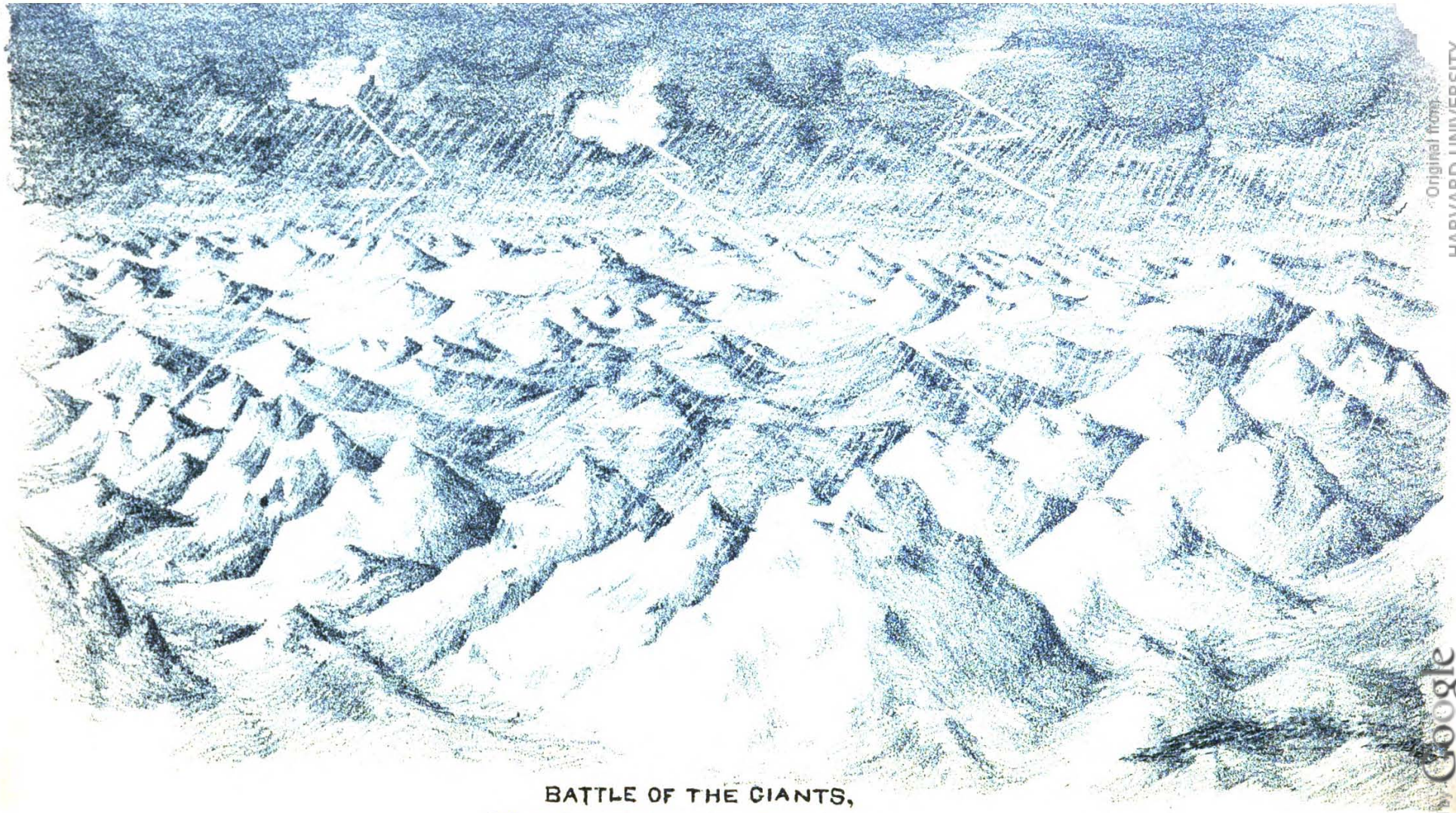

BATTLE OF THE GIANTS,
OR A PLANET IN THE RAIN AGE.

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The great mountain crags that lift their heads to the clouds are rent and scarred with the battles of the elements when the globe, emerging from the fire mist, had its desperate encounter with the descending watery envelope that kept it in a state of chemical ebullition for ages. The torn and ragged masses of shale, mingled with the huge crags of the primitive granite, that stand as mute survivors of the struggle, are the evidences that speak volumes of incontrovertible logic as to the forces which built a world out of the wreck of a dying sun, and the radiant power by which the earth yet responds to its last successor is the best of proof that the earth and sun acknowledge kinship, and had a common ancestry.

Both bodies respond to the possession of the same native elements when tested by the spectroscope, although it is hardly safe to depend upon spectroscopic analysis alone, but, in the interchangeable powers of the great electric relations of the elements, we have one agent whereby we can measure the nature and capacity of the sun with accuracy and certainty. Proportionate to its degrees of power, are we able to duplicate among the elements the essential processes and results that the sun and the earth produce upon a grand scale in the economy of nature. For the electric force is the great form builder as well as destroyer, and proportionate to its degree of activity do the elements come out of the invisible to the visible relations of material. All the elements in the visible world can quickly be sent into the invisible state by a powerful battery that is subject to the control of the skillful electrician, and through its power over the elements in the lower realm, we have ascertained the true process of cosmic

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as well as solar analysis. The carbon points that flash out in the density of darkness with a brilliancy rivaling the sun are powerful registers of the grades of force that pertain to the solar rays of light, as well as their nature, for the carbon, although only one of the elements that belong to cosmic formation, under the fluctuating power of the current of force, gives all the different rays of the solar system, and each ray corresponds in its light power with the same ray that comes from the great central orb of the solar system.

In the case of the electric light, it is the result of a perfect or imperfect control of the natural magnetic forces of the earth, and is caused by the transfer of those forces into motion that is applied directly to the elements in the circuit; but the results are identically the same as in the great natural pulsations from the sun, cutting the lines of force circling the earth, and giving rise to the powers of heat, light and the electric earth currents.

Do the spiculæ of crystals form in space by any definite laws of motion or are they the result of chance?

If we examine the crystals of the primitive rocks, we find that they bear the impression of being the modified form of consolidated molecules whose motion in space was arrested by some well-defined power, for they are hardly able to drift into all the positions in which we find them without some positive law of attraction or repulsion. They are found in all grades of form, it is true, but some of them evidently come there by a process of form building that is hardly understood at the first glance.

The first form of granitic structure which lies at the basis of the planet earth has its well-defined strata and

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layers, that show how the elements that form granite piled their masses of crystals upon each other ages and ages ere the final emergence of the globe from the fire mist occurred, but even their massive foundations were not all that were formed in those ages of planetary fury and surging power.

The atomic motion of the elements in space that were forming the planet had to have its corresponding transferral as the elements settled into the crystalline state, and by that law of polarity, through the electric transfer of atomic motion, the envelope of the planet flashed and scintillated with the radiance of a sun during that long period when the elements in the vortex were freez ing into the crystals that should make a world in space.

In that period were laid the visible foundations of the earth, and whether there were volcanic irruptions as the seething drifts of the fiery crystals struck each other and settled into place, or whether for a season the nucleus was free from such convulsions, may not certainly be known without a method to penetrate the depths of the earth be devised; but from the fact that the crystalline masses of the granite rock which compose the great bulk of the visible primitive structure, do not bear evidence of an extreme melting heat, except in places, we think that the heat of the primitive globe was not so great as has been the habit of many writers, who have assumed from the presence of volcanoes that the center of the earth must be a molten mass, although no doubt the earth was at a comparatively high temperature for a long time on its surface. But from the fact that granite crumbles and loses its clear crystalline structure at a melting point and becomes quite a different rock, we incline to the

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opinion that the central portions of the earth will be found to resemble the external rocks that have not been changed by the action of the atmosphere or weather.* It is possible that the surface rocks of the primitive order might have had their final crystallization in the period of submergence, and some of them seem to have marks of that age quite distinctly recorded. They are of the lower ranges in the great mountain systems of the earth, and vary somewhat from the greater peaks of the crystalline drift period.

Undoubtedly, the external surface was greatly heated and agitated during the period when the rains first began to fall upon it and crack and crumble its surface, but that was long after the period of crystallization from the fire mist, or even the age in which it was the solar center of the outlying planets.†

There are some natural queries as to what must have been the status of the planets outside the present orbit of the earth during this period of the world's po-

* Some writers on geology have inferred that granite rocks do not belong to the primitive forms of the earth, but that they are metamorphic in their character. From the fact that they are found all over the globe, and at its lowest explored depths, it would seem that they are their own best evidences as to the character of the primitive foundations of the earth. Because they do not confirm the theory that the earth was once in a state of lavitic emulsion, does not necessarily imply that they were metamorphic by nature. As resultants of the primitive crystallizations from the fire mist, they are all the evidences needed.

† Here is an idea that will bear careful analysis. It is well known that the sun of this age is not in the exact center of the solar system, but is in one of the foci of an ellipse. When it becomes a planet, if it ever does, it will then be in a good position to circle around a sun nearer the true center of our present system.

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sition as a solar center, but the answer must necessarily be somewhat speculative. If planets all have to pass through the gestative period, there must be all the necessary processes that pertain to the acquirement of form in planetary nature, as in its outgrowths. We can see and measure quite accurately to-day the processes of the operations whereby form is constructed from the elements, and we know of no law whereby form exists ever having been abrogated. We also know that until chemical knowledge was acquired, or had its birth, all ideas prevalent upon earth relative to the nature of form were based upon a superstitious interpretation of some ancient writings that were transmitted to the present age as the voice of the Supreme Creator. We know now that those writings were the work of sundry priests of Chaldea or Egypt, and that, so far from their being the voice of any creator, they were the fruit of speculative thought, supplemented by the most transparent fraud that was ever devised to hold the world in bondage to a priestly order.

That the priesthood of Egypt and Chaldea may have had great chemical and astronomical knowledge is unquestionable, and they might have sought to embody this knowledge in their writings, but if so, they purposely or negligently obscured its true meaning, and there is little dependence to be placed upon any rendering of it we can get in this age. Still, from the fact that they preserved the records of astronomical observations for many centuries, and had very valuable ideas relative to the nature of eclipses and other matters, we need not despise their writings, even if they sound crude in this age of the world.

It should be our object to ascertain what they meant

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by the terms in which they couched their ideas ere we blindly accept them as authority, or reject them as totally false and the words of designing craft. When they wrote that "the earth was without form and void" in the beginning, they gave a great truth, and when they said "darkness was upon the face of the deep" they sensed a true and positive relation of the planet when life was first evolved upon its surface in the dark waters.*

They did not seem to be able to follow out the processes of world building as we do now, but they laid the foundation of the great sciences that mark the progress of the race through the ages of evolutionary unfoldment, and we are more indebted to them than we are aware for the existence of our present scientific knowledge; for we do not have to tread in their footsteps, but, on the other hand, we can avail ourselves of their wisdom to proceed upon the pathway of new discoveries in the fields of natural science.

They may not have left a perfect record, or, if so, we may have lost it in the mazes of centuries of superstition and ignorance; but the men who made the heavens

*The efforts of the crude mentality of earth to understand the meaning of the ancient writings has led to numberless expositions of them to make them confirm dogma or creedal interpretations. Probably the writers had a special interpretation of the symbolical language in which the lore of Chaldea and Egypt was preserved, but it was lost or has descended to us in a very imperfect form. There is no doubt, however, that whatever they may have known or taught relative to cosmological ideality, the subsequent ages failed to grasp the significance of the truth they held, and gave us instead the present absurd astrological interpretation, that seems to present them as the work of superstitious idolaters. It should be remembered, however, that Christian symbolism runs upon parllel planes, and is of the same nature.

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a study in the ages of the Pharaohs have the advantage of us in this age, for what they lacked then in knowledge has long been remedied in the superior opportunities which life in the world invisible and eternal should have given them.

They know whether the solar system which they regarded as the work of the gods was a special creation by fiat or a long and slow evolution from the primate elements, and they also know whether the world in regarding their written ideas of the processes of creation as a divine revelation is wise or the victim of a foolish and childish superstition.

That the astronomers and chemists of the ancient nations might have sensed the truth of planetary conditions and their resultant consequences is highly probable, but that they had a revelation from the gods as to processes of creation is about as probable as the deductions of such minds as Wallace or Darwin being of the inspirational order. To those who conceive all new ideas to be revelations from the gods, such discoverers in the realm of natural forces will rank with the ancient inspired writers, but it is doubtful if Wallace or Darwin would in this age declare that their greatest thoughts were the result of any special revelation of Deity. In fact, the ancient writers whom modern superstition regards as the chosen vehicles of Divine Wisdom seem to be very chary of such honors, and often speak as if they did not regard the source of their oracles with the same reverence which our modern worshipers bestow upon them.

However, in the work of a rational solution of the problems of creative powers, we may safely discount all ancient revelations as but partial at best, and examine

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the ground upon which modern theories are based, and perhaps we shall discover that the gods reveal about as rapidly as man discovers, and that discovery depends upon the evolution of the mental powers whereby the mind can trace out from principles the processes that Creative Energy has actually employed in the construction of suns and systems that fill the universe.

In this work, we do not needlessly infringe upon any one's rights or privileges, for although the sticklers for the sacred character of ancient scriptures are numerous and persistent, probably a more helpless, and to a great extent hopeless, grade of intellectual weakness concerning the actual truth does not exist in the physical world than among them.

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CHAPTER VI.

THE LIFE OF A PLANET.

We have followed the elements from the primitive state of nebulous form up through the grades of solar and solid evolution until it becomes a vast body whirling and wheeling in space, with all its latent forces ready to spring into new forms and phases of activity, but we have not, as yet, touched upon the life energy of the planet itself.

For it has a distinct life and mission in existence as a planet, and to carry its mission to a successful issue it must have life energy as distinct as that of any individual life upon its surface.

When we use the word "life" it is in the general sense, and all planets must have a certain amount of vitality or they fail to preserve the form, and go back into the primates like any body from which the life energy has departed. If we can once discern the principle by which a planet holds its life power, we then have the key to the problem of all the life generated upon its surface; for life of the planetary order always draws its sustenance from the planetary relations of the elements, and no life that we are cognizant of can have an existence that is not dependent upon the planet for its first expression if not its full development.

This throws us back again into the realm of the invisible forces, which opens up to us an unexplored kingdom, for upon them we are to depend, and from them

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we are to ascertain the very foundation of life and its correlatives.

We have written of the nature of force and its relations to the movement of the primates in space, and here we must ask the reader to remember that proportionate to the play of forces in the elements upon each other arise all the varieties of form into which the elements enter as factors. The interchange and balancing of the atoms upon certain grades or rates of motion gives form, and the actual motion of the elements in the form gives life power to the form.*

Now, planets have the same atomic interchange upon a higher or lower balance that all other forms in the universe have, but the planet, in certain stages of its life, has different degrees of activity, and here is the secret of all its diverse appearances at consecutive stages of its existence. As a nebulous mass, its atomic motion is extremely rapid; as a solar body, its activity is lessened as the elements are passing from the gaseous to the fluidic and solid state; while as a planet full grown, its solid form is well nigh in a condition of permanent atomic repose.

*There is a theory extant and held by many teachers in the Oriental schools, that life does not inhere in the planet but is introduced to it by the will of the Supreme Mind of the Universe. This class of minds avers that the life energy comes from external infusion, and that the elements cannot evolve life, although they can produce form upon the lower plane of crystallization or cellular structure. Now, as all life which manifests itself upon a planet, however minute, has to give evidence of its existence in form through the cellular tissue first, is it rational to assert that it has its first evolution upon a higher plane and descends into matter, or does it look as if the truth lay in in the opposite direction, especially when atomic motion in the cell is the basis of life action of the form?

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Unless this state can be changed to some extent, the only life the planet will have is stone life, and the permanence of a planet would seem forever assured if stone life was all it could ever manifest, but even the stony solidity of the embryotic world has not escaped the transferral of the atomic power resident in all space, so its crystalline masses fluctuate with a slow, but powerful motion, which in time unlocks their primitive atoms, and sets them free to enter into new forms that will reflect other results in the domain of planetary powers.

When a planet is first emerging from the primitive fire mist, we have an exhibition of the most peculiar status of the elements imaginable. As the various compounds are evolved from the gaseous states to the crystalline spiculæ, the fiery sparks must necessarily be whirling and striking against each other in all the varied forms that the primitive mountain ranges now exhibit in the regions above the clouds, where the masses of rock still stand as mute witnesses of the last deposition of the primitive chemical struggles in space. In this wrestling of the primates in the gaseous state, we see the first evolution of planetary life, and it is no misnomer to aver that the first life power of the planet is a struggle for existence. The elements that enter into this battle are desperate antagonists, and some of them are never content with any victory they may achieve. Especially is this the case with the primate oxygen, for it is ever alert to seize upon all others, and in its equally powerful antagonist, hydrogen, it finds a foeman worthy of its steel; for between them they control nearly all the other elements that enter into planetary structure. When not engaged in contests with each other, they

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continue to be extremely busy with the other elements, and between the two, planets have a lively expenditure of energy that keeps the body itself in a remarkably active state of exertion.

This chemical activity that permeates its entire system may properly be said to be its life energy, and upon it the planet itself depends for its power of changing forms and conditions. It is not possible for it to be entirely free from chemical changes at any period of its existence, but during the time in which it is life producing this power is especially active and positive.*

Even more than this: the secondary forms that come into existence upon it are absolutely dependent upon it; for the moment the elements in the planet and its environment change from a specified condition or course of action, secondary forms perish, and the surface reverts to the primitive barrenness of the crystalline basis that first came from the nebulous consolidation in the gestative period.

Therefore, to measure the life energy of a planet, we must consider it equal to the sum of all the forces which enter its structure, and the sum of those forces is the quantity of each element multiplied by the rapidity of the motion of each atom in the element.† This

* Those who have not made a study of planetary forces upon the basis of chemistry are surprised that all life forms are so dependent upon the same powers that the planet itself embodies to have its existence. Let there be the least disturbance in the normal chemical activity of any living form upon the earth, and it follows the same law of disintegration or change the planet itself obeys.

† The meaning of this is, that elements in solidification are capable of weight and measurement, but when raised by trans-

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may seem to be carrying the matter to an infinite series of mathematical proportions, but the truth is that every planetary combination of the elements can be broken by the application of the same force that originally produced it, and the factors of the compound returned to their primitive relations. This places the life of a planet within the scope of mathematical calculation; for, as the elements within it are locked in combination by the law of definite proportion, when they are released from any cause back to the original status the life of the planet will have been finished, and it will revert back to the original status or enter into new combinations to form other worlds.

It will be somewhere in this period, between the emergence from the fire mist and its final dissolution in space, that the planet must have its life producing status, and there is no reasonable ground for the theory that any planet ever can exist that does not have some time in its history inhabitants or life resultants from its own inherent energy.

Our planet has long been a living witness to the truth of this theory, and it is only one of a series that belong to the great system that is within our special province of study. Other systems are to be considered, and when we realize that a few principles lie at the basis of all visible worlds, we are silent with wonder that in so simple a manner we can read the secrets of universal existences.

For it is not, as might be supposed, a theory merely when we touch the realm of solar chemistry. There

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ferral of force to the gaseous or radiant state. they change their status as factors of the life force of the planet from which they are released.

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are within our grasp the means to prove or demonstrate the theories of causation that touch upon this realm of study. Science through its powers is able to extend the sphere of positive knowledge into the fields of visible and invisible life to a degree unprecedented in human forethought or calculation in the past ages. The telescope brings to our gaze the forms of worlds that transcend our own in the sphere of creative energy. The microscope opens up to us a world that was unknown and utterly incomprehensible to the sages of antiquity, and each of them is the fruit of modern science in its endeavors to penetrate the veil of physical forces and their results.

The labors of the patient chemist have revealed to us the constituent factors and forces of this planet, while the equally indefatigable spectroscopist has begun to measure the chemical constitution of the suns, not only of our own, but other systems, and their labor is not in vain. Planets are born and systems are evolved by invincible forces, that if subject to superior power, are nevertheless themselves competent to evolve from their own elementary powers all that inhabit them, and sustain them in physical and mental ability, for a season at least, or until the secondary life is ripe and ready for transition to the realm of controlling forces.

Until a planet has done this, its greatest work may be said to be incomplete. How long it may be in its mission of accomplishing it may be incomputable in human calculation, but that it should do this ere it dissolves in space as a dead planet, is hardly questionable.

Nor should any superstitious theories of the nature of planetary life have any weight in our speculations of

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the origin or destiny of worlds. Those theories belong to an age and a people whose knowledge was crude, and whose theories were rather of the astrological than astronomical tendency, and who attributed creation to their gods. But if their gods created our heavens and our earth, they have been silent for centuries as to their motives, and the people of this age must seek for wisdom at other shrines or remain in ignorance.

One good astronomer with a fine instrument can reveal to us more of the material heavens than the planispheres of Chaldea or Egypt ever could. A Lavoisier or Faraday tells us more of the constitution of the earth than a Berosus or Hermes. They might teach of magic or the wonders of the gods in transmutations of the baser metals to gold, but the gold of this age is wrought out of the treasures that the earth has had locked in its bosom since the process of transposition has brought it from the radiant state of matter.

Great as has been the life of the past ages, this planet probably has not reached its culmination. In the ages yet to come her productions are to be more perfect, and ere she passes into the realm of eternal silence, her children will reflect in far greater power the forces that enter into her construction, for her full evolution is hardly yet accomplished.

The question naturally arises here as to the actual knowledge attained by the astronomers of the ancient world concerning the nature of planets and their destiny, but we cannot help having a strong suspicion that the knowledge of the philosopher was often obscured by the craft of the priest in what was written concerning the history of the heavens and the earth. When the Lord of the earth is represented in the position of a

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repentant creator, and deliberately plotting to exterminate the world by a system of wholesale destruction either by fire or flood, we see the hand of the priest in recording those ideas rather than a scientific revelation of world extinction, and we should treat it accordingly.*

The earth is too long gestating and being fitted for planetary life to be sent into oblivion by a whirlwind of fire or drowned out of existence by a deluge of water. That either of these conditions might put an end to planetary life is true, but their effect would probably be local rather than general, and the globe as a distinct entity would proceed upon its mission for countless ages.

There is only one possible way in which the planet could become extinct, and that would be by raising the elements in it to the gaseous state, which might release the atoms in the compound from their present relations; but that process is likely to be ages in progress ere the earth or any other planet would be annihilated in form. The more likely method is, that the elements will pass through ages of re-formation into the secondaries, and they in turn will pass from its environment with little immediate effect upon its destiny. Yet they will have some influence upon its ultimate extinction, for they must take some of the force locked

* The author must apologize to the reader for the frequent allusions to the work of priestly craft in dealing with the subject of evolution. In the most advanced ideas of the Chaldean or Hindoo astronomers, there was such an admixture of the astrological religious myths, that one hardly knows at first sight where to draw the line between the scientific and superstitious ideas. The world has made some advance since then, but the priest stands ever alert to seize the advantage if given him of scientific discoveries in this age of the world.

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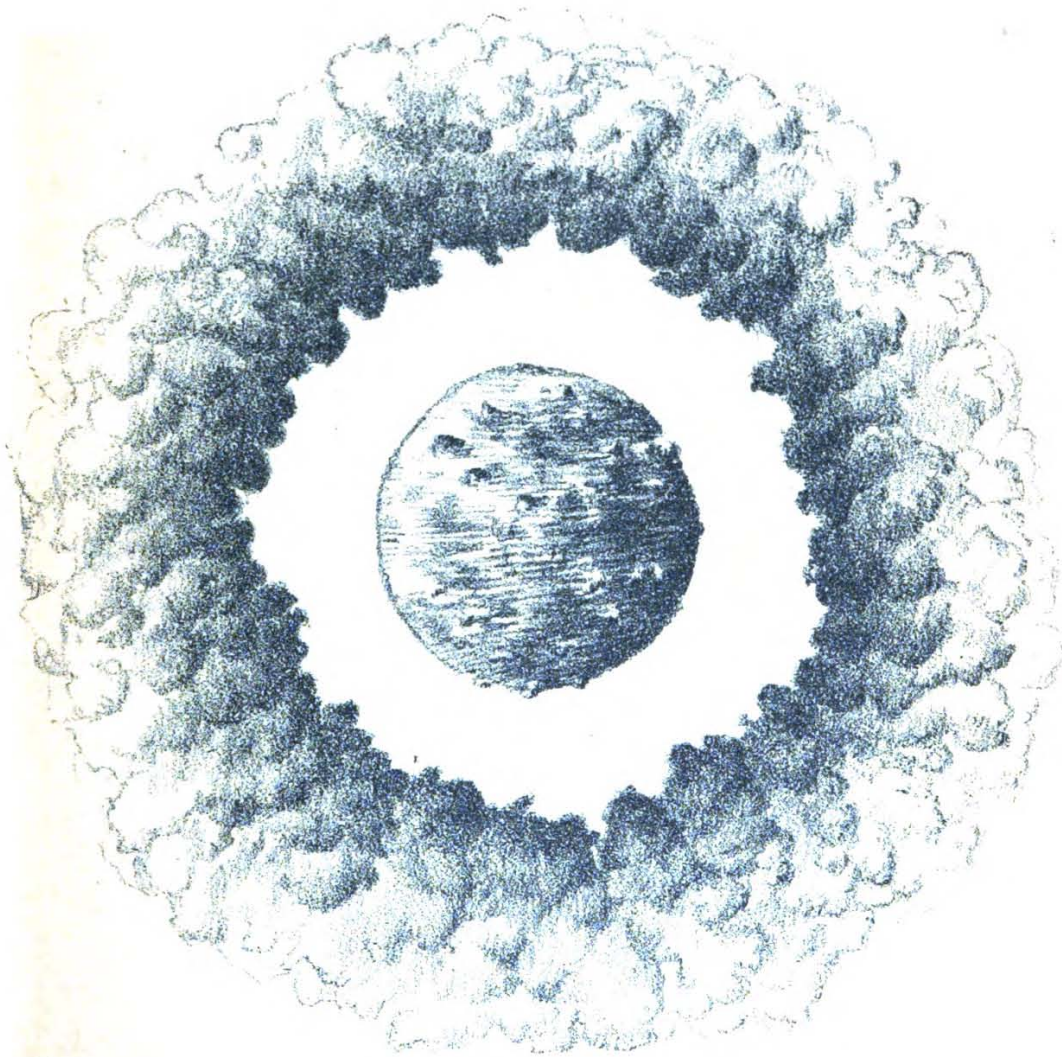

A PLANET IN THE AGE OF SUBMERGENCE.
THE CELL LIFE PERIOD.

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in the embrace of the visible universe when they depart to the invisible, and thus the time may come when the extraction of the latent powers of the planet by the process of the life and death of its inhabitants will leave it so enfeebled that it will no longer produce life or sustenance to support life upon its surface.

The question of the ability of the planet to hold an eternal existence as such may seem to be necessarily somewhat speculative, for our means of access to a knowledge of the life upon other planets are quite limited. Of the inhabitants of Saturn or Jupiter we can learn nothing from the telescopic vision, and of the possible dwellers upon Mars or Venus, we are almost equally in the dark. The latter are each nearer our sphere of observation than the former; but if the revelations of the telescope are to be relied upon, we can hardly reach their shores with any certainty of obtaining reliable information.

But there is one deduction that may be inferred from observations of the superior planets, and that is, that they are much older than the earth and are passing through periods of changes that either betoken a return toward the more rarified conditions, or their original forms are expanding in new degrees of power that belong to a more refined status of a visible world. It is said that the bulk of matter composing these distant orbs is much less in density than that of the inferior planets, and the circular rings about Saturn seem to indicate a rarefaction of its atmosphere that may be a token of the method by which a planet grows old and returns to its original elements.*

*Here is a magnificent analogy to the process of death as witnessed in all the secondary forms that pertain to planetary

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For if its life energy is spent, it need not be thought strange that the external structure should not be indestructible. The chemical processes in reverse action would liberate the solid compounds that belong to its constituent bases as readily as they once took them from the fire mist and transformed them into crystalline solidity. In so doing, the elements would rise slowly from the disintegrating planet, and either in vaporous form or dense gases pass back to the radiant state, to be again absorbed in some new planetary combination that is having its evolution in some other point in space. Thus in this manner a planet could die easily and gracefully, with no shock or disturbance to the grand economy of nature. In this manner should all of the secondary planetary forms upon its surface pass from the realm of the visible to the invisible forces, and thus do they pass when natural laws of planetary powers have their perfect expression.*

Most of our knowledge of planetary formation and dissolution of a practical value necessarily pertains to

being. If the same laws prevail upon the lower planes as upon the upper, the fading out of the life energy is attended by its transferral to the radiant state in a more refined and glorious condition than it possibly could ever retain in the cruder relations of crystalline or organic forms. What a splendid destiny for planetary creation if it should prove to be true!

*The gradual extinction of a planetary form by the sublimation of its elements gives a most beautiful interpretation of the death process, whereby nature closes the planetary existence of all creatures. As the planet fades out of visible form, to pass into the more subtle relation of the elements, so should all its inhabitants pass away into the realm of radiant forces without the ghastly struggles we often see that mark the prematurely dying. This should not be, nor will it be when the planet comes to a more perfect state of being.

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the planet upon which we live, but there is no valid reason to suspect that chemical laws or chemical forces differ in any material respect in their operations upon all planets. In fact, if we have any evidence of the stability of laws it is in the chemical world, and upon their inviolability we rest our argument of the nature of solar evolution.

It is a daring conclusion to formulate and proclaim, but we unhesitatingly make it, that all the discoveries that astronomy can make in the next century will confirm the assertion that all the planets of our siderial system were once suns, and in passing from the primitive to the secondary stages have become progenitors to some extent of life powers. What the degree or quality of the life may be we cannot certainly know from any means at present, but if the earth with its crude specimens of animal and human life is any index of what one of the smaller planets can produce in its immature development, what might we not expect from the superior planets that have had eons of evolutionary power before the earth had an existence as a planet.

It is not unscientific to infer that their population may have been immensely our superiors in all degrees of unfoldment, and it is the height of childish conceit to suppose our planet to be the only one in the vast universe that has had or now has a population of intelligent life.*

* The conceits with which the European nations have surrounded the subject of life present a curious anomaly in the mental evolution of the race. By a peculiar interpretation of the Oriental mythology, they have adopted the astounding theory that this world is the most important planet in existence, and the believers in their

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View it in whatever light we may, the earth is only one of the vast number of worlds in space, each of which is in a greater or lesser degree of unfoldment, and all of them the result of certain chemical laws that have called them from the realm of invisible chaos into the relations of majesty and power.

The planets all reflect the power and wisdom of Omnipotent and Omniscient design. They are not the result of accident, nor are they without definite aim or purpose in nature. They come into being through absolute and incontrovertible laws, and they fulfill a destiny that is magnificent beyond human conception. It is only when we enter the realm of the invisible forces that we first sense the methods or nature of the power behind the visible exhibitions of creative power. There we stand in the presence of an intelligence that shames the highest conceptions of the word as used in human language, for this intelligence is both able to conceive and execute without the aid or advice of any mentality known upon earth.

It is not God as used in human expression, but it is greater that any term ever used by man to express the idea of God. The nearest in thought to the idea we would express is the Hindoo word Om, or the All of universal knowledge and power.*

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creedal ideas the only inhabitants sure of immortal life or happiness. Could the fanaticism of any type of ignorance excel this doctrine of the outcome of planetary existence?

*This word that has been considered so difficult in translation to the European tongue is the Sanscrit equivalent of the Latin *Om*nipresent, *Om*nipotent, *Om*niscient and *Om*nific. It seems that many of our philologists in describing it as a senseless word were unwittingly exposing their own ignorance of Hindoo thought instead of giving its true meaning.

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CHAPTER VII.

THE CONTROLLING FORCES OF PLANETARY RELATIONS IN THE UNIVERSAL COSMOS.

We have followed the course of planetary formation as it has passed through the various stages of its evolution, from the fire mist and nebulous stages to its ability to produce the different forms of life upon its surface; and the next idea to be considered is, what relation naturally exists between the varied planets that belong to the different systems of the universe itself.

Here we are again forced to take the wings of the perceptive faculties as they are presented to us for our assistance, and leave the environment of earth for a season, while we explore the more subtle relations of the elements themselves.

And first let us observe, that vast as the bulk of matter may seem to us which is existing in visible form in the starry world, the amount of the elements so related is nothing to the dense masses not in those relations, and we might almost be justified in asserting that all of what we call the universe is but a point in comparison with that which is beyond our visible perception. Planets, suns and systems might vanish from sight, but the vast ethereal realms of space would still exist, holding all the elements in their expanse ready to form myriads of systems without any serious detriment to the elements not in planetary form.*

*By that peculiar wisdom that is evolved by the senses, this vast realm of transparent material is hardly perceived as existing

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For the primate relations of the elements are not in the solidified, but the radiant state, and in that state there can be no vacuo where nothing exists. Every particle of matter that comes from that realm to the planetary form creates no serious disturbance, for in planets the atoms never lose their primitive power, although their individual functions may be briefly transferred to the cosmic body for a season.

Hence, when planets are formed from the elements in space, they have not lost their original relations as integral factors of the universal cosmos, and they can only proceed upon their destiny subject to these original powers.

As two atoms cannot absolutely arrest or destroy each others' motion in space, so neither can their combined powers in form destroy each other if they should chance to cross each others' path. There is a principle in cosmic form that seems competent to prevent this, although at first sight one might think that all planetary forms would have such a mutual attraction for each other that they would naturally rush together in space, to the mutual destruction of each.

The principle that acts as a preventive of such catastrophes is found in the positive and negative relations of the atoms themselves that make up the planet; for should there be the least disturbance of those relations, the atom is released from the compound to go on

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at all, and many worthy critics of evolution pride themselves upon their ignorance of matter in the fourth dimension. If any one doubts the importance of the elements in this relation, let him hold his breath for a few minutes and see if the invisible material does not have about as much to do with sustaining life as the elements having the three dimensions of length, breadth and thickness.

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its way as an independent force in the universe, and this holds good in all the forms in which it enters as a factor.

So positive is this relation in the primitive state, that it goes into form by these laws entirely, and when the vast concourse of atoms that make up a planet come into temporary planetary relations, they have no special attraction toward other planets then, but hold firmly to their planetary status until individually released; and their unitary motion being now transferred to the mass, sends the whole body whirling through space with the exact ratio of motion that results from the neutral point between the different rates of the atoms composing the planet itself. Thus, when the atoms are in one planet they keep it safe from contact with all others, but when they are released from one combination they are then ready to transfer their presence to another without disturbance; and herein lies the safety of planetary systems, for as such they are controlled by the atomic powers primarily, and those powers are equally repellant as well as attractive in all the relations which they may hold to form. In the radius of each planet the forms upon it will ever be attracted or drawn toward its own center proportionate to the density or atomic silence of the body, but as each planet has this law in full force, there seems little danger of any of them ever letting go of their own to sway or move toward each other to any great extent. There will be indeed some fluctuations from a perfect circular orbit as the attractive or repellant powers are transmitted through space, but no deviation from that primitive course that the atoms themselves have marked out for all planetary forms in consequence of their own devia-

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tion from the straight line movement to a common center, which in turn sends the crystal to the globe and the globe in a circular orbit around another center, and the whole system in a magnificent spiral throughout the universe itself.

For our siderial system is far from stationary in its relations to other systems in space. Its position is constantly changing, and where it has been or where it will go in the ages to come conjecture only can be given. It was long ages ago as we count time when our polar star was in Draconis instead of Ursa Minor, and it may be ages ere our pole star will pass from that to some other constellation.

There is a theory that in the course of twenty-five thousand years it returns to its original orbit, but no accurate record has been kept for that period, and although the long passage way in the great pyramid in Egypt points to Draconis, yet that proves little, although it may have been and probably was the pole star when that monument of earthly tyranny was erected.*

In close relation with the atoms composing the planetary systems are the atoms not in combination which surround all planetary bodies, with more or less influence upon the form itself, which influence although subtle is nevertheless positive and powerful. These

* There have been many ingenious speculations relative to the astronomical value of the great pyramid, and one learned professor of Scotland has committed himself to the theory of its builder having a divine inspiration to account for its erection. It sounds quite curious in this age of the world to hear such a theory seriously propounded, yet scholastic ignorance has always assumed that God was responsible for what was beyond its comprehension.

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moving atoms are not as may be supposed inert or silent visitants of planets, but with marvelous facilities of locomotion they move along the lines of the least resistance, and convey or rather excite a reciprocal activity among the atoms of the solidified structure. This motion is the basis of the electric phenomena of nature upon a grand scale, and it has various exhibitions, but marked chiefly in the processes of chemical disintegration and new forms which come into existence through its activity.

Between the planetary bodies, however, this power of electric transfer is chiefly felt in the phenomena of the magnetic electric storms that trouble the electricians of the earth and presumably also of those of other planets, if the inhabitants of them are aware of the processes of utilizing this power of nature. It is not likely that this principle of electric transfer through space by induction has any great influence in determining the orbicular relations of planets, although some writers have advanced it as a theory, for this power is not of the nature to act upon the planet mechanically, but rather stimulates the force latent in it to a new activity. Especially is this the case with the influence of the sun upon the planets in our solar system, for the lines of transmitted power from atom to atom in space, when cut by the lines of planetary motion in axial revolution, arouse the electric energy of the earth to intense activity, and heat and light both flash out with great energy wherever the action is direct.

We have a fair specimen of the principle of this in the dynamo that excites the latent electric power of the magnets by revolution, and which by transmission ex-

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cites the atoms in the carbons to that degree that they volatilize under its power, giving again in reverse upon a small scale, the intensity of heat and light that belongs to the shifting of the elements from the fluidic or gaseous states to the solid.

There is one relation of planetary forms that may be mentioned which has a curious connection, possibly with the same principles that pertain to planetary life itself, viz., the general brotherhood of each system.

As the lives of all that dwell upon planets are the result of evolutionary growth, so the planets themselves may be said to be directly or indirectly related to each other. When Neptune and Saturn were in their prime of planetary life, the earth or some inferior planet was probably their solar center. What planets were in existence when Neptune or Saturn was the solar center will probably be as much a mystery as to whom we are indebted for our ancestral descent. But the principle is worthy of consideration, for in the remote wanderings of these planets from their later born relatives we see the processes whereby planets wax old and decay, and finally vanish. That they follow this law is almost axiomatic, and that in the remote orbits of the superior planets we have the evidence that in time the earth shall wax old and fade away, as those ancient worlds in space have vanished forever, is almost incontrovertible.

When we consider this is the law of nature in all that pertains to visible form, we see how rational the probability that the worlds and suns we behold shall follow the great law of life, and merge their existence again in the vast realm from which they once came through the

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long (as we count time) periods of cosmic evolution.*

If this deduction is correct, and there seems to be no flaw in either premise or conclusion, planets must hold a very intricate and to some extent important relation with each other. The older ones, like the inhabitants of our ancestral nations, become worthy of study, and the lessons they teach may be of value if heeded. They were supposed by the ancient astrologers to have had a direct controlling power over the birth and destiny of individual man, and even to this day we have learned (so called) expositors of the influence of the sun and planets upon the race. It is hardly necessary to say that such interpretations belong to the childhood of our race rather than to its mature knowledge of the subject, but, in a generic sense, the lessons of the stars are of great value to the student of the world's true cosmogony. They stand forth in space, the eternal witnesses of eternal changes.

Time alone can register those that shall vanish as suns to be born anew as worlds, and time also shall record those whose existence as worlds shall have vanished from their places in the heavens. There seems to have been a basis of truth in the writings of the old Chaldean astronomer, when he declared that the "heavens shall wax old as a garment and the firmament shall

*This idea of the infinite series of planets and their equally innumerable progeny causes the student of cosmic relations to wonder when the beginning was or where the end will be. It even suggests a respect for those nations of the East that have held for centuries to the theory of an endless cycle of births and re-births upon the planets in their infinite rounds of creations. There is more to the idea than appears at first sight, although probably of a different construction from the commonly accepted theories about it.

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pass away." Doubtless, he had observed the fading out of some distant sun as it passed downward to the state of planetary darkness, and read it as an omen of the ultimate fate of the universe, for in the addition, "Thou, O Lord, remainest forever," he seems to imply that he perceived the eternity of spirit, and its superiority in duration to the visible universe.

It is a pity that the superstitions of this age should deify the wisdom of such writers and account their knowledge divine in its source, but as ignorance of original truth sits enthroned in our colleges of learning, and childish speculation as to the nature of the Almighty is taught as of divine authority, it is not to be considered strange that the wiser observation and deductions of the ancient astronomers should be held by them as sacred oracles, so incompetent are our modern wiseacres to provide reliable oracles of their own. However, the ancient writers never claimed such an origin for their statements, and we cordially agree with them that "the gods alone know the origin of the world and its destiny, and the gods have kept the knowledge to themselves."

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CHAPTER VIII.

THE DEATH OF A PLANET.

It is the fashion of many modern writers to speak o the death of a planet or of planetary bodies as if they were to close their career in some terrific convulsion, whereby the heavens were to be dissolved with a great noise and the elements to melt with a fervent heat, while this world and all within it were to be burned up in a wholesale conflagration. In proof of this, they point to certain ancient writings as reliable prophecies of the certainty of the truth of their theories.

While it is indeed a pity that the prophecies should be unfulfilled if they are the oracles of the Supreme Ruler of the Universe, it nevertheless is highly probable that the planet we inhabit will be a long time in passing from the period of life energy to that of decrepitude or old age.

For the nature of planetary bodies is such that their vitality is enormous as we count time. They cannot die except by the utter disintegration of the compounds in their structure, and their relation to the elements in proximate conditions is so intimate that they are able to sustain an immense draft upon their original stability.

The basis of all planets is the crystalline solidification from the fire mist, and as long as the planet has the substructure of the rocks, it cannot vanish in a deflagration. The chemical decomposition of the rocks is extremely slow, although it is steadily going forward, and their elements in a variety of forms are passing from

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the solidified to the aeriform relations without serious hindrance or delay. But so delicately balanced are the relations of the solid and gaseous states of the elements in the planet, that while it may lose in crystalline solidity, it may also increase steadily in bulk until the planet grows obese and unwieldy, and the elements in it are finally released from their chemical relations that give solidity and stability of form.*

In this event, the planet would literally "wax old like a garment and decay," but it would not vanish in a cloud of fire and ashes. Rather, by insensible processes it would grow more and more ethereal in its appearance, until it would finally recede from visible perception and join the innumerable worlds whose existence even is a question of speculation to the thoughtful observer, and whose positive relations many of the wisest minds of earth regard as an unsolved problem. †

There are some daring flights of fancy that the astronomical chemist may safely indulge in when he brings the universe to be weighed in the scales of his laboratory and the secrets of life to the crucible of his

* This property of the elements to shift from the solidified to the fluidic and gaseous states has been regarded as the death blow to formative power upon the higher planes of the elementary states, and, as far as visible relations testify to the form principles, would justify the conclusion that form cannot exist above the plane of the visible. But as the gaseous combine to produce the vaporous, and the vaporous generate the fluidic and crystalline states, and the organic respond to all the lines of each and either, producing new forms, so the inference is justifiable that form power resides back of these states and can be exerted upon any plane where force exists.

† The existence of planets that are far beyond the sphere of earthly observation and that have passed the stages of visible form

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exact analysis. His vision there is not bounded by the merely technical results, for in the death and sublimation of compounds he discovers the key to unlock the problems of Infinity itself. He finds that death and destruction of form is only a step in the process of life and the evolution of more perfect form, and through that principle he perceives that matter is as infinite in its properties of form as force is indestructible in its nature; and upon this he proceeds to explore the realms of eternal existence.

The planet upon which he lives is a concrete expression of forces. He can trace its origin to the realm of eternal principles acting through definite and absolute laws. He can obtain a knowledge, and, to some extent, a mastery of those laws, and as he rises in the scale of evolutionary growth his power to manipulate the elements increases. This proves, if it proves anything, that intelligence as a force in Nature must not be discounted in advance, but recognized as a prime factor in world evolution.

That intelligence is not, as might be inferred by our lack of comprehension of its motives or knowledge of its plans, beyond the province of scrutiny, but when we approach the borderland of the physical expression of its powers, we then begin to sense the nature of the object of planetary existence, and why they come into being in the cycles of the ages.

becomes a subject of startling interest to the student of cosmic speculation. Here in the sphere of chemical problems of an infinite series of worlds we have the rational solution of the existence of one planet. The mind becomes well nigh overwhelmed in contemplation of the magnitude of Creative Power, and is far from being inclined to dispose of the subject with flippant remarks as the unknowability of the cosmos universal.

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Planets are conceived, gestated and born by a series of fixed and unalterable laws. They flourish and produce their myriad forms of sentient life by an equally positive series of absolute laws. Their fruitage is as indestructible in essence as the elements of which their forms are constructed, and, by the law of correlation and conservation of forces, must have an eternal existence somewhere in the universal life.

They cannot perish nor can they return to the primate relations from which they were evolved by this power of sentient being, and the question of their destiny brings us to consider the ultimate destiny of the planetary systems through which they have had their evolution.

We have said the planet to the visible eye may wax old and vanish away. Its elements may pass to the realm of their primal relations or they may enter new forms, but we opine that the form power of any planetary body is not entirely dissipated when it passes to the sphere of radiant matter. It may exist there in a chemical balance far above the plane of the crude planet, and the crude planet itself might have its counterpart in that condition where form of the highest degree of the attenuation of the elements in form can exist. *

* A planet passing into this state would be duplicating in reverse order the process whereby it passes from the solar stages down into the sphere of primeval darkness. As there has to be in nature the evolutionary stages to balance the dissolution of old relations of the elements, so the death process of planets should follow the regular order to pave the way for the evolution of new worlds. By passing upward into the sphere of radiant forces, the worlds with their progeny become component parts of the universal cosmic life which fills the worlds eternal.

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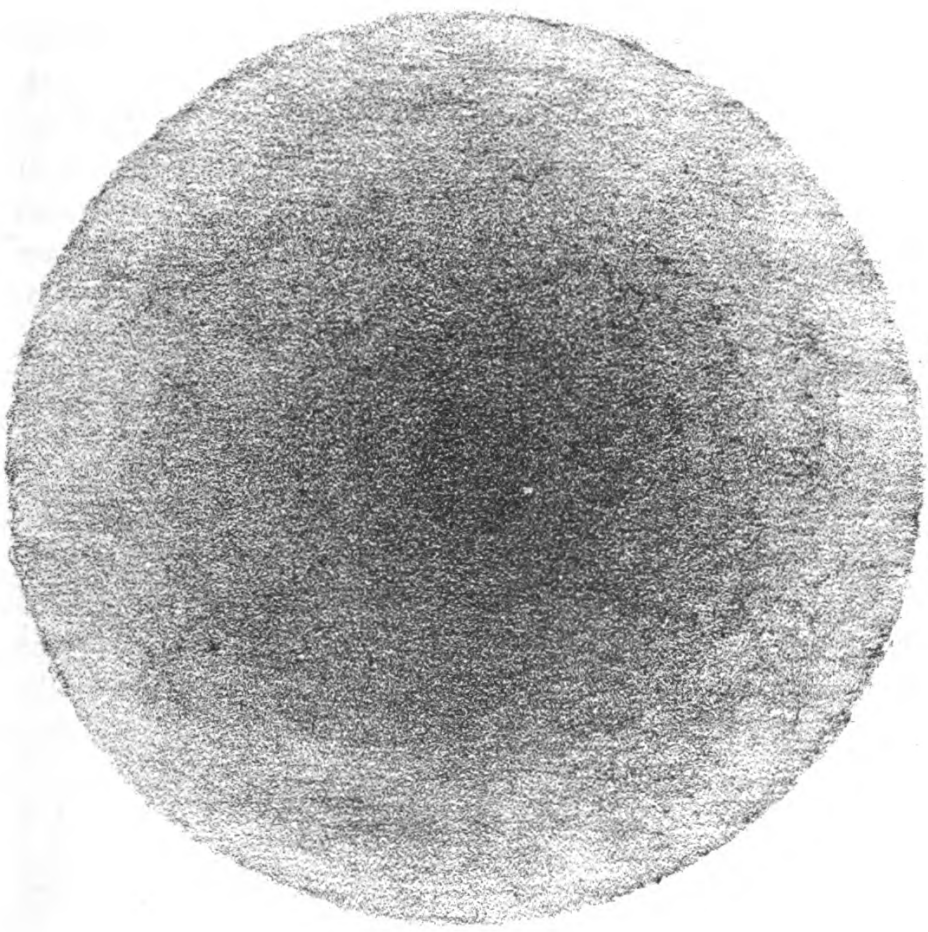

A DYING PLANET. HALF OF JUPITER.

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It is there we shall find the refined planets of the cosmic ages of the past, if they exist. It is there that the dying planets of the visible universe shall burst forth again in all the glory of perfect relations, and it is there that their myriad populations will finally gather to bear witness to the truth of the universal law of the indestructibility of life and the impossibility of annihilation.

Neither planets nor their progeny can evade this law, for the Eternal Intelligence that made the laws governing the Universal Cosmos placed all under their power, and the power itself insures their eternal existence.

Of the planets that have passed through the stages of causative construction and have vanished from our system we may be ignorant and unappreciative, but the laws that made ours make all, and as our ancestral progenitors came into sentient existence by the same great forces whereby we exist, so in the cosmos of the past the same laws must have made the prehistoric planets that made ours of the present solar system, as well as all others of the visible and invisible universe.

The glittering stars that fill the heavens with a glory of transcendent splendor upon this plane of existence are but the harbingers of that realm of celestial radiance, where the very atoms are vibrant to the will of intelligence, and the forces in them haste to do its bidding. For when we enter the realm of the death angel of planetary life, we are beyond the sphere of earthly ignorance, and tread the pathways of eternal wisdom.

It is the triumph of our age of physical science that

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this is so, but it is true that in the field of scientific forces the grandest revelations that have ever been given to mortal man are bestowed. They are not bestowed upon the devotees of superstition, for the latter are unworthy of them, and they come not from the shrines of worshipers of the past, for the wisdom of those ages was sufficient for the day and generation in which it was expressed.*

The culmination of the wisdom of this age is in the application of science to the enlightenment of man. The highest aim of the enlightened of the past was to conceal the truth and veil its light from the masses, and convey it to the initiated in symbols that could only be understood by the wise. Therefore, in this age the truth has to be rediscovered, and the mentality that was competent for the task has to be generated in the scientific rather than theologic schools of thought; for, while the former are not afraid to enter the pathway of discovery, the latter cling to the traditions of the past, and have never been able to go beyond the boundaries that craft designed for ignorance.

In the application of principles to the consideration of the subject of planetary dissolution, we are forcibly reminded of the midnight darkness that surrounds the subject of planetary death throughout the civilized

*The author is well aware that this statement will not pass unchallenged, but the facts in the possession of some of the ablest scientific minds of Europe and America settle the question beyond the pale of controversy. The helpless ignorance with which the schools of modern theological dogmas approach the subject of cosmic evolution bars them from ascertaining the truth, and they and their followers have to beg the question the moment they come to the plane of scientific accuracy.

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world, and it is not out of place to treat of it from the standpoint of chemical science.

We perceive, by the laws of chemical formation and dissolution, that nothing essential to power or material can be lost by the death process, and that death itself is but one of the resultants of formative power seeking new expression; and herein is the basis of a true explanation of planetary dissolution. It is only another evolution of the forces in the planet as they pass into new relations, and upon that premise we can readily perceive how illimitable may be the evolutionary life of a planet and all that pertains to it in the universal cosmos. It is not essential that a planet or its population should remain in the sphere of visibility to be in existence, nor is the disappearance of the forms of planetary being any certain evidence of their annihilation as forms, for the very clouds that form and dissolve in the atmosphere are a sufficient refutation of that theory.

If their forms vanish from our sight, their ability to return from the realms of space is an unquestioned fact in nature, and their reappearance is regarded as one of the common phenomena, but they only reflect in that process the indestructibility of force and its ability to control form.

So a planet, when it has passed from the plane of visible existence to the unseen, carries with it the same inherent powers to form again, and, if it fails to come into the lower atomic relations that characterized it in its crude primitive relations, we need not look far for the elements composing its refined and refining conditions to manifest a decided influence upon the remaining nucleus; and from the fact that the atmospheric elements press with a uniform direction toward the central point,

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we can see how the invisible planet has the same laws of form that govern the crystalline masses of the visible. and how when the latter is raised to the aeriform status the planet still holds its principles of form in the radiant or invisible realm of matter.

It is upon this basis that it is possible to construct a rational theory of the existence of eternal worlds with populations of immortal beings. for. as neither the planet nor its inhabitants can be annihilated by the chemical transposition of either, they must exist in that more refined and etherealized relation of the elements that exists beyond the realm of visible planetary form. Nor should their existence be made the basis of a superstitious rendering of the ideality connected with that life, for as its inhabitants were the products of planetary life in the visible realm, their existence in the invisible life is of the natural order, and of no more intrinsic consequence than their first appearance upon the planet as a part of its evolutionary results.

This consideration of the outcome of planetary life opens a wide field of conjectural speculation, but there need be little controversy about the subject, as the laws which govern the processes of death are as well defined as the laws that govern the primitive processes of life. They are purely chemical and equally absolute and irrevocable. The only mistake the world has ever made about them proceeded from the ignorance of them and the substitution of superstition in place of knowledge concerning them.

Being of the nature of subtle powers that could not be perceived in their workings until the resultant forms were produced, they remained for ages the subject of ignorant speculation, and if perceived by the abler

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minds of the ancient world, were ignored by the priests, who substituted their crude and unreliable fabrications for the truth, and labeled them as Divine Revelations.

Of all the misfortunes that could have afflicted an unfortunate race, this was probably the greatest, for it must have biased the mentality of countless myriads with false hopes and extravagant ideas of the outcome of life, and filled the world of the next life with almost hopeless ignorance and despair, when they ascertained how baseless were the ideas they entertained concerning it.*

It is time that the world of mortals had a revelation, not from the gods, but from the world of science, concerning the nature and outcome of planetary life. It is high time that the evolution of mentality upon the plane of science should speak with no uncertain voice upon this subject, and regardless of the curse or frown of priest or prelate.

The latter have held the reign of terror over the mind of the race since the first savage chieftain announced himself as the Lord of the earth and demanded the blood of his enemies to propitiate his wrath. The subject of life and death should be taken from that type of mind forever, and the inhuman threats against the souls

*European nations reflect this in their mentality to a certain degree that is absolute proof of the laws of heredity. Biased by the belief of the truth of priestly dogma for centuries, the masses cannot think upon a different plane, and the average mental power of the old world is subordinate to the priestly order as much now as in the ages when the priest was supreme authority in church and state. It is to be hoped that the radiant gleams of science in all its departments will yet light up the mental atmosphere of the world, and the inhabitants be able to get a mentality above the plane of owls or bats.

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of earth be buried in a merciful oblivion or exhibited as the curious relics of a savage and barbarous period of human evolution. They should not be perpetuated with the authority of a supreme revelation, nor should the mind of man be longer subject to the pernicious influence of the idea that such a revelation has ever been made to the race.

Science is abundantly able to determine the truth or falsity of the revelation business and to reveal the truth as fast as it is discovered, and we may confidently expect that there will be no revelations that do not belong to science in this or future ages of the world.

The gods began to recede when man perceived the true nature of the gods, and the world is not likely again to be made the victim of new impositions by the priestly orders. Although even now there are plenty of advocates of the theory, they confine its practical realization to the remote ages of the past.

When the scientific world began to make its revelations the priestly orders found their occupation gone; and the people, for the first time in the history of the present age, had some chance to ascertain the falsity of the ideas which had been taught for centuries as the oracles of the Supreme Intelligence. Aside from one cardinal point of the immortality of man, the oracles were worthless as authority, although in them were woven the maxims and morals of the philosophers who had discovered their value, and promulgated them without any claim to their being the result of anything more than philosophic observation and discovery.

The reader will perhaps observe that the author has been needlessly severe upon the teachers of the past in their claims to oracular wisdom, but there is no other

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way to treat these pretenders to spiritual authority. They hold the power of priestly surveillance over millions of people who would become intelligent and enlightened were it not for this mental supervision to which they are subjected. The virus of the poison which they have injected in the human mind is so deeply seated, that nothing short of heroic treatment will ever remove it and redeem the race from its power.*

Their claims and their ability to present them vanish before the plain facts of science, and there is but one course to pursue. They cling to the past as having all of truth, and they must be ignored if we would know the truth. As teachers of truth, they lack the essential faculties which enable them to discover it, and so they stand halting between the past and the present, uncertain which way to go, and generally ending in taking neither path and so learning nothing.

To them life is an insoluble mystery and death a hopeless problem for the majority of the race, while the world of the invisible is a realm never to be explored by the mind of man. This world is a failure, and its Creator incompetent to remedy his mistakes except by a system of general annihilation of the races or

* The mentality of the priestly orders has ever been of the arbitrary and autocratic nature. While claiming jurisdiction over the mind realm, they have ever been averse to progress, and with dogmatic insolence have stood in judgment over the race, and have been the foe rather than the friend of science. As proof of this, in enlightened England, the great masters of scientific thought like Darwin and Huxley have been recipients of the most savage vituperation from those whose zeal for religion was only equaled by their ignorance of truth. This was not because the ideas of Darwin were not true, but on account of his audacity in publishing them to the world.

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their hopeless imprisonment in the realms of eternal darkness.

Such is the practical outcome of this system of oracular revelation by the Supreme Wisdom, and such the basis of our condemation of the scheme and its advocates. Both are wide of the truer revelations of science, and each is destined to pass away when the latter has had time to perfect its work upon the planet.

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CHAPTER IX.

THE OBJECT OF PLANETARY EXISTENCE.

When we observe the vast realm of visible planetary existence, the mind naturally speculates as to the possible utility of the whirling orbs that go on their careers through space and why they come into visible existence at all.

They pass and repass the given points in the heavens with seeming regularity, and their orbits seem to be fixed and definite, with only a few deviations from absolute circular or elliptical pathways.

As far as human vision can perceive, the various stars that shine with steady and inviolable precision are the solar centers of planetary systems far beyond the power of our most perfect telescopes to reveal, and they, like our sun, have to be reached by the power of spectroscopic analysis.

Here again the positive and definite laws of chemistry are seen to be at work, and as far as human judgment can justify conclusions, we feel it not to be presumptive to regard each star as the solar center of a planetary system that may or may not be infinite ages in excess of priority to our own, and which, like ours, is working out its destiny obedient to the same or similar principles.

This naturally leads us to consider of what object planetary existence can be in the economy of Infinite Intelligence, and why the realms of space should be

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filled with these myriad hosts of suns and their attendant systems. Here again we are forced back upon the functions of planetary bodies in our own system, to see if any light can be shed upon the object of planetary being.

If we consider the great aim of our own planet to be the production of life forms, we see at once that planets hold a very important relation in the universal cosmos, for life is such a relation of the elements that it practically is indestructible in its nature, as it belongs to the realm of the imponderable forces that permeate all the more crude relations of matter. Hence, life, as the outcome of planetary being, must have its connection if not inception in planetary conditions, and without planets no life forms can be.

This conclusion may be a subject of dispute with many minds, but we would ask the reader to observe that in planetary forms the life energy is able to express itself in the production of new forms, whereas outside of those conditions it is extremely doubtful if life is able to express itself in form, except through the evolution of form in the radiant state, and even there as a continuation of form from the incipient planetary conditions.

This, indeed, seems to be of a speculative order of thought, but from the fact that planetary life has the power of reproduction in certain stages of its own evolution, and that this power fails after the evolution of the form has reached a certain stage, it seems conclusive that the evolution of a new life form must have its origin on the planet, or fail of having any organic structure whatever.

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If this conclusion is correct, (and it certainly accords with the facts as far as external observation can perceive,) the great object of planetary existence is for the production of life organization, and the highest order of that life is in the type of beings that can correlate the conditions of life so as to evolve intelligence and wisdom.

This gives a rational and satisfactory answer to the object of planetary existence, but it does not give a complete answer as to the nature of the intelligence that controls planetary forces to produce such a result, although it does open a wide field of exploration into the realm of causation.

We have adverted to this intelligent power that seems to be so mathematical in its principle of causative construction of form through chemical laws, and now we propose to push our inquiries into the realm of the mentality behind planetary construction, for it is as legitimate a field of inquiry as any other, and it ought to answer or reveal some ideas of its true nature.

Why did it call the worlds into the relations of cosmic life, and why does it act in the production of so many varied types and forms of life in which apparently there is not any object to be gained by the production or propagation of such types and species?

To answer this question is to solve the mystery of creation, and with reverent steps one must approach the subject, although without the bias of any superstitious regard for it. If the object of worlds is to produce life, and the object of life is to acquire the wisdom by which life shall be a perpetual source of beneficence and blessing to its recipient, this motive is enough to justify the existence of worlds, and any failure to insure it would

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be to stamp the intelligence that caused a world to be, with ignorance or malevolence.*

Such a being would be far from perfect in the wisdom and power requisite to govern a world, and infinitely less than worthy of the jurisdiction of the universe. It needs no further criticism, for in such a failure it is not infinite in intelligence or power.

In treating of the object of planetary existence, we are forced to be governed to a great extent by the phenomenal manifestations of nature, although we may often be ignorant of their exact relations to causative power. We have only this planet which we can analyze or study in a practical manner, and this earth of ours presents a strange medley of life and phenomena for our inspection.

First, we observe that all life upon its surface lays its foundations in the environment of precedent life, and that it can remain in the planetary relation but for a limited period. It may leave behind a resultant life, but it must betake itself after awhile from the visible environment of the planet and pass on into the next stages of existence, wherever that may be in the realm of universal power.

One fate befalls all that spring from the planetary

* The partial system of creedality that has had its evolution in the Christian religious system is a curious deflection of the primal theories of causation as taught by the Oriental sages. While the wisest minds of Greece and Egypt held to the supremacy of creative and preservative power, the Christian system that copied from them admitted to its system the presence of a Supreme Devil, who had general jurisdiction over the world, and with whom the Creative Power was ever in antagonism. By this system, the Devil became the chief power and man his helpless victim.

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surface, or that dwell upon it, and the only question is where does the life energy that is a part of the planet find its equilibrium when it is thrown from the balance of the primitive relations.

If we can solve this problem, we can feel confident that we are near the solution of the question as to the object of planetary existence, for it becomes only a matter of deduction to the reasoning powers. If the resultants of planetary formative power do not lose identity of structure by transferral from the planet, then the planet becomes the great organic center of creative power, as manifest in the formation of intelligent creatures from the elements in their more complex relations, and planets are the nurseries of beings of an immortal type; for being resultants of both force and matter, and each being indestructible in essence, the organized life that comes from planetary relations holds itself in organic existence upon any plane where the elements can assume form and exert power.*

This carries the life energy to a higher plane of evolution, and leaves it intact to go forward upon infinite degrees of expansion of all that marked its nature while in planetary life with its distinguishing charac-

* This conclusion, which is so perfectly in accord with the relations of the elements in the radiant state, has often been the subject of controversy, as the ancient world of cosmology taught that life was preëxistent to form, and that its embodiment was for some fancied disciplinary benefit. Under this conception, the object of planets was for the educational processes of immortal spirits who had their evolution in other realms than planets. The weakness of this theory lies in the fact that planets do not seem to act in harmony with the hypothesis at all, but rather in accord with the principle of a gestative period, whereby new expressions of life and form can have a being.

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teristics, and also reflects wisdom and intelligence to a high degree of perfection in the creative power that controls planetary formation and its results.

The reader may think that this conclusion is inferential rather than demonstrable, but what are the facts regarding the outcome of planetary force upon this earth?

The highest production of the planet as yet is animal life, and the highest type of animal life is a creature of moderate intelligence, but capable of improvement. Once in a while an individual of this type arises who reflects more than ordinary brilliancy of intellectual power, and we say, what a pity that such a mind cannot live on earth forever.

In that expression we inadvertently recognize the object of planetary existence; for if such an exponent of wisdom could live on earth forever, we should expect in time he would attain unto such degrees of knowledge as to enlighten the earth with transcendent mentality. Now, if the culmination of earthly life is in the acquisition of intellectual power, what better motive could creative intelligence exemplify than by the organization of the elements into intelligent relations that should be self-active and self-sustaining eternally, thus filling the universe with intelligent life that should be able to express, in a variety of forms, the underlying forces of universal existence? Such beings would need an eternal life to give them opportunities to become perfect in knowledge and power, but they would need but a brief period upon the planet to perfect the organic forces so that the mentality could go forward upon the plane of the higher organization for infinite ages.

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It may seem as if this outcome of planetary existence is fanciful and illusive, but unless it is so the object of planetary relations is inexplicable by our present knowledge. For myriads of ages this planet has been producing and transferring into the realm of the invisible its hosts of life of all grades and types. It does this in obedience to definite and absolute laws, and some of its progeny are worthy of immortal existence if others are not. The conviction that all are destined to this life is deeply fixed in the mind of the race and influences its action to a marked degree. It may be tinged with superstition and absurdities, but in itself it is not unreasonable or unscientific. The great forces that culminate in intellectual splendor cannot vanish in the night of eternal silence. They must exist and they must act, and in their action we have the answer as to the object of planetary existence.

Somewhere beyond the realm of organization in its first stages they are to be sought and found, and when found they will respond to the idea which permeates the mind of the race with a desire for immortal being. We have no sympathy with the ignorance which would refuse to look beyond the visible terminus of earthly existence, nor have we any tolerance for the craft that would make an industry of its relations or prevent the rational consideration of it from any motive whatever.

Planets exist that they may serve to express life power in organic form. They serve their purpose when they have acted as channels to conduct the elementary forces into types of sentient life that are to exist forever. They are as far as known the only channels whereby such life forms can take their first evolution from the primitive elements and in that work we see a rationa

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motive for the construction and maintenance of a universal cosmos.*

We may not at first grasp the significance of this idea or its full import, but a little reflection will enable us to see that wisdom lies behind creative power, and that the translation of the elements and their forces to intelligent entities is a work worthy of Infinite Power and Eternal Benevolence. Such resultants can never perish, and such provision for the inhabitants of all planets bespeaks the nature of the Supreme Intelligence far better than any fulsome praise or ignorant devotion can designate.

The culmination of cosmic forces in intelligent entities being evident to our perception, we naturally wonder why it has been so long a subject of speculation as to the origin of planetary life and its outcome. We should remember that by the very process of planetary evolution of intelligence the mentality of all races is of slow growth, and until there is a high degree of intellectual power evolved, intelligence of that order cannot exist.

This is why the race has been so long in its process of obtaining mental insight into the actual principles of causation of being, as well as its liability to mistake the deductions of a partially developed intellect for the

* This theory that planets are a necessity to the first expression of individuality, while opposed to the Oriental theory of transmigration of soul or reincarnation of spirit entities, is perfectly in accord with the principles of material science, provided the powers of organic form extend into the realm of the radiant forces. That they do extend there, demonstrable experiments have proven, but as yet there are no tangible evidences that any life ever had individuality previous to the organic status, although some Orientalists claim to be able to remember previous stages of existence.

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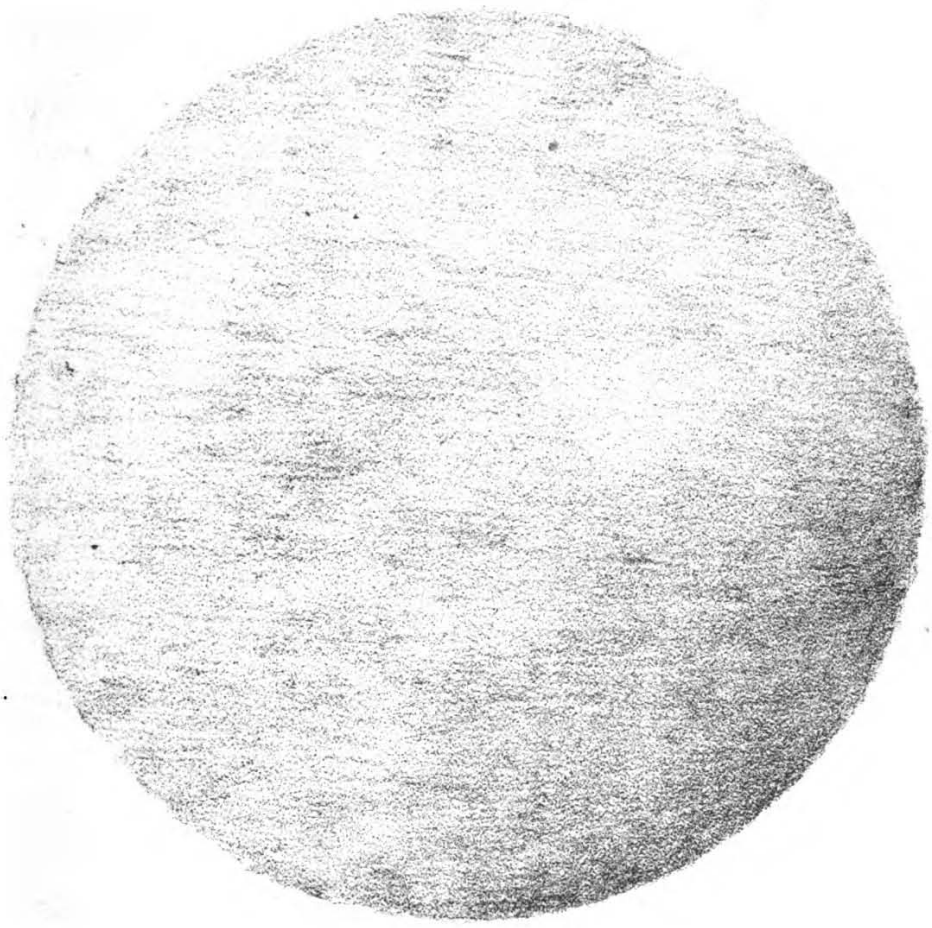

THE LAST STAGE BEFORE GOING
INTO INVISIBILITY.

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highest attainable truth. All races reflect, in their cosmological ideas, the exact grade of their mental status, and are irrefutable proofs of the truth of evolution in all departments of being.

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CHAPTER X.

THE NATURE OF THE GOVERNING POWER IN THE UNIVERSAL COSMOS.

It has been said that science is inadequate to account for the motive power which causes either worlds or planets to exist, and even one of the most intelligent scientists of this age, Herbert Spencer, has said that the cause, from which all things that exist proceed, is unknown and unknowable. By this we infer, that the ablest scientific minds that have been developed upon the plane of material thought as the only absolute science that is knowable, have met a barrier which prevents their mentality from further unfoldment, and therefore we must proceed to weigh carefully the evidence that nature presents upon this subject.

One thing that particularly strikes the observer of the action of chemical forces is their mathematical precision in the production of form. Another is the subtlety of their operations when manipulated by the power of a skilled intelligence. Upon these two premises we must postulate our theories of the grade of intelligence that is manifest in planetary evolution; and here let us say, if we are weak through lack of comprehensive power of mind, it by no means follows that that weakness is incapable of remedy, for the mentality of the race has been proven to be of an evolutionary as well as progressive character. Therefore, throwing aside the hypothesis of Mr. Spencer that it is unknowable, let us examine what may be known about it from our

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present data of discovery. When the mind of Charles Darwin propounded the theory of evolution as the probable method of the Creative Intelligence in peopling a world, he left the subject to be decided upon by the intelligence and judgment of the individual thinker, contenting himself with the remarkable evidence he had collected as the only proof necessary to commend itself to the intelligence of his own and succeeding generations.

In that transcendent modesty of brilliant genius, he refrained from asserting them to be absolute proofs, but rather called attention to them as possible records of the actual processes of Creative Energy, but he opened thereby the door to a long and tedious discussion between the lovers of science and the devotees of tradition. To a young man who wrote, asking him how he could harmonize evolution and revelation, Mr. Darwin was candid enough to say he did not think any revelation of truth from the source of life had ever been made, and there the matter rested.

But however wise and competent Mr. Darwin was in his earthly life to perceive the evidences of evolution as applied to the realm of animate material, we must say that he failed to answer the demand for evidence of the motive of Creative Intelligence in world building, and with reverent steps we feel it important that science should enter this realm and question Creative Power as to the reasons why planetary existence is, in the economy of Eternal Being. We feel this to be especially the department of chemical science, for it is through this power that forms result and worlds are called into being, and if in the lesser realm which we observe by the manipulation of the elements through

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the exercise of intelligence such great effects are attainable, then we feel it certain that in the more astounding exhibitions of chemical power upon a grand scale in the universal cosmos, a master mentality must be behind the manipulation of the elements by which such tremendous results are achieved. For it is not a slight triumph of power when a living form is evolved from the elements, even if it be of a low grade of activity; but when in the space of a few years' time a mental power that can measure the stars in their courses or set the boundaries of the earth in order comes into being, the world may well inquire what power is it that from the inchoate conditions of planetary existence calls forth such marvelous exhibitions of intelligence. And here again we are forced to measure the possibilities latent in this Creative Intelligence by the imperfect standards of a partially developed mentality. We think this power is so much in excess of our own that we call it infinite, not knowing whether it be truly so or not.

We often assume that it had infinite power because it was able to create a world and people it with sentient intelligence; and, at the same time, we speak of its handiwork as finite, whereas the work of an infinite intelligence ought to partake somewhat of its nature in order to be perfect in its results.

Now, we have seen that inferentially the work of a planet is to produce, at some period of its existence, a type of life energy that shall reflect in permanent form its own latent powers, and when this is done it passes away from the sphere of organic production. We also have seen that these products hold their conscious existence in other relations, and that this is the

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culmination of planetary effort, but we have not observed what must necessarily be the results of that mental power which, having its evolution on a planet and rising steadily in the scale of intelligence, may become, by giving it time to perfect itself in all the powers latent in itself, as well as in the planet from which it sprang into conscious existence.

It becomes capable of world building itself in the course of ages, for it only needs time to perfect its knowledge in this sphere of chemical power, and it can build a world in space as easy as the earthly chemist can combine the elements to make a compound or extract the pure metal from the crude ore. And this is the nature of the intelligence that makes a world of the visible order a possibility, if immortality is the sequence of intelligent organization in the sphere of organic forces.*

It is a startling conclusion, and to some extent a death blow to the theory that the creators of the planets are one with the Creator of Universal Life and Eternal Intelligence, but the deduction is not unscientific if the premises are correct. The world builders are subordinate to the Supreme Architect, and their handiwork is not except indirectly the work of the Infinite Intelligence after all. If this hypothesis is true, it may account for the crude and imperfect resultants that

* This deduction of the premise upon which world building rests may seem, at first sight, to be weak and insufficient to base such a conclusion upon, but it will bear careful study. There has ever been an unsatisfactory answer as to who made the world and the cause of the silence which has enveloped it for so many centuries, if it came into being by deliberate design. If it be the work of minds who had their evolution upon some prehistoric planet, it is not so strange that the gods are silent.

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betoken the pathway of all planetary evolution. No architect can speak his work into perfection by fiat or decree, neither do planets spring into existence full born, or capable of producing their highest fruitage, save by long and tedious periods of growth and change. In fact, so different are the later stages of planetary life from its primitive, that the former are well nigh unknown, and the observer of the recorded changes is tempted to think that the intelligence, if it exists, which stands behind the work of planet making must have been deficient in some respects, or it would have leaped some of the barriers that seem to have retarded its work for countless ages.

But we should be modest, and remember that it may have been thought wiser not to hurry matters in the process of world building. First, there were the outlying planets that needed their solar center, and the latest born had to be their stimulant from age to age. Secondly, the gradual evolution of the planetary orbit, from the central position to the ellipse that precedes the grand spiral movement of the system, had to have its ages of time to obtain its perfect action, and during all this time the myriad hosts of planetary life had their wants which had to be met with the attention their needs demanded. The evolution of one planet from the solar stage to the next in order required its time and age of growth, and as the circuit enlarged we see that the necessary elements began taking their positions in the great sphere of cosmic life.

So perhaps we might wisely conclude that the world builders were wiser than we could be, even if they did not hurry the work, or wrought out their plans in the darkness, and changed them to correspond with the in-

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herent principles of the elements in their primitive states.

Does this theory of the nature of the intelligence that governs cosmic formation militate against the idea of a Supreme Creative Power that governs all the intricate relations of the more refined status of the elements which exist in the invisible realm? or are we to conclude that one general Power controls the whole, and is the direct source of manifestations in both relations?

This has been the assumption of nearly all the writers upon the subject of stellar existence from the remote ages, and the sacred writings of all civilized nations have this theory as a basis of their doctrines upon the subject and object of world construction. They all have a god power to manipulate the elements, and some of them have gone so far as to teach that this god was able to create the elements by fiat or decree from nothing.*

However doubtful that latter dogma may be, the idea of a constructive god for each planet will bear some scrutiny, for gods are like all other subjects—legitimate objects for scientific investigation. The nearest we can approach, perhaps, to a correct idea of the nature of a planetary deity would be something of

* Upon the theory that the immediate agents of cosmic formation are developed intelligences of an evolutionary character, there would be a more rational explanation of the mixture of the ideas of world building with those of its multiform deities; nor would there be any reasonable objection if the god in revealing himself told the whole truth, but to delegate his power to a priest, or equally mortal representative, would be to place the world at the mercy of cupidity and design. The primitive gods did not seem to know this, if the records are true.

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the character given in the ancient Hindoo cosmogony, in which the creator of the world is styled Brahm, and to whom the construction of the earth is due, but Brahm is not the supreme governor of the universal cosmos, as his (Brahm's) jurisdiction only extends over this special planet. Other planets would have their special gods, whose dominion would be bounded by their individual wisdom or power.*

But whether this idea is correct or otherwise, the fact remains that creative energy is having eternal expression in the ever active relations of the elements, and that new and striking results are ever being made manifest from their activity. The planet produces its harvest of sentient beings for unknown ages, and the mind of man stands aghast at the inference which may be drawn when we think of the myriads which the countless hosts of planetary orbs have probably evolved in the ages of the past or may produce in the cycles of the future.

It is neither improbable nor unscientific to regard the evolution of planets as parts of a great plan for the further evolution of beings that shall hold the wis-

* In the Hindoo cosmogony, a year of Brahm, or the time in which a planet would have its first stages of being, would be somewhere near 250,000,000 years of our time. This is the Oriental way of expressing the infinite ages of planet building; but of course we must regard it as metaphorical rather that literal. However, these heathen Hindoos seem to have sensed what the Christian world failed to perceive, viz., the long periods that must elapse in planetary construction. The priesthood of India, in the later period of their history, confounded Om with Brahm, and in some of their books teach the supremacy of Brahm over the planetary system. A true interpretation of the terms places Om as Supreme and Brahm as one of the subordinate gods, having creative intelligence nearly equal to Om.

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dom and power in themselves to guide the stars in their courses, and to shine with a brighter luster in the fields Elysian than their birthplace or handiwork in the material heavens.

But one thing we should guard ourselves against, and that is the errors of which ignorance of the true nature of gods of planets engenders. It is the misfortune of the race, or of even the most intelligent portion of it, to confound the lesser intelligence that can only construct a planet out of the primitive atoms with the greater source of power that made the atom and imbued it with all its inherent energy and laws of action. Great as may be the world builders, none of them equals this source of being, and one pauses in almost awe stricken wonder before the Omnipotent Power manifested in the atom out of which the universe visible or invisible is evolved.

For here the world builder is met with a seemingly impassible barrier. He can manipulate the material, but like all builders he must have the material to work with or his power is as naught. Trace the intelligence that makes worlds in space as far as human mentality can pursue the subject, and even upon its boundaries we find that there are still open and endless fields of investigation that lie far beyond the province of planets or their environment, and a boundless opportunity to explore the realms where even the builders of planets have not gone, and where the principles that underlie the expression of force and matter are to be discerned and explained by the mind developed upon the plane of a perfect evolutionary growth.

We need not fear to enter this realm, for in it probably may be found some traces of that causative principle

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from which all that exists proceeds; and as that realm is infinite in its extension, we may take an eternity, if necessary, to explore its mysteries. It is the goal of science, and science alone can find the pathway that leads to its limitless expanse, for it lies beyond the visible, and it illuminates that department with the radiance of an immortal splendor. Into its precincts we will now endeavor to penetrate, for no flaming sword guards the portal or impassible barrier surrounds its borders. It lies in the kingdom of the mind, and with mental power as our assistant, we need not fear to explore its secrets or disclose its mysteries.

Therefore, all hail the advent of intellectual evolution, for in that last fruitage of the planet lies the hope of its mental emancipation from the slavery of ignorance, and the opening of the doors of intelligence to the mind of man ere he passes from the sphere of his first evolution.

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CHAPTER XI.

THE NATURE OF CREATIVE FORCE AS EXPRESSED IN UNIVERSAL CONSCIOUSNESS OF BEING.

We have traced in a somewhat desultory manner the evolutionary processes of cosmic forces as they pertain to the varied departments of planetary existence, and now we will endeavor to examine the ultimate cause from which these processes take their cue ere they express themselves upon the plane of cosmic relations. We are aware that it may seem futile to attempt to explore this realm, for is it not written, "Who by searching can find out God?" But as long as God's works reveal more of His true nature than all His reputed oracles, we will carefully proceed to draw aside the veil that conceals the mystery of creation, and see if there is any ground for a superstitious reverence, or any special objection to explorations into the realm of primitive causes.

We do this in no spirit of defiance or carping criticism, for whatever may be the pretensions of the self-constituted expounders of tradition, the scientist knows that the true revelations of knowledge come through the evolution of intellect, and that the revelations of the gods cease when the mind of man reaches a standard of judgment that enables it to perceive clearly the nature of the source from which the revelation proceeds. Therefore, we cheerfully pass by the revelations of the past, as the offspring of the mentality that might have been better able to express itself in metaphor or

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symbol. than in the literal declaration of principles which science demands in this age of the world as a basis of credence or consideration.

We have often heard the question asked as to who made God, when the assertion was made by scriptural teachers that God made the world, but that question has never been satisfactorily answered. It used to be asserted that "God made himself," a startling proposition to the unsophisticated mind, but one that contained within itself the germ of a mighty truth, for in the universal consciousness of Being there is no recognition of any external force that is creative in itself, but that all force in the organism by which form and life are manifested exists in the inherent energy of the elements composing it, and that herein at least the form makes itself.*

Proceeding upon this basis, we find that all power is self-sustaining and self-executive, and that no limit of its expression is possible of being conceived by the mind, and that even the mind power is of this order through which force is directed in channels of intelligent expression.

This opens a wide field of cosmic speculation, for the mentality that is creative must necessarily be of a high order, or the results will be imperfect and unsatisfactory.

*A school of metaphysical teachers has appeared in this age that teaches the system of individual self-creative power upon this theory. Curiously enough, they all claim to be gods in essence, but somehow are unable to evade the natural order of planetary laws, although they often manifest some improvement in the sphere of physical forces. Probably they will evolve in time a system of rational ideas, without the tinge of fanaticism that belongs to them at present.

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Does the universe as a whole reflect the handiwork of a successful architect, or are parts of it in a crude or imperfect condition? This question is not difficult to answer, as far as the exhibitions of cosmic results are to be observed upon this planet, for from the lowest strata of the rugged rocks to its highest expressions in form, the defective are far in excess of the perfect standards that the highest mentality declares to be the goal of endeavor. The world is not perfect, nor are its progeny worthy of that approval which a more perfect development would insure.

Mentally, it has few giants and many dwarfs. Physically, it breeds the venomous reptile and ferocious beast of the jungles as well as the domesticated animals, or the sage and philosophic souls who have illuminated its history with the torch of a brilliant genius. Its offspring is mixed and varied, as its form is composed of the diverse elements and compounds that belong to its primitive stages of growth, and if there is any deduction to be drawn from its present condition, it is that its more perfect evolution is yet to be, rather than it has ever been.

Its mentality is as diverse as its physical and geographical features, and in that one department we can perceive how slow in growth its processes must have been, for the mental power of its progeny naturally keeps pace with its other gradations of power as expressed in the sphere of chemical or mechanical forces.

In these departments the mentality of the race has had a new impetus within a few generations, that has seemingly forced it forward with a rapidity beyond the possible conception of the mentality of the remote past; but even this forced growth has been attended with

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retarding influences, because the mind of the masses could not rise to grasp the full significance of the issues before them, and as yet does not see that the mental power by which creation can be wrought out upon a small scale is identical with the power of mind by which creation is accomplished upon the gigantic scale that belongs to a universe itself. For the mentality can only differ in degree of perfected power, whether it acts upon the plane of mechanical forces in planetary life or in the gigantic powers that direct the atoms into the formation of worlds, or in the still greater sphere that embraces all the suns and systems that pertain to the realms of infinite existence.

All belong to the same inherent nature, and all express in greater or lesser degree the principles that underlie the mental processes whereby universal consciousness finds expression in all departments of being.

And herein again is a startling analogy in the relations of causative energy as expressed in the sphere of mental evolution, for the mind power of the greatest thinkers gets its growth, not by sudden decree, but by the slow and patient exercise of its inherent powers, and has to pass through the long and often painful experiences of contact with adverse conditions. It has its periods of changes and reconstruction of opinions, as well as the primitive ages of the planet had their convulsions and upheavels, ere the crust became fitted to produce the life structures that existed upon it afterwards.

There may be the probability that the traditional theories of causation will cause the mind to demur at the idea of a self-acting mind power in the universe that is above the sphere of embodied representation,

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but the inference from the action of universal law is, that this may be and probably is the reason of the inherent energies of the elements that correspond in the embodied form to the primitive potencies with which they are endowed, and through which the controlling minds that manipulate them exert their power upon them. But whether it be so or not, there need be no question about the existence of the evolution of the mentality that presents itself in the embodied relations. That must exist, and whether it reflects perfectly the true source of its being, or is retarded in the expression of its full powers, we can perceive that from age to age mental power is transferable, and that the evolution of form is a precedent condition of evolution of mind on the visible plane of planetary life.

This consciousness of life does not pertain to the human type only, for the lower animal species all have it in greater or less degree, and they express upon an imperfect development of form the effects of planetary conditions ere the earth was able to produce or perfect the better types of conscious life that since then have come into being upon its surface. Ages have elapsed since any recorded evidence in the earth's strata has been able to testify as to primitive conscious existence, and cycles must have had their entrances and exits in the planetary orbs of our system that are outside the earth's present orbit, but the mentality of all may be read in the evolution of one, if the principles that govern each are of the same eternal nature.*

*This deduction ought to be acceptable to the believers in the theory of angels and archangels who inhabit eternity. On whatever planet the individual may have had his evolution, he is equally

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It is a startling hypothesis, that the worlds innumerable in space are but the handiwork of minds immortal in potency of being, but it is not more so than the overwhelming evidence that the universal consciousness of being which pertains to the fruitage of all planets is the reflection of the universal mind power by which worlds and centers of systems pursue an endless cycle of transformations.

For this mentality of the universe is too great to find expression in the ordinary terms by which we designate intelligence. It is fitly denominated the Eternal Wisdom, and by some thinkers the Divine Life. It has never been adequately characterized in the terms God or Creator, for they mean some embodied manipulator of the powers that lie behind all gods and creators of form in the universal cosmos.

In fact, so palpable is this consciousness of the Infinite Intelligence in this age of the world, that no attempt is made to impose upon the world with crude speculations about it as oracular revelations, which was the condition of the ancient world when the opening paragraph of the traditional theories was penned by some ancient writer for the benefit of the ignorant devotees of a fabricated religious creed.

In the beginning, the gods themselves should be subjects of inquiry, for if they had the power to create the visible heavens and the earth they have never been able to reveal their own origin as apart from the evolution

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a part of the universal consciousness and a portion of the universal life. If one would express the supreme idea in concrete form, he would be supreme who comprehended the sum of all the intelligence held by the rest, and he would hold supremacy only as long as his own progress enabled him to do this.

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of planetary life. There is good reason for their silence in this age, and little credence to be placed upon their revelations of the past. That belongs to the age of credulity and superstition, and does not confirm one in regarding them as the original authority or the chosen mouthpiece of the Eternal Wisdom. The gods grew silent when man questioned them as to their nature, and the wisdom of the gods has lamentably failed to solve the questions of this age as to the nature of life or the process whereby the worlds innumerable have their existence in the universal cosmos.

But if the gods have failed, the Eternal Source of Wisdom and Power has not withdrawn into the obscurity of the traditional darkness of non-intelligent comprehension.

Its power is asserted to-day as powerfully as when the foundations of the planet were laid, and its voice speaks more positively than then as to the methods whereby worlds exist or planets are inhabited. It even transcends the glories of the past, for it frees the mentality of this age from any superstitious regard for the records of the priest, and explains the purpose of planetary life without regard for the errors that ignorance or craft have surrounded it.

It teaches that planets have their purpose and position in the eternal economy, and that they fulfill it with absolute certainty and perfection in the end. It also teaches that there are no insurmountable barriers to the acquisition of knowledge in any department that belongs to the sphere of planetary existence, and even opens wide the gates to the pathway that leads to a knowledge of the universal cosmos, as the natural right to the sphere of mentality that belongs to planetary life.

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Can we ask more than this, or shall we linger in the old fields of cosmic speculation, and content ourselves with a self-satisfied belief in the old traditions, or, upon the other hand, settle into the conviction that the source of ultimate being is unknown and unknowable? Would it not be wiser to examine the foundations of each, and see if after all they do not rest upon the substratum of ignorance rather than upon a solid foundation in fact, and would it not be well to reconstruct our opinions upon a basis of fact and wait for a more perfect growth of mentality, before we pass judgment upon the limitations of the mind or condemn the efforts that the intellect rightly used can make for the solution of the mysterious and unknown.

It is here that we must rest our case for the present, and it is here we have our hope for the future. We predict that there will be no further revelations of the old order except among the grossly ignorant, and we also feel sure that the mentality of the race has not yet attained its highest status. It can put forth powers that as yet are latent, and its efforts will not necessarily be futile, for in the mental evolution of the race, we see the culmination of planetary power in this age.*

It is not to be fanciful or superstitious, but scientific, and it is to rise in power by steady growth rather than by sudden leaps toward knowledge; but it will eventually

*The tremendous upheaval of the foundations of cosmic speculative ideas by the discoveries in the scientific world was the first essential step in the increase of mentality that marks this age. With geology, chemistry and astronomy enlisted in the service of the intellect, the mentality of the world is having a new impetus, and slowly rising *en masse* toward a higher level. Even the lower strata of society feel this influx of power, and respond with desperate efforts to throw off the incubus of ages of ignorance.

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reach its goal and solve the problems of planetary existence upon a plane that will not be untruthful or irrational.

One curious result of the subordination of the mental faculties to the dogmas of tradition has been the lack of an intellectual evolution above the plane of ideas that formulated the tradition. Hence the mentality of the race has not exerted its power because it did not know that it had powers to act with, and its intellectual progress in the field of causation has been slow and uncertain. It groped its way, because its eyes were blinded by reverence for the past, forgetting, or rather not knowing, that the mentality of the past was that of a people emerging from the conditions of savagery or barbarism. Such a people could not evolve a high standard of moral or intellectual power, and their highest concepts of life would be tinged with the crudities of savagery. They might, and probably did, catch glimpses of the radiance of a more perfect evolution, but they failed to retain them as their heritage or to transmit them unsullied to the thought of subsequent ages.

Hence, the world had only their interpretation of the Divine Wisdom, and in its ignorance lost the full significance of that, so that in this age the intellectual power of the race has had a period of conflict as to the meaning and nature of what was transmitted as to the true source of the mentality that governs the universe, or the Creative Power that caused it to be.*

*The question naturally arises, if this be so, has the world ever had any true idea of the nature of the Creative Intelligence that governs the universal cosmos, and if it be possible to obtain that

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To answer this, one has but to refer to the eternity of principles, if not of processes, and as we see intelligence spring from the precedent conditions of physical and mental evolution, we feel confident that the race will not have to grope in absolute ignorance of causation, or that the Eternal Wisdom will forever remain unknown or unknowable; for as the intellectual power of the race increases from age to age, it will naturally tend toward a study of eternal principles as a basis of acquiring knowledge, and in time it must pass to a far more perfect standard than is attainable at present.

One argument that is of great force in considering this question is, the eternal nature of force and matter from which all that exists proceeds, and which prevents annihilation of the individual or collective body. This gives an eternal essence of being, which only needs the evolution of form and power to present the conscious phases, and then it becomes a part of the eternal consciousness which belongs to universal life itself.

This is the outcome of planetary unfoldment as far as our present knowledge extends, and probably the best explanation of the nature of the power that is creative in all departments of cosmic existence, if not in those realms that antedate planetary relations or

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knowledge through any power latent or developed in the mentality of the race?

What degree of actual knowledge concerning creation the ancient sages may have attained, is somewhat problematical, but nations that rose to the heights of civilization and power which belonged to Chaldea and ancient India must have had some ideality of a high character. All these nations had their Supreme Creator, to whom the lesser gods were subordinate, but the latter were recognized as having a part in the handiwork. The later religious systems have abolished these intermediates entirely.

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that govern them after that brief period in the realm of eternal being.

This may seem altogether speculative, but it is based upon the best evidence we can obtain of the outcome of conscious being; and, until we can have a better theory, we think it best to conclude that the governing power of the universal cosmos is vested in the principles by which such phenomena are produced, rather than in any form of mental expression which may be the source of purely planetary formation. In one case the personality, although great, is subordinate to the principle, while, in the other, the principle is predominant, and beyond the power of mutation by the will or caprice of the personality. Planets may be governed by the latter, but the universe must be subject to the former by its very omnipotence and absolute control of all.

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CHAPTER XII.

THE REVELATIONS OF SCIENCE AND THEIR OFFICE IN THE UNIVERSAL COSMOS.

It has been the good or ill fortune of scientific thought to have relegated to it the questions that have ever been involved in obscurity. Its answers have been regarded with interest, because there is a feeling of hopeless helplessness when the mind turns to other sources for a knowledge of the mysterious and unknown.

Therefore, when science began to lift up its voice in the domain of physical life, or over the lower realms of physical expression of power, it was regarded with some curiosity as well as aversion by the ignorant expounders of the so-called sacred revelations of the various nations. Questions were propounded for its solution that were so far beyond the capacity of their proposers to answer, that the latter imagined them to be unanswerable except by a direct statement from the possessor of infinite knowledge, and because the answers were not speedily forthcoming, the ignorant devotee was swift to declare that the mentality of science was defective and unable to solve the problems successfully.

It is well to remember that the mental evolution of the race upon the plane of scientific thought is quite recent in the modern age, and whatever heights it may have attained in the palmy days of Egypt and Greece it left an imperfect record, or the record was purposely mutilated or destroyed by the fabricators of the reve-

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lations which they gave in place of the scientific thought that belonged to the wisest minds of that period.

In the fact, however, that the mentality must have its evolution along the lines of all departments of knowledge ere it can obtain the insight necessary to speak with authority, and that this evolution is slow in the attainment, we have the reason why the world of science has its revelations of a progressive order, and why they correspond with the mental evolution of the race instead of being the fruitage of spasmodic assertion, which has ever been the characteristic of fraudulent device to deceive the ignorant.

The truth seems to be, that the revelations of science must keep pace with the mental development of the scientist, and if that be deficient in any particular, the revelation will be defective; and when the mind is brought face to face with the problems of causation, it cannot reveal more of their mysteries than the mental insight or growth of faculties enables it to perceive. Such a revelation may be partial or quite defective for a season, but it differs from the theory of the superstitious ideas of what a revelation should be, inasmuch as when the mental faculties have attained their better growth the defects can be remedied.

When the author attempted to write upon this subject of siderial evolution and its consequent resultants, it was with no idea of touching upon the mind realm that seems to be so intimately connected with it; but as the work grew, the presence of a powerful mental as well as physical force seemed to be a necessary factor of planetary formation. It seemed that the truer revelations of this mentality were to be sought in the ever changing processes of planetary evolution; and that,

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as the human mind rose in the scale of sentient power, it could grasp better the thoughts or purposes of the controlling mind. It did this with perfect ease and almost axiomatic precision, for, as the ancient relics and records of the planet are their own best evidence of the conditions and processes through which the planet passed, so the mentality of this age, with its ability to manipulate the powers latent in the universe, seemed to be the best evidence attainable of the true plans and purposes of Creative Power in the construction of worlds and systems in the universal cosmos.*

Such revelations have the distinction of belonging to the department of natural relations, and there seems to be no limitation to their scope of action. They pertain to all departments of being, and are as liable to lead the intellect into the realm of the spiritual or invisible cosmos as through the fields that belong to the purely visible relations. In fact, the revelations in the invisible are sometimes as interesting as in the visible, and when pursued with laudable motives are productive of a degree of satisfaction that well repays the labor or trouble one may have in the research. However, the main interest of scientific revelation for the present age must center about the physical realm, as the world of mind on earth cannot yet get above the evidence that pertains to the physical senses. What it can perceive

*The author would call the attention of the reader to this analogy, not because of its absolute certainty, but it makes planetary existence conform to the same principles that upon a lower plane are evidences of intelligence and skill. The great problem of existence becomes no longer at the beck of chance or subordinate to the control of an ignorant or incompetent creator. As long as the primal laws govern the result, the evolution of sentient life becomes a blessing and its ultimate security a certainty.

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by them is the real; what is beyond their cognizance is doubtful, or too obscure to be regarded with much credence.

The perfect mental evolution has not yet come, and the scientific minds of the age alone are the pioneer recipients of the greater powers of mind that belong to to this age of the world's evolutionary period.

The revelations of science can hardly be said to be more than fairly begun, yet their effect upon the mentality of the race is marvelous. For the first time since the historical period of humanity, they are coming to the front comparatively untainted by the virus of superstition, and the world is promised a rational explanation of the processes and results of creative energy. Its deductions are more positive than the older revelations, so called, ever dared to claim, but it has little do with the latter, save to explain them and often label them as antique curiosities, and shelve them along with the other fossils of a bygone age.

There seems to be no other way to deal with the subject of ancient ideas, termed revelation by the ignorant and superstitious, and science quietly points out their source with unerring accuracy as the work of craft or ignorant speculation. Not so with the revelations of science which shine forth from the various realms of being in this age, for they light the mind of the race with the knowledge of truth as far as the mind can receive truth. The only limits of its power seem to be in the incapacity of the brain to perceive except according to its development, but those limits are being steadily extended from generation to generation and age to age. The old is the basis of the new, but the new surpasses the highest conception of the old.

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Hence, the revelations of science keep pace with the expanding intellectual powers of the race, and while they have often been the basis of imperfect and crude speculation regarding the processes of cosmic action, they have not suffered more than usually befalls the truth in the hands of ignorance.

The intelligence of the race has always been proportionate to the evolution of its powers of brain, and as it has ascended above the plane of animality, its speculations have necessarily been tinctured with the ideas that physical sense had stamped upon the consciousness, so that there has been much confusion of thought upon all subjects that could not be measured by the standards of the physical senses.

When the mental powers were forced to range beyond this realm into the sphere of causation, they halted at the boundaries, because to them it seemed impossible to proceed further, and it was only when material science pushed its discoveries over into the realm of radiant forces that there was even a chance for the mind to grapple with the subject of causative energy as manifest in planetary construction or the motive for sentient existence.

In this work, the labors of the explorers in the field of materiality were so successful, that for the first time in the historic period of the race the true pathway into the invisible world became known, and it was seen that in the powers resident in matter that enabled form to be we might rationally hope for light as to why form should be.

There was in this conclusion but little aside from pure scientific deduction, for upon the old basis there was no connection with scientific thought and causation, and

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the whole subject was relegated to the domain of future discovery, for science as yet had not penetrated beyond the sphere of the physical relations.

To push out from the solid ground into the undiscovered (and to a great extent unexplored) sea of invisible matter, required courage as well as knowledge, for the race, as such, regarded it as a forbidden and hopeless task, but the possible results justified the efforts, and the reward that met the daring souls that ventured was beyond all calculation.

It was found that, beyond the utmost limits of the range of the physical relations, the elements had a perfectly demonstrable existence, with all their powers intact, and that from that realm proceeded all the visible forms which pertained to planetary conditions, and that the latter were but as points in the universal cosmos. Following close upon this discovery, was the equally startling evidence that the forces which pertained to the planetary condition could never be annihilated by change, but were always in existence somewhere, ready to manifest their ability to assume and control form whenever the conditions of form were required of them.

This placed the problems of planetary existence upon an entirely new basis for solution, and it was only through science that they could be solved at all, for the world of mind had long ago ascertained that revelations from the gods were to be discounted in advance. and aside from the scientific world, no one ventured to attempt the task of exploring the universe.

Here, then, was the proper field for all the different forces of science to act in concert. The astronomer pointed his telescope to the different orbs in space. and

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beheld a universe filled with suns and systems; the spectroscopist saw that they all were composed of the same essential elements; and the chemist declared that they all must be subservient to fixed and immutable laws. They might come and go as forms, but as essences they could not vanish in the realms of eternal oblivion.

The world of material existence presented a new aspect under these discoveries, and its possibilities became more a matter of interest than ever. It could exist for countless ages as a source of prolific life, but could that life exist for countless ages outside of visible planetary relations?

On this problem depended the destiny of countless myriads, but the answer of science was safe and certain, viz., dissolution of physical form does not interfere with the existence of the forces of the form, and they must exist in the realm of radiant matter when they have passed for the visible realm. Planets bear them, but cannot destroy them, and their transition must be but a change of relations in the universal cosmos, and their possible eternal existence in organic force, if not form in the realm of radiant material from which planets are evolved, and all their abundant progeny.

It is a startling conclusion, but bears the evidence of conclusive testimony as to the nature and outcome of cosmic evolution. There is no loss, for there can be no annihilation of the individual life or its powers. Its life goes back of form and has its source in principles that are eternal by nature, and hence has an eternal source of power by which it can sustain itself through the countless cycles of being.

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There is one further question that science has to solve, and that is why organic form is necessary to the perfection of forces that in themselves are self-existent and eternal, but this question is so deep that it requires an almost omniscient insight into the spheres of causation, and we leave it for consideration in our next chapter.

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CHAPTER XIII.

THE NECESSITY OF PLANETARY CONDITIONS TO EXPRESS LIFE ENERGY.

In the preceding chapters the reader will perceive that we have traversed a wide field of speculation, as well as demonstrable evidence relative to cosmic evolution, and the question naturally arises as to why life of the cosmic order exists if it is capable of holding itself intact in conditions that are not strictly of the planetary order, as we perceive them to be by the ordinary channels of knowledge.

To answer this question involves some knowledge of the forces as they exist in the radiant state of the elements, and as the forces in that state are beyond the cognition direct of the physical senses, we have to observe them by their effects, as well as by a reference to the principles that must exist in all the different conditions in which force enters as a constituent factor.

We know that to explore the realm of radiant matter is no easy task, for the elements there will not obey the laws of visible manifestation except through reference to the imponderable forces known as electrical and magnetic states of matter, and it was only when the experiments of Professor Crookes opened wide this realm to our inspection that we first began to perceive the basic principles of cosmic forces and their more subtle lines of manifestation.

These forces seem to be the controlling agents of all kinds of form, and when we study them carefully we

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are astounded at the diversity of their powers, as well as their inherent adaptability to bridge the supposed-to-be impassible chasm that exists between the visible and invisible universe.

Even more than this: it was seen that they were the natural paths whereby matter might be traced along the lines of all its exhibitions, and the scientific world awoke to the fact that beyond the realm of the visible was the true field of discovery, if the world would ever know the secrets of its own existence.

For it was here that the secrets were veiled from physical sight and the mental powers were the only means available to push discovery to its ultimate, and nobly did the world of science advance to ascertain if the world invisible would yield up its secrets. It found no impassible barrier, and it also found that the only obstacle which had ever existed was the ignorance and stupidity of the undeveloped mind whose knowledge was limited by its lack of a more perfect mental evolution.

Beyond the border line of the visible lie the boundless realms of the radiant or invisible forces, and it is to their province that we now introduce the reader as the place to seek for the reason why planetary forms are essential to the evolution of sentient mentality of a new order.

First, the forces latent in the elements themselves must have fields in which they can express themselves upon a perfect equilibrium of different planes. The atom must move somewhere all the time, and the compounds of the elements must furnish it with a range of different capacities of expression. This enables the physical form to exist as a form or concretion of powers

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that reflect the action of the atoms in the form upon some of their different planes of expression.

Coming into these relations in a form, they naturally correlate with the elements in proximate relations, and a new form ensues, having in itself a little different action from the others from which it sprung. The planet holds these powers subject to certain modifications of its own inherent energy, and by the power of magnetic induction keeps them in form long after they have vanished from the visible realm, but they are not, as we might suppose, dissipated in the universal ether. As sentient forms upon a higher plane they exist, but were it not for the influence of the planet they could not exist as independent entities.*

We have stated in previous chapters that the office of a planet was to produce these entities, and without their production the life of a planet was abortive, but from the fact that planets have their evolutionary processes, we need not consider it at all doubtful that at some period of their existence they have their progeny of the sentient order. Their very existence as planets seems to depend upon this functional action, and there is very little probability that any planet can exist long without bearing some fruitage of this character, for the elements in it will compel life upon it to be as surely

* This is the most important office of the planetary state, for the evolution of the powers in form upon the plane of radiant matter gives a basis for the preservation of the intellectual powers on the plane of an immortal life. In spite of all the theories as to the preëxistence of spiritual entities who enter the sphere of matter, this plain relation of the planetary state puts the question of entity subject to the general laws of eternal existence in form as well as force.

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as their marshalling themselves into form brought the planet itself into being.

One of the most startling sequences of planetary evolution in this age is the phenomena that bear witness to the essential truth of this theory, for in the scientific experiments of Crookes and Wallace the realm of the invisible gave up its inhabitants without question. They proved to be the fruitage of the planet in previous generations, and their coming at the behests of science was a convincing argument that science is master in the world invisible as it rules the domain of physical life.

Nor need one shrink from questioning the wisdom of the sentient hosts, who must through long residence in the realm of radiant forces be familiar with the principles by which worlds are constructed and minds evolved through their environment.

The mentality is there, and the evolution of mentality on a planet should be able the recognize it and keep pace with it if possible, for it is only in so doing that it can hope to avail itself of the knowledge and wisdom that centuries of mental evolutionary processes can produce.

It may be said to be unscientific by the less informed, but the highest science is to avail onesself of all the knowledge that others have acquired, and then upon that basis launch out into the undiscovered and unknown realms upon a voyage of transcendent importance to the welfare of the race.

Closely connected with this theory of the outcome of planetary evolution is the consideration of the origin of the mental power that controls the destiny of planets, and if it be of the same order that creates the worlds in space. In another place, we have alluded to this

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somewhat pointedly, for in the ideas common to the mass of mankind the creator of this world is regarded as the Controller of the Universe.

But we should remember that the mental evolution of the race as yet is so embryotic that it can hardly rise above the conviction that the planet on which it finds expression is the most important world in existence. Hence it reasons that its creator must be the creator of the whole and the governing mind of all. Now, whether the mind that governs or creates this planet is the Supreme Creator of all the worlds in space or otherwise, we certainly know that the statement that it is so is pure assumption, and an evidence of the ignorant mental status of the mind that makes or believes it; for the universal cosmos must have an equal importance in the consideration of creative wisdom with any individual planet, and to pronounce judgment in favor of one world to the exclusion of others is premature, to say the least, and worthy only of the mind biased by a defective education or the victim of craft and superstition.

This planet is only one of many others in the same system. Its progeny is not wise nor competent to decide so important a question upon the evidence that they have acquired up to date. In fact, it can be truly said of the vast majority of its population, that their mental power is of the animal rather than intellectual order. How, then, can they be competent to pronounce judgment or to know accurately of the source or object of their own existence? They are too ignorant to learn, and, being incapable of comprehension of their source of existence, live and die in ignorance of the basic principles of universal being. Hence they are

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unworthy of our consideration, for they know nothing of the realties hidden behind the veil of cosmic causation.

Turning from them to the deductions of scientific study, we enter the realm of the invisible, to explore its mysteries and discover its secrets. We find that the mentality at work there is cosmopolitan rather than exclusive, and that the world builders are not so ignorant nor incapable as their self-constituted exponents. They are mighty in intellectual and will power, but they are not omniscient in knowledge or supreme in wisdom, although to many minds they may appear to be so. They are subject to fixed laws, and outside of them they cannot act, but they cannot be said to be the author of the laws through which they impel the atoms into planetary form.

It sometimes seems even doubtful if they are able to produce the results they always desire, for the elements seem to be more ready to follow along the lines of the primitive forces than to bend to the will of any external mental power, but the world builder must be able to balance one force against the other or his work will be in vain.

Is it because of this that the planet has to pass through so many changes, or has the mental power that has sought to express itself in planetary construction found that it too is subordinate to a greater power that rules the whole, and that makes the work of the world builder reflect the defects as well as wisdom of the architect?

This is one conclusion that may well stagger our confidence in the Supreme Wisdom of the Universe being identical with the authors of planetary existence directly, but it also subordinates the latter to a power

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that is well able to supplement any defects they may have through imperfect knowledge, which prevents their handiwork from having that perfect expression which ought to mark the successful and perfect work of an All Wise Creator.

This the planet earth does not present to the thoughtful student of planetary conditions. From the earliest dawn of its history, the elements of its being have been in constant strife and turmoil. The inhabitants of its latter ages have transferred the violence of the primitive stages to the plane of mental as well as physical action, and wars, bloodshed and agony have been the birthright of its unfortunate children. Its history is not that of a wise effort to populate the ethereal realms with a race of intelligent and well developed spirits, but rather a breeding ground for the inception of life and the organization of the elements into the first relations of sentient form. As a place for the generation of organic life the planet has been a success, but beyond that it cannot be said to have reflected much credit upon its responsible author. If the greater laws did not exist by which the teeming life upon its surface could be protected from eternal destruction, and give it a better evolution than it can possibly attain here, it would be a lamentable failure.

Fortunately for its myriad hosts, the laws governing the world invisible are so much more lenient as well as powerful than those governing the material relations, that however low in the scale the life of the individual may have been upon the planet, its transfer to a better environment enables it to proceed upon its way with no worse conditions to encounter, and the chances infinitely in its favor for a better evolution than it ever could obtain in planetary life.

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THE CONCLUSION OF THE MATTER.

The reader who has followed the trend of thought may have been surprised at some of the conclusions respecting the nature and outcome of planetary evolution, and especially at the theory of the true controller of planetary destiny.

While the theory of a sentient power may be questioned by many scientific minds, and while popular theories concerning it may be entirely erroneous, yet the processes whereby a planet is called into existence by the power of intelligence of some character seem to be irrefutable evidence in its favor.

We have traced the planet through its several stages, from the fiery, incandescent, gaseous states to the crystalline form, and through the latter until it loses its crystalline density and approaches the conditions of sublimation, and even pushed our discoveries over into the realm of the radiant forces, but we seem to be unable to penetrate beyond the boundaries of secondary form in the radiant state. Even here we are met with much opposition or difficulty on account of fancied obstacles, but we trust that the world is not to remain forever ignorant of its ultimate destiny on account of any superstitious regard for the fabrications of craft or ignorance.

In the department of astronomical forces, we are necessarily obliged to proceed slowly, for our methods are so imperfect that we are not able to overcome the obstacles rapidly. We have only the means to open the

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pathways through chemical forces and spectroscopic analysis when we deal with the external manifestation, but when we enter the mental realm connected with each, we are in a comparatively unexplored and unknown country. Yet mentality is there, and ought to be amenable to our inspection, but with the imperfect powers we have to measure it, we are often liable to be seriously mistaken.

It is a curious outcome of modern science, that it should be denied a hearing and relegated to the domain of the physical state when it attempts to penetrate beyond the border line of demonstrated forces; but it goes there just as positively and powerfully as it penetrates the secret departments of the visible world. It finds that the gods have abdicated their thrones, but it also finds that they have an existence in a little different relation to the world of mortal consciousness than that which has long been attributed to them.

As possible subordinates of the primitive powers of nature, the gods of old may be regarded as modifying the relations of the elements through planetary evolution, and if they have any power of affecting its destiny it would be by their superior knowledge of adapting means to obtain the end sought.

That they have this knowledge, or could obtain it through the long ages of planetary being, would not be impossible, nor is it so improbable as it might appear, as it only needs growth of the intellectual powers supplemented by an active will to move the elements into any relation that the intelligence so disposed should desire.

But while it might set the forces in motion in space, and cause the elements to combine and recombine to

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form a sun, and from that sun evolve a planet, it would still be subordinate to the principles that inhere in the elements, and outside of their energy it could not act effectually. Even the gods are powerless in the presence of the Infinite, and the Infinite is present in the elements and primitive forces. Beyond these, the most learned mind in existence seems unable to penetrate, and within them the worlds eternal seem to have their final destiny assured.

It is singular that so many of our most famous scientists have overlooked this, and some of them have gone so far as to pronounce it beyond the power of ascertaining the source of procedure, but it seems as if the whole subject is embraced in the idea of mentality seeking to express itself in the controlling of the elements to obey its will.

Out of that arises the myriad forms of expression, but the power behind the veil is not so hidden from acute mentality after all. The gods are revealed in their work, and the universe visible is at best but an imperfect expression of their labors. When the mental vision of the visibly embodied turns toward them, they are discovered to be only elder brethren, and the world builder in space is companion to the creative genius that in visible form constructs new forms of beauty and utility, for which the world builder has only furnished the material.

The recession of the gods has marked the advent of science, but the Eternal Intelligence has not receded any further into obscurity than when it was so misunderstood in the remote ages of the past. It has never expressed itself in such relations as to be personified, and while it has had any number of usurping exponents,

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it remains the same inscrutable mystery as when the most wise of the ancient world declared it to be past finding out.

One of the most striking conclusions respecting it is, that all the evidence of its existence and true nature seems to come from the sphere of scientific illumination, which has dethroned the ancient gods from modern worship. Those gods proved to be the scarce developed minds of savages, who were so low in the scale of mental evolution that they knew nothing and could reveal nothing concerning the nature or destiny of the world. They have had their time of ignorant devotion, but their followers are as ignorant now as ever, for they could not inspire them with a knowledge of truth or how to obtain it. That had to come by a different evolution of the mental powers in a different field of thought.

Science entered this field with this premise, that the worlds visible were the proper spheres of study, and from them the mind was to trace the course whereby the destiny of worlds was to be discovered. If it has failed, it has left us no worse than before, but it is premature to say it has failed. It has gone where the less daring could not go, and it has found its reward; for in so doing it passed beyond the limitations of the physical, and found the world eternal to be but the outcome of the universal cosmos, of which the worlds temporal were the imperfect expressions, as they reflected the greater or less development of their responsible authors. There is one conclusion that seems to be self-evident as to the outcome of all planetary bodies, viz.: They are the channels whereby the elements pass from the realm of mechanical force into the sphere of sen-

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tient existence. Of all the myriad hosts that have had their evolution of life from planetary conditions, none can be said to have perished, and none can be demonstrated to have ever had conscious existence prior to their advent upon the sphere of planetary organization. From this it may safely be inferred, that planets are the embryotic stages of sentient being, and when they have fulfilled their mission in that regard they have performed their destined purpose.

Why it is essential that sentient life should have its first evolution in the planetary stages, is perhaps an insoluble problem with our present means of exploration into the origin of life, but that it is so is as deonstrable as any other fact of nature. As for the theories that suppose the individual consciousness preexists and enters the material realm for educational or other purposes, there is so little foundation for the hypothesis as to practically forestall it as traditional rather than probable. It comes from the realm of theoretical speculation rather than that of demonstrable evidence, and may be safely shelved along with the imperfect reflections of an undeveloped mentality seeking to solve the mysteries of life upon a basis of imagination rather than solid fact.

In all the ideas the author has advanced, he would beg leave to state that the question of the mental evolution of the race seems to be the only reliable index of truth or its attainment. That there ever has been a revelation from the Supreme All regarding the nature of worlds or the outcome of life upon the planet, is too preposterous to entertain for serious consideration. That there may have been ideas transmitted from the lesser minds that were once inhabitants of planetary

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worlds which have been received and believed to be revelations from the Supreme Will, is neither impossible nor improbable; but however exalted or defective they may have been in their definitions of truth as affecting this planet, they can be traced to no higher source than the mentality of partially developed individuals that may have known some things and surmised the rest.

The transmission of ideas from such a source would be necessarily far from absolute truth, and of so little scientific value as to be practically worthless in forming conclusions as to their emanating from Omniscient Intelligence.

The Supreme may have delegated authority through the laws of evolutionary unfoldment to minds that could form a world or direct a planet in its course, but it is very doubtful if the subordinate intelligence could ever equal the Supreme in the manipulation of the elements to produce such results as the former had imbued them with inherent power to accomplish.

The world builder might fail, through lack of intelligence, to accomplish all it desired, but the Controller of the World Universal cannot fail, nor can the imperfect work of the former remain in permanent imperfection. By the inherent energy of the primitive forces, the evolution of perfect results must come as the natural outgrowth of the ultimate processes of evolutionary powers.

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EVOLUTION.

QUESTION.

Out of the deep and voiceless space,
The stars shine forth in the solemn night;
Each holds a world in its strong embrace,
Which the coming ages bring to light.

They blaze and burn with matchless power;
They flame and glow with worlds unborn;
For the radiant orbs await the hour
When a glorious life shall each adorn.

As the ages pass and the world grows old,
Its power is seen in forms sublime;
But the surging pulse of its heart grows cold
As the life-force ebbs in the tide of time.

As the worlds in space their courses run,
Do their children still survive decay?
Do they pass from the light of a transient sun
To the perfect realm of an endless day?

As the stars fade out in the night of time,
Shall their light be quenched in endless gloom?
Does their hour of death give a hope divine
Of a life to be. beyond their tomb?

O, World unknown, whose mystic light
Has touched the souls on earthly shore,
Dispel the gloom of error's night—
Aid us thy secrets to explore.

ANSWER.

The stars go down in deepest gloom,
Their light departs, their form decays;
They fade out like the waning moon;
They come no more to mortal gaze.

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But in the spheres of radiant light,
They form new worlds of boundless power,
Which shine anew where earthly night
No longer clouds their heavenly dower.

The heavens preserve their secrets well,
But star-eyed Science points the way;
She knows the haunts where errors dwell;
She leads the soul to perfect day.

The worlds above, the worlds below,
Alike to her their secrets trust;
She lights the path for all to go,
And to all worlds is ever just.

Roll back the tide of buried years,
Unveil the secrets of the past,
Discard the creed of doubt and fears,
Admit the power of truth at last.

For the mighty soul of the Potent All
Guides all the worlds their endless rounds;
Through its perfect power they never fall;
By its mighty will they keep their bounds.

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THE SONG OF THE ATOM.

Swinging slowly to and fro,
Backward, forward, high or low,
Moving fast or moving slow,
Sing the atoms as they go:
"Come in line my brothers all,
Let us make the earth a ball."

So they cross each other's path,
Backward, forward, all in line;
Then they change to straight across,
Meeting squarely as they pass;
Then they settle into place
As they build a world in space.
Moving fast or moving slow,
Sing the atoms as they go,
When they form the crystal flower,
In the great world's natal hour.

Change the measure swift my brothers,
We must now give room for others;
So they face and turn about,
Moving in and marching out,
Weaving measures fast or slow,
Sing the atoms as they go;
Waiting each its time and motion,
As it reaches forth in ocean
Little hands that touch the treasure,
Which the water without measure
Holds within its strong embrace—
Of each element a trace
That the crystal once had known,
As it came from clouds alone,
When on that celestial morn
The great universe was born.

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Weaving in and weaving out,
Changing, moving all about;
Up and down, across the screen,
Move the atoms in between
All the lines that one can think,
As the crystal once did shrink
Into form, in time more brief—
Thus the atoms make the leaf.

Now we have another sight:
Atoms dance from left to right;
Backward, forward, as before,
When they built the world of yore;
But they move in rapid measure,
As they seize the floating treasure
That the air holds in its grasp.
Not so firm as ocean's clasp;
And the atoms now so free,
Move and glide in liberty,
Backward, forward, up and down,
Lengthwise, crosswise, round and round,
Moving each way as they will,
Swiftly rushing, slowly flowing,
Swinging, dancing, leaping, glowing,
Till the measure is complete
And we stand upon our feet—
Thus the atoms make the man;
Thus they fill creation's plan.

Rolling on and drawing out
From the form that eye doth see,
Rising, swaying, cloud-like motion
In the vast eternity;
Waving, swaying, rising, floating,
Without haste and without resting,
Rolling onward through Elysian—
Thus the atoms, to my vision,
Move in triumph as they go,
Soaring high or sinking low,
When the paths of life are trod
And the spirit goes to God.

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Thus the atom tells the story,
How it travels worlds of glory;
How in crystal, leaf or soul
Always moving to its goal;
Never hasting, never resting,
Till the worlds are changed to soul;
Then in glow of life eternal,
Moving on in forms supernal.
Dwelling in the spirit ever,
Rising upward, moving onward,
Thus the atom goes forever
In the vast eternity.

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