THE THEOSOPHICAL PATH

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THE SECRET DOCTRINE teaches the progressive development of everything, worlds as well as atoms; and this stupendous development has neither conceivable beginning nor imaginable end. Our "Universe" is only one of an infinite number of Universes, all of them . . . links in the great Cosmic chain of Universes, each standing in the relation of an effect as regards its predecessor, and being a cause as regards its successor.—*H. P. Blavatsky* in *The Secret Doctrine,* Vol. I. p. 43

THE AGE OF THE EARTH: by H. T. Edge, B. A. (Cantab.)

THE age of the earth has frequently been a subject of speculation among scientific people; but, owing to the great uncertainty of the data from which calculations are made, the results arrived at have been very various. The length of the time over which our actual observations or historical records extend is so exceedingly small by comparison that it is most unsafe to use it as a basis for calculating the duration of the total time.

First it must be decided what meaning is to be applied to the phrase "age of the earth." Assuming the nebular hypothesis, which represents our earth as having cooled down from the state of an incandescent gas, we may speculate as to the length of time required for the various stages of that process. Or we may take the commencement of erosion and sedimentation as our starting point.

Various methods of estimating the age of the earth have been employed. There is the argument from sedimentation, whereby we seek to arrive at an estimate of the length of time which has been required to deposit all the sedimentary strata known to geology. But the thickness of these strata has been put at 50 miles (Sollas) and 33.7 miles (Croll), while the present rate of deposition has been placed at one foot in 8616 years (Houghton); so the extreme uncertainty of reasoning from such data is obvious. What possible means have we of knowing how far our present rate of deposition is from the average rate during the immense period concerned? We have three

uncertainties to contend with: the present rate of deposition, the past rate of deposition, and the thickness of the sedimentary rocks. The first of these three is a point about which much difference of opinion must exist; the second seems wholly conjectured; the third is subject to such varying estimates as the two given above, 50 and 33.7 miles. The older sedimentary strata are so greatly metamorphosed that reckoning in their case is difficult, and it is even in doubt as to where to draw the line between the primeval crust and the earliest sedimentary rocks.

Then there is the argument from rate of cooling, as to which the data, and consequently the results, are if possible yet more vague. We have to assume the earth's present thermal condition, for what do we really know about this? We have to assume its past thermal condition; and finally we have to make assumptions regarding its rate of cooling. Naturally the most diverse opinions have been recorded; and of late the introduction of radium into our calculations has still further complicated them; for radium has the power of communicating heat to its surroundings, and, if it is present to any considerable extent in the earth, it would indefinitely prolong the amount of time required for cooling.

Theories of biological evolution have been made the basis of calculations as to the age of the earth; and here again the uncertainty is as great as ever. Even if we were to grant that there is a general consensus of opinion as to what the evolution theory is — which we are far from doing — still for mathematical purposes there is no definite theory, and each theorist will make different estimates based on his own ideas as to the processes that have taken place and the time required for them.

According to Geikie, Croll puts the age of the earth, since the beginning of sedimentation, at no less, and probably more, than sixty million years; while Dr. Houghton, estimating the present rate of deposition at one foot in 8616 years, and *assuming* the former rate to have been ten times as great (what an assumption!), and putting the thickness of the strata at 177,200 feet, obtains a minimum age of two hundred million years. (We quote the figures as given). H. P. Blavatsky, in *The Secret Doctrine,* quotes Professor A. Winchell's *World-Life: A Comparative Geology,* as follows:

> Sir William Thomson, on the basis of the observed principles of cooling, concludes that no more than ten million years [elsewhere he makes it 100,000,000]

can have elapsed since the temperature of the Earth was sufficiently reduced to sustain vegetable life. Helmholtz calculates that twenty million years would suffice for the original nebula to condense to the present dimensions of the sun. Prof. S. Newcomb requires only ten million years to attain a temperature of 212° Fahrenheit. Croll estimates *seventy* million years for the diffusion of the heat, etc. Bischof calculates that 350 *million years* would be required for the earth to cool from a temperature of 2000° to 200° Centigrade. Read, basing his estimate on observed rates of denudation, demands 500 million years since sedimentation began in Europe. Lyell ventured a rough guess of 240 million years; Darwin thought 300 million years demanded by the organic transformations which his theory contemplates, and Huxley is disposed to demand 1000 millions. (!!) — Vol. II, p. 694

A recent writer in *Nature* (London) is quoted as estimating 325 million years for sedimentation, which figure he regards as merely indicating the order of the magnitude, and as being probably too low. But this figure reminds us of the following from *The Secret Doctrine:*

Now, as it is certain, on occult data, that the time which has elapsed since the first sedimentary deposits = 320,000,000 years. . . . — Vol. II, p. 710

We see from the above that scientific men are ready to concede an age comparable with that assigned by *The Secret Doctrine,* and in some cases an even greater duration. But we ask readers to try and compare these figures with those used to measure the scale of human history, so that they may arrive at some kind of idea of their extreme lack of proportion and symmetry — and hence, in view of the argument from harmony, their extreme improbability. Dividing up the said period of 320,000,000 years in accordance with geological information, H. P. Blavatsky assigns, at a rough estimate, to the Quaternary Period 1,600,000 years, allowing the other periods the following durations:

Primordial (Laurentian to Silurian)	171,200,000
Primary (Devonian to Permian)	103,040,000
Secondary (Trias to Cretaceous)	36,800,000
Tertiary (Eocene to Pliocene)	7,360,000

Let us compare the least of these figures to the periods spoken of in history. Take 6000 years, for instance; what fraction is this only of the 1,600,000? It is 1/267. Even the 170,000 years given to the Thames Valley Englishman is only a little over one-tenth. But the durations of the other geological periods range from between four and five times to over a hundred times as much as that of the Quaternary period, while the total of the five periods is just two hundred

times that of the Quaternary. If the figures were represented diagrammatically, the contrast would be still more strongly brought out. Allowing one foot for our 6000 historical years, we should require for the whole 320,000,000 years more than ten *miles*. A picture thirty feet high, such as might be projected before an audience, would show the historical period as a length of the 1/148 part of an inch, the breadth of a thin hair!

All this may serve to give a faint notion of the absurd incompatibility between the figures used in some departments of science and those used in others; and justifies us in surmising that knowledge needs co-ordinating. The "scientific use of the imagination" is not overdone in some ways, though it may be in others; for theorists are apt to forget one thing while thinking of another. Thus all sense of proportion is lost. The earth is spoken of as if it were a rather large rock, whereas it is so vast that the highest mountains are like the granules on the hide of an elephant, and the deepest oceans like his sweat. The velocity of light is held up to our wonder as something marvelously great; yet, compared with the stellar distances it has to traverse, it is like the progress of a beetle across the Sahara. The historical period of 6000 years compares with the 320,000,000 years of sedimentation as one day to two whole life-times.

But the teachings of Theosophy are consistent and symmetrical; the idea that the earth during these vast ages was given over entirely to sedimentation and the lower forms of life, man being nowhere, does not enter into the Theosophical view. It is clear that we must not allow ourselves to be frightened by mere vastness; nor, in fact, do scientists, in some of their speculations, so allow themselves to be frightened; magnitude is a purely relative affair. But in the matter of human history the influence of old attitudes of mind, largely of theological origin, seems to have survived longer. To get an idea of the age of man we must do what we do in other branches of inquiry — not add but *multiply*. History, as we reckon it, coincides with a thin layer of sedimentary deposit; but we multiply such layers into beds, beds into strata, strata into systems, systems into ages. Thus men make nations, nations make sub-races, sub-races make races, and so on. The geological record shows many epochs of change in the distribution of land and water, and these mark the boundaries between the larger divisions of humanity.

Every day, however, scientific opinion makes further advances in

the direction of admitting the antiquity of the human race; it will both estimate more truthfully the age of the remains which it has found, and find other remains that will afford stronger proof.

Speaking of the origin of man, we must bear in mind that our studies of the physical world can reveal to us no more than man's *physical* origin. There still remains the question of the origin of that which, entering the physical vehicle which natural evolution had prepared for it, became self-conscious thinking man.

The correction of our views with regard to the antiquity of man enables us to introduce more symmetry into our views of the extent and purport of human life. It is obvious that a theory which regards the period of seventy years as the total of a man's earthly existence is quite inadequate as a gage by which to measure the destinies of a Soul, the denizen of a world 320,000,000 years old.

And now as to a certain objection that will be made in some quarters to these teachings. We shall be told that they are altogether too large and lofty for man to concern himself with; man is here on earth in this life, and has to do his duty here; the simple teachings of the gospel, or the wise ordinances of the church, will suffice; and such profound affairs should be left to the care of the All-Wise. This objection might be worthy of consideration if it were consistently maintained. But, as a matter of fact, it is not; for the very people who profess this limitation of mind, this humility of attitude, nevertheless plunge into speculations of this very kind. As we started by saying, the age of the earth has formed a frequent topic among scientific men, nor is there any subject too vast for speculation to venture upon. The very figures given, vast as they are, are from scientific sources. Theosophy therefore does not venture any further than current thought itself. The only difference between the two is that Theosophy is the more reasonable and consistent. No one is obliged to speculate about the age of the earth or the past of humanity; no one is obliged to let his imagination stray beyond the limits of his immediate surroundings and humble duties. But, if he speculates at all, let him speculate wisely; if he dares to ask for the truth about these large questions, let him not be frightened at it when he gets it; let his courage equal his presumption. It may suit him to think that there is no Beyond at all; or that, if there is a Beyond, it is all softly carpeted in familiar patterns; but Theosophy warns you that beyond the beaten track lie strange countries. Once we get beyond the bounds

of personality and earth-life, we begin to think in thousands of years.

True knowledge demands a dignity worthy of itself, and the Sage must leave behind all pettiness. The penalty for neglecting this truth is that one will achieve delusion and not knowledge. We may choose to let these higher questions alone, but we can not at the same time assume the valor of the knight and the pusillanimity of the varlet.

THE EARTH AS SEEN FROM A BALLOON: by H. Travers

A UNIVERSITY Doctor, writing in a scientific periodical, offers an explanation of the apparent concavity of the earth's surface as seen from a balloon, and makes it due to refraction. He has, however, assigned a cause which has so little to do with the appearance that it may be considered negligible; while the true cause he has overlooked altogether. In his explanation he is assisted by a diagram which represents the balloon as being over one thousand miles above the earth's surface (the top of the balloon is one thousand seven hundred miles above the earth's surface). But if we draw the diagram to scale we shall at once see the insufficiency of the explanation. Supposing the balloon to be at a height of four miles, and taking the earth's radius at four thousand miles, we find that the theoretical horizon is situated at a distance of one hundred and seventy-nine miles in a direct line from the observer's eye. The angle subtended by this line of one hundred and seventy-nine miles, at the earth's center, is about two and a half degrees; the surface beneath it is therefore virtually a plane. The triangle concerned in the diagram of refracted rays is forty-five times as long as it is high. The real reason — or at any rate the principal reason — is one which is given by Edgar Allen Poe in his " Hans Pfaal "; it is that of an optical illusion. The horizon is so far that it seems virtually on the same level as the balloon, the angle which the eye is called on to estimate being only about a degree and a quarter; while the surface of the earth below the spectator is obviously at a great distance down. This naturally gives the impression of concavity. The same effect is produced by a person standing on a large clear space of ground, but in this case the sight is familiar and his judgment corrects his vision.

In the case of the aeronaut the same phenomenon appears on a different scale and in an unfamiliar manner. The importance of correctness in the drawing of diagrams can scarcely be exaggerated.

CLIMATIC AND AXIAL CHANGES:

by F. J. Dick, M. Inst. C. E.

N Arago's *Popular Astronomy,* published about fifty years ago, he drew attention to the discovery on the shores of the Arctic Ocean, near the mouth of the Lena, of an enormous "elephant" contained within a mass of frozen clay, the flesh of which was so little altered that the Yakuts of the neighborhood cut it into pieces to feed their dogs. He concluded that Siberia was formerly a warm country, and that the catastrophe which caused the death of the animal suddenly reduced the region to an arctic condition. He adds:

> In the present state of our knowledge we perceive at first only one cause which would be capable of altering almost suddenly, and in a very definite manner, the thermometric character of a climate. . . . Let us imagine that the axis of rotation of the Earth pierces the surface in Peru or Brazil, without the inclination of the equator to the ecliptic undergoing any change, and icebergs would soon float into the ports of Callao and Rio de Janeiro. . . . It would freeze there at the surface in less than twenty-four hours. . . .
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> Any change, especially as it must be sudden, could not result from the forces to which the earth is daily subject; but if our planet were to come into violent collision with some large external body, a sensible displacement of the axis would be the almost necessary result.

Other results, it may be guessed, would happen first, leaving neither Earth nor its denizens in condition to discuss them. The collision theory will hardly work. As to suddenness, not a century has elapsed since a tiger was killed on the banks of the Lena in latitude 52°30′, in a climate colder than that of St. Petersburg and Stockholm. Arago pointed out that all European regions contain, at a moderate depth, remains of more or less tropical animals; and he might have added that during the Miocene age Greenland developed an abundance of trees, such as the yew, the redwood, a sequoia allied to the Californian species, beeches, planes, willows, oaks, poplars, and walnuts, as well as a magnolia and a zamia (Gould) — southern plants which neither perambulate nor grow under glaciers.

One explanation might be that the general temperature of the Earth at that time was higher, although we have no definite facts to warrant the assumption. On the contrary, so far as the effects of solar radiation are concerned, the chances are that the Earth was then farther from the Sun. *The Secret Doctrine* in a number of different places says that such well-defined climatic changes result from changes, or disturbances of the axial direction. To quote from it:

The Secret Doctrine teaches that, during this Round, there must be seven terrestrial *pralayas,* three occasioned by the change in the inclination of the Earth's axis. It is a *law* which acts at its appointed time, and not at all blindly, as science may think, but in strict accordance and harmony with Karmic law. . . . Science confesses its ignorance of the cause producing climatic vicissitudes and such changes in the axial direction, which are always followed by these vicissitudes; nor does it seem so sure of the axial changes. And being unable to account for them, it is prepared rather to deny the axial phenomena altogether, than admit the intelligent Karmic hand and law which alone could reasonably explain such sudden changes and the results. . . . Such . . . shifting does not happen between sunset and sunrise, as one may think, but requires several thousands of years. . . .

Students of Theosophy know that everything is under the control and proximate guidance of various orders of intelligences corresponding to different realms of action, just as a railroad train is under control of the driver; and that there is no magic, in the sense of a subversion of natural laws, although everything is magical when regarded as operative effects of will and intelligence. They also know that results are ordinarily reached along direct and simple lines. Thus no "magician" would be likely to lift a train at New York and set it down at Chicago. Neither do planets change their courses or their angles of spin because a celestial spirit comes to give them a kick. Notwithstanding earthquakes and other calamities the gods operate along sane lines. The persistence of our beautiful Earth is proof.

To imagine that things happen fortuitously — such as the idea of the harmonious grandeur of a solar system with its myriads of various orders of being, incarnate and ex-carnate, resulting from the accidental primordial encounter of "two streams of cosmic dust" — is a superstition of some who in saner moments are men of science. Now as to the train: if while running at eighty miles an hour it neared a ten-chain curve, would the driver increase steam-pressure and brake-power, or shut off steam and slacken speed? The latter of course. Just so, when the time arrives for an unusual disturbance of axial direction, there are undoubtedly laws which ensure that the Earth is not destroyed, even if many of its passengers (reincarnating egos and races) be shaken out of their bodies for the moment.

Mechanical laws are never suspended on their own plane of action; but all the agencies which produce or counteract mechanical effects are by no means fully known yet; which happens to have an important bearing on the subject of climatic and axial changes. In a spin-

ning body like the Earth there is a vertical precession, of about one degree in six thousand years, which may be called inversional precession; that is, a movement which would invert the direction of the poles if long enough continued. In an article on the Earth's Rotation (*Century Path,* October 31, 1909) which invited attention to current theories about causes and effects of the slight oblateness in the Earth's shape, it was suggested that the present rate of diminution of obliquity was due neither to "gravitational" planetary influences, nor to "tidal friction" (the latter would increase the obliquity) but to what might be called an electro-magnetic torque.

A first step toward this way of looking at the cosmic forces playing in and around the Earth was taken by Kelvin and Tait in their suggestion that "the Earth and Sun together constitute a thermodynamic engine." (*Natural Philosophy,* ii, §830)

Now the Earth, as well as man and everything else, possesses an inner subtle body or essence, non-atomic, and having properties unknown as yet to science. In that, and not in visible or tangible "matter," inhere the imponderable agencies with their dual correlations of sympathy and antipathy, attraction and repulsion. So long as science continues to ignore an important fact of this kind, so long will it fail to understand the possibility of a connexion between Karma and axial changes. As regards the "mass" and moment of momentum of the Earth, probably we are far from being in a position to estimate either truly. Referring to Newton and the fall of the apple, H. P. Blavatsky wittily said that "the Apple is a dangerous fruit, and may again cause the Fall — this time of exact science." For there are different *kinds* of magnetism.

> The materialist . . . will some day find that that which causes the numberless cosmic forces to manifest themselves in eternal correlation is but a divine electricity, or rather *galvanism,* and that the Sun is but one of the myriad *magnets* disseminated through space — a reflector. That the Sun has no more heat in it than the Moon or the space-crowding host of sparkling stars. That there is no *gravitation* in the Newtonian sense, but only magnetic attraction and repulsion; and that it is by their magnetism that the planets of the solar system have their motions regulated in their respective orbits, by the still more powerful magnetism of the Sun, not by their weight or gravitation. (*Isis Unveiled,* I, 271)

The point is that while normal conditions prevail, "gravitation" between Earth and Sun, etc., may be nearly as good a word as "magnetism" so far as regards "the law of force," equal areas in equal

times, etc., though it hardly covers the facts of certain variations; but when the inner essences of Earth become altered by the mephitic emanations of human and other life, interactions with the pure solar life-currents occur, causing retardation and torques, while other internal " forces," or more properly entities, push outward and pull inward. The earth's axis becomes more rapidly inclined, continents sink and rise, races are destroyed, and so on. The motif is purification, preparation for new races. Considerable cataclysms are few and far between. Minor ones occur at intervals roughly corresponding to the great precessional year, the last being about eleven thousand years ago, when Poseidonis went down.

The whole subject is extremely complex and we can form but the faintest idea of the subtle yet titanic forces and interactions underlying cosmic phenomena. Supposing a major cataclysm occupied ten thousand years, that " a third of the stars fell from heaven " (*Book of Enoch*), which means sixty degrees of change, that the kinetic energy involved remained about constant, while the average angular velocity of rotation was retarded temporarily say about fifty per cent, the ecliptic torque would have been about seventy-five times its present amount, roughly speaking.

The inner structure of the Earth is definite, and involves, apparently, the resumption of a more or less erect position after each cataclysm, the " head " (the geographical North pole, see *The Secret Doctrine,* II, 400-1) towards the Draconian regions of the sky. In order to bring the geographical North pole down to Peru, as Arago suggested, it would seem that the time would have to be reduced from our imagined ten thousand years to something like twelve hours, and the access of kinetic energy to produce the needed torque would afford ample employment for Byron's angels, who

> all were singing out of tune
> And hoarse with having nothing else to do.

But they may have done it, who knows?

With an intermediate inclination of say 45°, an orbit of considerable eccentricity, and mid-winter at perihelion, the Greenland summers would have been long and warm enough for the trees that grew there. If there was once a polar day lasting almost an entire year, this must have been when the terrestrial and ecliptic poles nearly coincided.

Cosmic phenomena belong in truth more to the domain of biology

than to physics. The Icelandic Eddas, the description of Valand bringing on a cataclysm, Wm. Q. Judge's story of *The Skin of the Earth,* and *The Secret Doctrine,* outline more real science than our text-books on these subjects.

Blind theories about man-bearing spheres rolling hap-hazard through space, remind one of the Irishman who wanted to buy a clock.

" Here is one," said the dealer, " that goes for eight days without winding."

" Eight days without winding! " said Pat, eyes kindling.

" We guarantee it," was the reply.

" Gorra, that's wonderful! And for the sake of St. Patrick, how long would it go if you did wind it? "

STONEHENGE: by P. A. Malpas

THERE was a time when Stonehenge and the myriad other great monuments in any way resembling it were called " Druidical." This is regarded as a threadbare theory now, although the Druids were ancient enough in the system of six thousand years for the age of the earth, modern as they are in the world's history.

Doubtless, the Druids used them. Why not? We use misunderstood symbols, deities, ceremonies and ideas, wholesale. Only the Druids probably originally understood what these structures meant and used them for their legitimate purposes, understandingly.

In the British Museum is an excellent little model of Stonehenge, but by its side is a little descriptive illustrated article from a popular magazine of ten years ago, which is scarcely to be taken as gospel. It declares that Sir Norman Lockyer and Mr. Penrose carefully worked out the date when Stonehenge was erected. There seems to be no special effort to indicate that they *might* have been wrong, and their statement is not liable to be often challenged by the casual visitor.

Assuming (in the first place) that Stonehenge was a sun temple, it is again assumed that the northeast avenue leading to the circle was in the direction of sunrise on June 21 at the building of the temple. The " altar-stone " in the center is assumed to be the point where the sun's rays should fall on that date.

Then by careful measurements it is ascertained that the sun has

shifted from its then position about two diameters, or a period in time equivalent to 3581 years. This was in 1901, and the date given by this astronomical calculation is 1680 B.C., "with a possible error of two centuries either way."

This is bold, as an assumption. As a scientific investigation it is very timid. Presuming that the sun's movement taken is that of the precession of 25,868 years or so, or any other regular movement, what is there to show that this "sun-temple" was not built in 27548 "B.C." or any other date before that when the sun occupied the same place, such as 53416 B.C., or 79384 B.C.? If any other basic period was used to determine this number why should it have only been the last time the sun was in that position? Also what of the changes in the earth's axis, and similar possible factors?

If a crime were committed in a house and among the dusty rooms were found a clock with its hands stopped by a bullet at a quarter past ten, would that prove that the incident occurred at a quarter past ten *this* morning?

Looking closely into these wonderful monuments one can see the careful way in which the stones have been keyed into one another with sockets and projections. Even laterally the horizontal stones of the great triple arch are so keyed. One such projection at the top of a stone is very clear in the photographs.

Remembering the enormous quantity of stone fragments that "shivered" off the Egyptian Needle (commonly called Cleopatra's Needle) in London, before its special preservative treatment, may we not picture these wonderful masons setting up the stones in a far more finished state than we now see them? May it not be that far from being "primitive" nature-worshipers these giant builders were in many respects as cultured as we are? And that they desired to leave tokens for us to realize it after we had forgotten all history? To realize it, to attain to it, and to surpass it in time?

Can we not even read some hint from their frequent avoidance of the arch as such? The old idea that they had not reached the degree of masonic knowledge requisite for the modern arch is worthless.

IS MATTER ALIVE? by a Student

SCIENCE teaches us that the living as well as the dead organism of both animal and man are swarming with bacteria of a hundred various kinds; that from without we are threatened with the invasion of microbes with every breath we draw, and from within by leucomaines, aerobes, anaerobes, and what not. But science never yet went so far as to assert with the occult doctrine that our bodies, as well as those of animals, plants, and stones, are themselves altogether built up of such beings; which, except larger species, no microscope can detect. So far, as regards the purely animal and material portion of man, Science is on its way to discoveries that will go far towards corroborating this theory. Chemistry and physiology are the two great magicians of the future, who are destined to open the eyes of mankind to the great physical truths. . . . The same infinitesimal *invisible lives* compose the atoms of the bodies of the mountain and the daisy, of man and the ant, of the elephant, and of the tree which shelters him from the sun. Each particle — whether you call it organic or inorganic — *is a life.*

The Secret Doctrine, vol. i, pp. 260, 261

Everything in the Universe, throughout all its kingdoms, is CONSCIOUS: *i. e.,* endowed with a consciousness of its own kind and on its own plane of perception. . . . There is no such things as either "dead" or "blind" matter, as there is no "Blind" or "Unconscious" Law. — *Ibid.,* p. 274

Since the above was written in 1888 science has taken several steps in the direction of a confirmation. The unity of nature has been demonstrated both from the physical and the biological side. This unity being granted, we are left with two alternative hypotheses: that the universe is all unconscious mechanism, or that it is all life. In the former case we have to perform the extraordinary antic of postulating that our own mind which conceives the hypothesis is unconscious mechanism. The idea of representing the universe as a machine may be said to be buried with the past century and only survives in the defiant assertions of a few who seem striving by that means to convince themselves of something in which they no longer really believe.

On the "inorganic" side we may be said to have opened up a new realm of infra-atomic physics and chemistry and to be entering upon the study of the agencies that play behind the scenes of our former chemical atoms and molecules. This has obliged us to reconsider some of the statements of the familiar textbooks. To say that oxygen and hydrogen combine directly to form water is a statement which is true only so far as it goes; in other words, it is untrue. If the two gases are perfectly pure and dry, they will not combine, even though heated. This is given as a fact in a recent book on the romance of modern

chemistry. Other facts given are that ammonia and hydrogen chlorid, if pure, do not combine directly when mixed; and, if memory serves, there were other and still more ardent reactions which were found to fail when the reagents were perfectly pure.

There is a loose category of actions known in chemistry as "catalytic," wherein reactions which would not otherwise take place are brought about by some third substance which apparently takes no part in the reaction since it remains the same after the experiment as before. Thus sulphur dioxid and oxygen are made to combine by the use of a catalytic agent, a recent form of which consists of platinum reduced to such fineness as to form with water something very like a solution. A more familiar example is that of manganese dioxid as used in the obtaining of oxygen from potassium chlorate. Some of these actions are explained on the principles of thermo-chemistry, as when a metal occludes gases, thus bringing them into a more efficient state for combining. In other gases the catalyser seems to play the part of a go-between by forming a temporary combination.

In seeking to find a general explanation of catalytic action, a writer in *The Scientific American* points out that our knowledge of chemical reactions is mostly confined to their beginning and end and that we know very little of what goes on between whiles. Imagine a little group composed of two hydrogen atoms and one of oxygen, floating about in the measureless abysses of intra-atomic space. An unattended atom of potassium comes along — or perhaps we should say a diatomic molecule of potassium — with the result that the potassium goes off with the oxygen and one of the hydrogens and leaves the other hydrogen atom to pair off with one of its own kind. But there is a time when the atoms are loose and uncombined, and it is here that the catalytic agent may get in its work, catching them on the hop.

It almost seems as if the actions which formerly were considered accidental were the essential ones, and as though "impurities" were necessary for the success of an experiment. Incandescent gas mantles of thoria do not glow brightly unless the thoria is impure from admixture of about one per cent of ceria; and it is significant that a greater proportion of ceria does not produce the effect. Luminous paints made from the sulphids of calcium, strontium, and barium, will not glow unless certain impurities are present. The writer in *The Scientific American* mentions a case that occurred in a manufactory of artificial indigo. It was necessary to oxidize naphthalene to phthalic

acid, but the process presented difficulties. But one day it was found that the action proceeded rapidly and easily. Investigation showed that a small quantity of mercury had leaked into the chamber and was acting catalytically.

The analogy between so-called inorganic and organic phenomena is also commented on by the same writer. Supersaturated solutions may be made to crystallize by dropping into them a small crystal of the same salt; and if there are several different salts in solution, any one of them may be made to crystallize by dropping in the appropriate crystal. In the same way germs will create teeming life in a culture medium, each according to its kind. We have an analogy with the catalysers in the large family of ferments, such as those that make alcohol and vinegar, in the nitrogen-fixing bacteria used in agriculture, and in the germs that breed disease among the chemicals of our body. All this helps us to understand that there are living beings behind every operation of nature, even though these beings do not necessarily have a fixed number of legs and a tail. They dart about in obedience to unseen impulses, devouring, creating, destroying, multiplying, whether in the test-tube of the physicist or the culture medium of the biologist. In physics and chemistry we are now provided with a new machinery in the shape of those electrons and so forth which play such a part in the doings of the great cumbrous chemical atoms. However far we analyse we still find life. We do not find heaviness, bulk, and inertia; but on the contrary the smaller a thing is the more lively it is.

Some writers have suggested that all life is a series of fermentations. One experimenter mixed yeast with fine sand and subjected it to pressure, thereby crushing the yeast cells; and the liquid which flowed out was found to have the same fermenting action as the cells. Fermentation has been closely imitated by the action of finely divided platinum. Sir E. Ray Lankester said in the London *Daily Telegraph:*

> Few persons can realize at first what an immense number and variety of microbes there are, not only around us, in air and dust and water, but also in and on us, and in and on every living thing. The work (the huge system of chemical change and the circulation of the elements, carbon, hydrogen, oxygen, nitrogen and sulphur) which they carry on is incessant, varied and complex. . . . They, by a series of steps, in which different kinds of bacteria or microbes are successively concerned, convert the proteids and fats and sugars of dead plants and animals into less elaborate bodies, organic acids, aromatic bodies . . . and at last, when what were highly complex combinations of hundreds of atoms in each molecule have been reduced by the action of first one and then of another kind of

microbe into comparatively simple substances . . . the *coup de grâce* is given by certain special microbes which convert these latter into still simpler combinations.

The "conservation of energy" was the great generalization of last century; and the universality of life will be one of the great generalizations of this century. And it is not merely that *life* is everywhere, for the word thus used would be a mere abstraction. Life is the property of a *being,* and the universe, organic and inorganic, teems with beings, of various orders and grades. And everywhere is consciousness, also of different grades. But in thus seeking to bridge the gulf between mind and matter we find ourselves on the threshold of mysteries which we cannot fathom without entering upon the study of that universal life as it is manifested in our own being. The study of "self," of mind and of consciousness are integral parts of the study of the art of living. We stand at the portals of a higher science and must give new passwords — Duty, Purity, Selflessness — ere we can tread this path. For those who think they can pursue it without giving these passwords there are errors and disillusionments.

LUMINOUS PHENOMENA ACCOMPANYING EARTHQUAKES: by a Student

THE view by which mineral matter is regarded as an inert mass, subject only to gravitation and mechanical forces, though passing away in favor of ideas which bid us regard every particle as teeming with life, has left many corollaries still surviving, The explanation of earthquakes is one of these; for we find in books that they are attributed to a slipping of the strata or to explosive forces in the crust; that is, they are regarded as mechanical movements. Perhaps we may come to the idea that the earth is held in equilibrium by electric or magnetic powers, and that when these are disturbed the earth quivers; and that the dislocation of strata is rather one of the consequences than the cause of the earthquake. There is a list of atmospheric, electric, and psychological phenomena accompanying earthquakes, and it is difficult to class all these as effects. To the list must now be added luminous appearances.

Professor Milne, the well-known English seismologist, recently

reviewed in *Nature* a paper by Dr. Ignazio Galli in the *Bollettina della Società Sismologica Italiana,* on the collection and classification of luminous phenomena observed at the time of earthquakes. This writer gives one hundred and forty-eight instances of such appearances, from 89 B. C. to 1910. It has been recognized for some time that certain earthquakes have been accompanied by appearances of the aurora borealis, glimmering lights in the sky, fireballs, coruscations and emanations from the soil, etc. Professor Milne's own observations in Japan, as well as information he collected from other parts of the world, have led to the conclusion that curious lights have been seen playing across the hills in the epicentral region. This led him to make observations at Shide in the Isle of Wight; and he noticed that a certain large chalk-pit there exhibits after dull damp days a flaring luminosity. This he succeeded in photographing by leaving plates in contact with the chalk. He arrived at the conclusion that the light was not connected with radio-activity, but was probably of an electric character. There was no indication of it being caused by micro-organisms.

All this tends to a confirmation of the idea that earthquakes are but a part of some larger event which has other manifestations besides tremblings of the earth; and this makes it the more easy to understand the psychological effects including the prescience noted among animals. Some day we may be able to add to our barometers, below "much rain" and "stormy," the signs "earthquakes in divers places," and "wars and rumors of wars." And probably such a barometer would be electrical, weighing the ether rather than the air. Yet this would be transferring to a machine functions which might be better performed by man himself, if he only kept himself well oiled and cleaned. What is a seer, whether on a Delphic tripod or not, but one who perceives the faint present beginnings of events which will later on grow to fuller manifestation? How do animals know it is going to rain much in the fall, so that they must build their homes higher up? We might answer — because, in a sense, it has begun to rain already. Already changes have taken place in the ether, which will ultimately eventuate in rain; and these changes the animals perceive. When does an earthquake, therefore, really begin? A proper question indeed.

PRE-GLACIAL RIVERS:

by Per Fernholm, M. E. Roy. Inst. Tech. (Stockholm)

HE "Glacial Age" is a constant puzzle to the geologists, new theories appearing every year as to where to place it in time. And it is greatly alluring to the imagination, aided by the few data at hand, to try to picture the conditions before that immense ice-cover descended from the north. The fact that there have been several glacial periods may account for part of the confusion in regard to its time and its effects; but generally it is the last great Ice Age that is meant, and even then the time from its end till the present time varies in the estimates from a few thousand up to hundreds of thousands of years. The latter seems to come nearer the truth and the figures agree more with the statement made by H. P. Blavatsky in *The Secret Doctrine*. Still, we find one of the latest attempts to fix the time giving only 7000 years, and estimating the duration of the glacial age at only 15,000 years. It is Dr. N. O. Holst who in the publication of the Geological Survey of Sweden for this year holds that the geological figures as a rule have been far too high; though it is hard to understand how he can account for the depositions and changes mentioned even in his own article, in such a short time. It seems to be a reaction from the liberties sometimes taken by the technical imagination.

Dr. Holst's recent researches give an excellent illustration of how the map of another age is traced. The pre-glacial rivers constitute one of the most interesting problems of that period. It is known that the Rhine, for example, then emptied into the sea on the present east coast of England, by means of the so-called Cromer river. Dr. Holst has now succeeded in proving the existence of another, still larger pre-glacial river, running from east Germany across the Baltic and southern Sweden, finding its outlet off the Norwegian coast.

It was more than twenty years ago that the first trace of this river-bed was discovered in the search for artesian water. A great number of borings have since been made, covering a wide area, and the geological strata have been carefully examined. The bed of the ancient river was found to lie 120 feet under ground; it consists of fine sand, being coarser at greater depths; and nearest to the limestone rock is a layer of boulders. The rock is 250 feet under the ground and it shows marks of long-continued erosion. This fact indicates that the rock must once have been higher than sea-level, and shows that north-

ern Europe was one continuous land in pre-glacial time, as it has been once even after the ice went.

An immense river it must have been, as the bed is three miles wide, and tributaries can be traced from north, east, and south. The pre-glacial strata are rich in fossils; wood, fruits, seeds, leaves and mosses, and insects and mollusca also have been found. And the bed is astonishingly rich in amber all through, some pieces being as large as a hand. It is the oldest amber deposit known in Sweden. Dr. Holst believed it to come from east Prussia, and that led him to make borings on the German side, which confirmed the fact; the present Vistula seems to be what now remains of the pre-glacial river. The fossils and sediments show it to belong to the same period as the Cromer river.

This survey is of great practical value, as an immense natural water-reservoir has thus been found, serviceable for the needs of the cities along its course.

WHAT MUST I EAT TO BE SAVED?

by H. Coryn, M. D., M. R. C. S.

HAT must I eat to be saved? is a cry that nowadays goes up in greater and greater volume. There is a vast multitude of replies, nearly all with the same sharp note of assurance, not to say cocksurence. Most deal with the *what,* according to the question; but of late there have been replies which rather turn the tables upon the questioner: "Eat anything so long as you eat *little* enough of it; even *nothing* may be the immediate prescription for you."

The health-restoring success of that prescription, when it has any, no more warrants its universal applicability than that of a particular medicine in a particular disease. The medicine antidoted the malady; the fast a foregoing excess whether of years or of a meal.

There is no quantitative general rule. The factors concerned in each organism are too many and too diversely working. For each man there is his own *how much* and for each his own best *what*. One man's excess is another man's starvation.

There is *habit*. Even the habit of eating too much should not

always be suddenly denied. By the time a man reaches a certain age his organism may (*may,* note) have fixedly accommodated itself to his excessive ways in diet. We all have a sum of spending energy to be spread over physical, ordinary mental, and higher mental work, creative or inventive work. Hardly any man is altogether shut out from the possibility of this last, though an immense number shut *themselves* out. One way of doing this is to eat too much. There are men who, whilst always eating too much, have extremely good health — according to our standards. They have practically decided to put the energy that might have gone to higher mental work, to the task of digesting, assimilating and excreting. But since the essence of man as man, as not animal, is in this higher work, these people, whilst often very good fellows with excellent qualities of heart — but so are dogs, usually! — have really put by the crown. What should be at the top of the head is doing menial work at the pit of the stomach. They cannot alter their scale of diet suddenly. Their bodies have efficiently adapted themselves to the excess. Only where the body is *suffering* somewhere from excess can sudden lessening be profitable and safe.

Occupation counts among habits. It is not reasonable to suppose that a man working with a pen in an arm-chair all day should have the same quantity or quality of food as he who wields a pick in the open air all day. Nevertheless the conditions under which the pen is used may equalize the needs. Brain cells working under strong feeling will burn up a lot of fuel. The medical student at the end of a day's written examination will play a very respectable part at the dinner table.

But here a little-considered point comes in. Food serves two purposes — as *food,* that is, as tissue replacer and fuel, and as *stimulant.* It is quite usual to eat too much of it as food in order to get enough of it as stimulant. Apart from the act of eating, itself a stimulant, some foods especially stimulate. Meats do; for some people fresh fruits do, and sugar.

We can see a line now between one man and another. Some fine natures generate their own stimulant and live finely and responsively. These will be small eaters, especially of meat. They do not require food beyond its *feeding* point and then somehow get its finer essence. For them there is something in sunlight and air and earth and life itself which the heavier natures miss. Chemically their nerve cells may perhaps rejoice in the usual proportions of phosphorus, lime,

magnesia, and so forth; but functionally the vibrations are faster, subtler, more responsive to will and feeling.

So *temperament* counts, habitual keynote of thought, quality of feeling, emotional mobility.

Conservators of energy naturally require less food than the wasters of it. *The* waste of energy, especially in America, is talking. Owing to the amount of lubricating saliva he squeezes from his salivary glands and thereafter swallows, your chatterer has commonly a good digestion; and the constant vibrations of his voice, rippling through his body, insure an equally good assimilation. He needs and uses plenty of food. His immediate health is usually good. But it is a sort of hand-to-mouth health. His restless and mostly futile brain spends as fast as he makes. He cannot accumulate those reserves which make health *stable,* which tell at the crises of illnesses, which the conscious and unconscious will can draw upon in the times of heavy stress.

The waste of creative energy in another direction must also be met by plenty of food. The vicious and indulgent man must eat much, and if his digestion happens to fail he is in a bad case. The influence upon the cells of this way of life usually persists long after reform — when there is reform. This man must always eat more than he who has conserved his vital capital for better use. And in the crises and strains of life the latter's wisdom will have its reward.

So the matter will not readily be settled by the experimentation of the learned Bureaus. The most valuable piece of advice to be given to the ordinary man is to lean over constantly on the side of less eating and to decide most doubtful points against his appetite. For one man that eats too little there are a thousand that eat too much. Be not hasty to suppose yourself that one.

Do what thy manhood bids thee do, from none
but self expect applause;
He noblest lives and noblest dies who makes
and keeps his self-made laws.

The Kasîdah of Hâjî Abdû el-Yezdî

BRITTANY: LEAVES FROM AN ARCHAEOLOGIST'S NOTEBOOK: by V. B.

DOLMEN DE KERRAN (KERHAN), NEAR LOCMARIAQUER, BRITTANY

THE name *dolmen* is compounded of two Breton words: *dol,* a table, and *men,* a stone. A dolmen consists essentially of several big stones set on end, forming supports or walls, with one or more capstones, which are usually larger than the uprights, forming a table or roof. The chamber or chambers thus formed are usually entered through a gallery or passage built in a similar fashion. When such a covered passage is found separately, not leading to a chamber, it is called an *allée couverte;* or, in other words, an *allée couverte* is an elongated form of dolmen.

According to archaeologists, all dolmens and *allées couvertes* were formerly covered by tumuli or galgals, i. e. artificial mounds, sometimes of huge dimensions, composed respectively of stones, earth and mud, and stones alone. The denuding action of the elements, and the depredations of farmers requiring soil to spread on their fields, are the causes to which are ascribed the discovery of most of these monuments.

Some of the larger tumuli which still exist enclose several dolmens: such is the tumulus known as Mont Saint-Michel, near Carnac, in which four large dolmens have been discovered, and others are thought to exist. The height of this tumulus is now 65 feet, but must once have been considerably greater, as the summit has suffered repeated levelings.

TABLE DES MARCHANDS, LOCMARIAQUER, BRITTANY

The Table of the Merchants (Dol ar March'adourien) is considered the most remarkable dolmen yet unearthed. Its capstone is 20 feet long by 13 wide. Supporting this at one end is an upright stone gracefully rounded to a point at the top, and covered with partly-effaced carvings, which the archaeologists find unintelligible.

ALLÉE COUVERTE DES PIERRES-PLATES, LOCMARIAQUER, BRITTANY

The remains of this gallery form one of the finest specimens now extant of an *allée couverte.* It is 74 feet long, with a sharp bend about midway. On some of the upright stones are remarkable carvings, of which no explanation is at present forthcoming.

In the background is seen the village of Locmariaquer, which is said to occupy the site of the ancient Doriorigum of the Romans.

INTERIOR OF THE " PIERRES-PLATES," LOCMARIAQUER, BRITTANY

This view illustrates the curious effect of bright sunshine entering between the menhirs which form the walls of the *allée couverte,* and shows one of the carved stones which puzzle archaeologists.

THE MANÉ-RUTUAL, LOCMARIAQUER, BRITTANY

The capstone of this huge dolmen measured, when intact, about 30 feet long by 15 broad, with an average thickness of about 3 feet; unhappily, it is now broken in two, and one end rests on the ground. Nevertheless, this monument, standing against the wall of a garden, and close to the houses of the village, seems more fully even than others a hoary reminiscence of the mighty past.

LE GRAND MENHIR, LOCMARIAQUER, BRITTANY

The Breton name for this greatest of menhirs is Mané-er-H'roeck, the Stone of the Fairies. Its fall is popularly supposed to have been occasioned by lightning striking it early in the 18th century. A writer in 1727 describes it as fallen and broken much as we see it today; but there appear to have been five pieces at one time, whilst only four now remain. The fifth piece was doubtless incorporated in some needy farmer's wall, or broken up for mere road metal, like so many of the great megalithic monuments here and elsewhere.

The four remaining pieces, the two largest of which are shown in the illustration, have a total length of 67 feet and a maximum width of nearly 14 feet; their total weight is estimated at 340 tons. When erect, this imposing pillar of granite must have resembled the obelisks of Egypt.

EXCAVATING A DOLMEN ON THE ÎLE LONGUE, GULF OF MORBIHAN

The illustration shows the dolmen as it was discovered by excavation in the *galgal,* or artificial mound of stones, which has crowned the little island for unknown centuries. It is supposed that all dolmens were at one time similarly covered by *tumuli* or galgals.

MENHIR DU CHAMP-DOLENT, NEAR DOL, BRITTANY

This fine menhir stands about 30 feet out of the ground, but is somewhat dwarfed by the huge wooden crucifix which surmounts it. It seems rather paradoxical that a monument of the prehistoric past should be thus " converted to Christianity," but many other menhirs have suffered a similar fate. The more usual method adopted was to carve rude crosses or inscriptions on their surfaces. By this means

the priests hoped to direct aright the prayers and offerings which, in spite of all injunctions against the practice, a great many of the Breton country-folk continued to make to certain menhirs all through the middle ages and until comparatively recent times. Indeed, in remote districts, this cult of the menhirs continues furtively even today. It may perhaps represent a dim and distorted reminiscence of age-old rites and ceremonies.

GENERAL VIEW OF SAINT-MALO, BRITTANY. GRANDE PORTE, SAINT-MALO

Saint-Malo, at the mouth of the Rance, completely covers the old island of Saint-Aaron, which is now joined to the mainland by a broad causeway. Though crowded with visitors all the summer, and in close proximity to the fashionable " resorts " of Paramé and Dinard-Saint-Énogat, it remains in general plan a truly medieval city. One may still make the circuit of its magnificent ramparts, in the thickness of which are broad stairways, dwelling rooms, and shops — though steam trams run just outside them, and telegraph wires cross overhead. Most of the streets are narrow, steep, and roughly-paved, with high, wooden-fronted houses on either hand. One of the most interesting old houses is that of the famous corsair Duguay-Trouin, who, at the age of nineteen, is said to have captured two English frigates with their convoy of thirty merchant vessels, and brought all his prizes into Saint-Malo. He was born here in 1673. Other sea-rovers cradled in this " stronghold of corsairs " were Mahé de la Bourdonnais and Surcouf. Jacques Cartier, discoverer and explorer of the Saint Lawrence, was a native of Saint-Malo, and is honored by a statue on the ramparts. On an islet just off shore, and reached by a causeway at low water, is the tomb of Châteaubriand, marked by a rough-hewn granite cross. This brilliant writer, but unhappy man, was born at Saint-Malo in 1768, and lived there during childhood. Many admirers of his genius bring flowers to place upon the simple tomb.

The traveler who loves an old-world atmosphere should visit Saint-Malo in the spring or late autumn, when the fashionable hotels are empty, the casino closed, and the beautiful sands deserted. Braving the odors of the narrow streets, he will realize, more fully than from books, what the conditions of European life in the 16th and 17th centuries really were. No doubt the town is now far cleaner than in the days when the Rue Bel Air derived its name from the fact that

the citizens descended by it to the ramparts, for a breath of fresh air, after hours spent in the stifling and poisonous atmosphere of the inner streets. But it is still always somewhat of a relief to come out on the walls, and here one may spend some delightful hours, conjuring up pictures of the past, or watching the life of the port of today and the various craft that come and go through the difficult channel by which this is approached. It ranks as the seventh port of France, but is above all interesting by reason of the extraordinarily large rise and fall of the tide, which, during the equinoxes, attains to 49 feet in the inner harbor. At low water, all the craft alongside the quays are usually left high and dry. From here sail many "terre-neuviers," or sailors of the Newfoundland fishing fleet; and from here sail also steamers laden with the Brittany produce that figures so prominently at certain times of year at Covent Garden Market, in London, England.

In the highest part of the town stands the church — or cathedral, as it is often called — dating from the twelfth century, and with a beautiful spire presented by Napoleon III.

THE SOUL: ITS NATURE AND DESTINY:

by F. S. Darrow, A. M., Ph. D. (Harv.)

THE Soul or Real Self is neither a thing nor a substance but a life, a conscious purpose seeking fulfilment. It must be defined as an ideal. The temperament — characteristics, physical, mental, and moral — is the inheritance given the Self by the past and can be explained in causal terms. But such an explanation is the explanation of an observer and not of the Self, as composed of will and intent. All causal explanations have to do with common qualities and generalities. They never deal with the uniqueness of individuality. The World of Causality is the World of Description; the World of Selfhood is the World of Appreciation.

The Self though born in time is eternal in essence. It is a part of the Manifold Unity of the Absolute. No Self can be independent of any other Self. Therefore were it possible for one Self to be sundered from the Absolute the whole Universe would collapse. The Individual Self will ever continue to grow as a fuller expression of conscious

meaning and consequently its life-span will ever continue to broaden.

The law of periodic repetition or recurrence holds universal sway in nature; the ebb and flow and consequent re-ebb is continuous and never-ending. The body waxes and wanes; is born and dies. The Self, beyond the realm of space and time but inclusive of it, eternally linked with it, is, was, and ever will be. Its life is an eternal Now. It is the man " for whom the hour will never strike."

> It is not a thing of which a man may say, It hath been, it is about to be, or is to be hereafter; for it is without birth and meeteth not death; it is ancient, constant, and eternal, and is not slain when this its mortal frame is destroyed.

But the temperament is born, dies, and is retransmuted; for experience shows that whatever is born must also die. Birth necessitates mortality. The realm of birth is the realm of death. A logically consistent conception of immortality demands an eternal pre-existence as well as an eternal post-existence of the Soul. To postulate a temporal beginning to it is to make it temporal in its essence. Substance is eternal, form evanescent.

No philosophy can be true which does not reconcile the vast seeming injustice of life with the ideal of Eternal Justice, which unerringly rewards or punishes according to merit or demerit. Justice cannot be built upon a foundation of injustice. An infinite past is required to explain the present and the infinite future. Only thus can the Self be morally free and personally responsible. Only thus can the Deity be conceived of as perfectly just. Justice cannot be established by universal injustice. Justice can be maintained only by an eternal and ever-present compensation; no future " Day of Judgment," but an ever-present Now of Judgment. Transgress the law and pay the penalty; follow its injunctions and receive the reward; that is an everlasting decree.

To put it briefly, the Soul is the Real Self and the body the reflex or apparent Self in which the Soul temporarily dwells. The empirical manifestation of the Soul is the power of choice, of free will. The body is the reflex of which the Real Self is the cause. The Soul, the Creative Strain of Individual Will, a child of the Absolute Will, has existed throughout all the ages in numberless forms; now associating itself with this, now with that form; a ceaseless Wanderer, an Eternal Pilgrim, the Traveler ever seeking the at-one-ment with its Other, which in reality is the Manifold Unity composed of all other Creative Strains of Individual Will, which in their entirety form the Absolute.

The Real Self, the Creative Strain of Individual Will, in aeons past thought its Other to be the rock and temporarily called itself a rock until it learned the incompleteness of such an identification, when it sought its Other in the plant and called itself a plant; then it sought its Other in the animal and called itself an animal; now the human Soul thinks itself to be a man and calls itself a man; but in the future it will seek its Other in the Above-man; and so on, ever onward and upward. Never once, despite its temporary satisfaction with its passing reflection has the Soul lost its own Selfhood. These identifications are variables, ever shifting; the Creative Strain of Individual Will, the Soul, is the constant in the sense of having pre-existed as itself, but not in the sense of remaining the same in outward expression; for it ever seeks the more complete fulfilment of its Purpose. Thus the line of connexion in the progressive evolution of forms is the Soul, the I, the Perceiver in every thought and deed, the Creative Strain of Individual Will, a center ever forming by its own ceaseless activity varying degrees of consciousness in bodily forms, various capabilities of sensation, various time- and space-spans.

The connexion between the Self and its temperamental clothing is somewhat like a solution in chemistry, midway between a mixture and a compound. During an earth-life the two are intimately connected; but at death the soul is precipitated out of its former state of solubility in a body, until later, after its rest, it enters into a new temperament, the outcome of the one preceding, and thus forms a new solution.

The Real Self, at one with the Absolute, lives in its own life in an eternal Now; but in its connexion with the reflex or personal selves of temporal sequence its life appears as if made up of succession and change. It is the duty of true philosophy, of true religion, to teach the Divinity of the Real Man, his inherent responsibility and perfectibility. Brooding over and partially incarnated in every incomplete finite fulfilment of its Purpose is the Source in Heaven. Experience is the great teacher. There are no limits to Soul and to Soul-powers.

As the rays of light scatter at sunrise until they cover the heavens, so the Individual Selves journey on their Eternal Pilgrimage of more complete Self-expression out from the One Absolute Self. As the rays are re-gathered into the single glowing disk of the setting sun, so are all the Individual Selves re-gathered at the end of a cosmic day — a period of enormous duration — into at-one-ment with the Absolute Self.

AURAS: by H. T. Edge, B. A. (Cantab.)

IT has been reported in the papers lately that certain scientific gentlemen have succeeded in photographing the human aura, and even in rendering it visible to the human eye. In the former case the rays emanating from this aura though not seen, can record themselves on the sensitive film; in the latter, the eye of the spectator is prepared beforehand so that he is able to see the said aura. The aura is described as being in two layers: an inner or denser, and an outer or finer; it is the former alone that has been rendered visible to the eye. Another account states that a doctor proposes to use the method in diagnosing disease; adding that he has already examined a tuberculous patient and found the aura to be ruptured in the pectoral region.

A few years ago H. P. Blavatsky was striving to direct the attention of scientific people to these very facts, and encountered only ridicule, neglect, or calumny. She championed the memory of others who had striven in the same cause and who likewise had achieved nothing but ridicule and persecution. Among these was Dr. B. W. Richardson, whose theory of a " nervous ether " brought him nothing but loss of position and favor; and Reichenbach, whose teachings about the " odic force " which emanated from both animate and inanimate bodies, in the form of rays of light, has caused his works to be placed on the scientific Index Expurgatorius while against himself the scientific ban of excommunication was pronounced. A mere glance at *Isis Unveiled* or *The Secret Doctrine* will show that the writer strove hard to call the attention of the world to the evidence in favor of this and many other facts, bringing forward all that is now alleged, and much more that will be admitted later, and collating the discoveries and opinions of many a luckless pioneer of knowledge. The result is that learned encyclopaedias, whose writers either have or have not read her works, ignore her teachings, while the very class which formerly derided her is now bringing forward as original discoveries and views a part of those very teachings; and this without amends or even acknowledgment. Such is the world's justice.

If we had any notion of appealing to logic, we might point out the advantage of consulting writings which have so often proved themselves to be trustworthy and prophetic; we might suggest that H. P. Blavatsky, being right in so many things, may be right in others, and the still missing parts of the discoveries could be supplied from her teachings. But while Science is a true deity, so to say, scientific people

are human beings, and the general practice of the worshiping body falls short of the ideal. Anyone following the true scientific program would be conducted along the road to truth; and though he might not find many of the roses of fame and comfort growing by the wayside, he would at least achieve his impersonal quest. But there also exists among a few the desire to restrict knowledge within the limits of a creed conformable to expediency; to ignore, deny, or proscribe that which threatens to take the explorer too far from home; and to exclude those who attempt to transcend these limitations. In a word, there is the tendency with some extremists (to put it mildly) to constitute an established church of science.

One peculiarity of a dogmatic church is that when it has failed to suppress the knowledge, it attempts to father it. The necessity of keeping abreast of the times impels it to bestow its endorsement on things which have been achieved without its aid and in spite of its opposition. It was high time indeed that scientific men should recognize the existence of the aura, if they did not wish to be left behind altogether. They might have recognized it years ago, but then the same necessity did not exist. It is the duty of a church to lead; and if the people will not follow where it leads, it must lead where they follow. In all this it will be understood that reference is made only to those cases where the cap fits and not to those many truly great men of science who faithfully and honorably fulfil the duties of their noble calling. These latter will be as ready as we are to admit the existence of dogmatism and to endeavor to dissociate the true cause of science therefrom.

If it were not for this dogmatism, then, the researchers might be able to know something about the aura of inanimate objects — part of the teaching of the repudiated Reichenbach — and many other things to be found in H. P. Blavatsky's writings. But as it is, we shall probably find them admitting just so much as they consider expedient and no more, and borrowing without acknowledgment from the very sources they have repudiated.

And now as to the attitude of Theosophists towards this subject of auras. The difficulty experienced by Theosophists in dealing with it is the same as that experienced by H. P. Blavatsky and by everyone who in times of materialism and spiritual ignorance endeavors to help humanity along the path of knowledge. It is the difficulty of telling people enough to counteract the dangers of materialism and ignorance, while at the same time avoiding the danger of exposing knowledge to

abuse. The gravity of the latter danger is too obvious to need expatiation. Even the discoveries of science, such as explosives and drugs, are already abused to a deplorable extent. The discoveries in psychism lend themselves in an even greater degree to abuse. Hypnotism is a power which alone threatens to develop into something that will bring civilization to a serious crisis. The age is full of morbidity and corruption of various kinds, and we have but small means of controlling it and the consequent abuse of powers.

It may be argued that the use of this method in diagnosing disease will prove of benefit to the human race, but the fallacy of so general an argument is easily pointed out. *If* the use of the method could be restricted to physicians who are both beneficent and wise, the argument would doubtless hold good, but not otherwise. Observe the expression "beneficent *and wise,*" for it is meant to imply that mere good intentions do not prevent the perpetration of mischief, as we all know.

The danger lies in half-truths, and illustrates the proverb that a little knowledge is a dangerous thing. Let anyone try to imagine the probable consequences of an eruption of psychism and psychic experimentation in a civilization constituted like ours, and he will acknowledge the danger. The newspapers instantly publish the whole thing to the world, so that outside of the sane and noble-hearted, thugs and thieves, semi-lunatics, irresponsible fools, children, moral perverts and scoundrels — everybody, in short, can read and learn. We have already more powers than we can control, whether one speaks of the facilities that invention puts into the hands of malefactors, or refers to those physical and mental powers which, as so many know to their grief, we find it so hard to control. There is only one kind of public psychological knowledge that can do the world any good today. That is the knowledge of SELF-CONTROL.

Theosophy teaches self-control, and its teachings about the SEVEN PRINCIPLES OF MAN, in particular, supply the key. It distinguishes carefully between the PSYCHIC and the SPIRITUAL, a distinction which these experiments in psychism utterly ignore. Of the seven principles of man, four belong to his lower nature; and of these four the physical body is only one. Experimenters therefore plunge into an investigation only of the other three. But the lower nature of man is entirely selfish and governed by propensity; such experiments seem able only to increase the dominance of the lower nature over the higher. Usual-

ly they result quickly in a disturbance of the physical, mental, or moral balance, when not of all three together, and the career of the experimenter is brought to a close. They may even result in an epidemic of vice, as is obvious.

No attempt is made in the vast majority of these researches to distinguish between the animal emanations of the bodily centers, the atmosphere of the thoughts, the lurid flame of passion, the chaotic whirlwind of emotion, and the pure radiance of a clean heart; yet obviously the distinctions are vital. And is it not certain that people experimenting thus heedlessly and ignorantly along these lines will involve themselves in trouble and disaster in connexion with the psychic emotions and animal propensities? If it were not for the work of Theosophy, founded for that purpose by H. P. Blavatsky, and now firmly established, conditions would soon arise that would, we believe, render the continuance of our civilization impossible. The forces of selfishness and gross desire, added to the almost total ignorance concerning essential matters, would precipitate disorders beyond the control of any available governing body. The imminence of this disaster will certainly impel people to turn to Theosophy for aid, since Theosophy alone will prove able to afford it; and the teaching about the *Spiritual* nature of man will supersede haphazard experimentation in his psychic nature by unqualified hands. Knowledge is a sacred and holy quest, and no sphere of thought or action should be closed to man; yet dangerous pitfalls, traps for the morally weak, are found on every side so soon as the regions of man's psychic nature are opened up. It is on this account that we feel it a duty to reiterate our warning.

THE total length of the world's railroads, exclusive of light railroads and tram-roads, is about three times the distance of the the Moon from the Earth. Here are some of the totals in miles. United States, 227,000; Germany, 37,000; Russia-in-Europe, 37,000; British India, 31,000; France, 30,000; Austria-Hungary, 27,000; Canada, 24,000; Great Britain and Ireland, 23,000; the Argentine Republic, 16,000; Mexico, 15,000; Brazil, 13,000. Relatively to the population the United States have 26.7 miles of railroad to every 10,000 inhabitants; Sweden, 16.8 miles; Germany, including light railroads, 6.15; and Great Britain, 5.6.

BIOLOGY AND HEREDITY: by a Student

THERE seems to be considerable difference of opinion among speculative biologists as to whether or not acquired characteristics are transmitted. The disagreement is involved in an uncertainty about the meaning to be given to the word "acquired." Some seek to find a definition in biological terms, and make a distinction between "somatic changes" and "germinal changes," the former corresponding to acquired traits, the latter to those inherent in the germ. Further, the question is asked: If acquired characteristics are not transmitted, what becomes of the theory of biological evolution?

In thus studying the mere phenomena of heredity, without inquiring into the active determining influences behind them, biologists are seeking to formulate and classify such facts as may come within the range of their observation; and it is only to be expected that, where the facts are so plentiful and varied, many different conclusions should be arrived at. It would take an intellectual giant to take a complete view and draw adequate inferences from the whole; but the majority of investigators and theorists, though men of ability, are not giants; hence their observations are partial and their conclusions various.

It is impossible to conceive of growth or heredity without postulating at least two factors — the passive material to be operated on and the active power that operates on it. Accordingly we find that biologists have postulated these two factors. According to biologists they are environment and a power inherent in the germ. The great difficulty is to assign the various observed effects to their respective places under these two heads. Which effects are due to environment and which to the inherent capacity of the germ? To this question, however, logic answers that *all* the effects must be due to an interaction between the two factors; no environment can produce the slightest effect on an utterly dead and unresponsive material; nor on the other hand can any innate capacity express itself except through its influence on external conditions. So the question takes the following form: What is the relative influence of these two factors in producing the phenomena of heredity?

In animals and plants the germ is endowed with a potent tendency to reproduce the familiar type; and this tendency is modified in its effects by a modification of external conditions that may chance to be presented. When this modification in the conditions is withdrawn,

the original and standard type is usually resumed. Such types are the outcome of inveterate habit produced through long ages; these habits cannot quickly be changed. Nevertheless they can be changed; domestic types may be bred. As to whether such produced types revert to the original type when the modifying conditions have been removed, the facts vary; cases are quoted on both sides. And it is a question of degree; Nature is adaptive rather than fixed in her ways.

In man there is also a standard type modified by conditions which divide him into races, nationalities, and classes.

The general rule is that active molding forces contend with passive conservative forces, the two producing between them growth and evolution. New habits produce at first only superficial changes, not deep enough to be transmitted; but if continued in, they may produce deeper changes and these may become transmissible. If the new conditions are withdrawn the old type may reassert itself, taking a longer or shorter time to do so according to the relative strength of the several influences concerned. The problem is made much easier by looking at it from the mental point of view. In other words, instead of considering organic structure, let us for the moment consider character. In character we observe the same contention between the conservative power of habit and the changing power of new ideas, and the results depend on the relative strength and duration of these two influences.

Man is a seed sown in a soil and in an atmosphere, and cultivated under certain conditions. The innate capacity of the seed determines many results — first, that the offspring shall be human. How much more than this does it determine? Opinions differ; the thing has not been adequately tested. But the more we study, the more influence we are inclined to attribute to *post*-natal conditions, especially those brought to bear during the first year or two of life. We find that persistent culture will produce a cultured breed, but that here again it is rather the circumstances of birth and uprearing that count than the innate capacity of the germ; for a blue-blooded child brought up among savages does not stand much chance of showing culture.

The real influence determining the quality of the human breed is the thoughts of the living. These thoughts constitute the mental atmosphere in which we live, the forcing-house in which births take place. Those who wish to influence heredity for the better should pay attention to this factor. The woman Jukes is often quoted as having been the ancestor of some hundreds of criminals; but on the

one hand all these descendants might have turned out respectable people if they had been properly reared from the first; and on the other hand there are many women not of the Jukes type who are the ancestors of criminals, made criminal by their upbringing. The important thing is to remove the conditions; nor indeed would it be possible to enforce laws dealing with the restriction of breeding unless conditions were first considerably altered.

In studying the biological phenomena connected with heredity science is doubtless studying an interesting subject. But for practical purposes the mental side of the question is more fruitful. And this has to be studied in the light of broader and more rational knowledge concerning human nature than that generally prevalent today. The most important thing to be considered is the distinction between the Higher and lower elements in man — a distinction ignored with disastrous consequences. The child is treated as if it were a unitary being, whereas it is very evidently a composite of two contending elements. It is a Soul incarnated in a bodily environment. Its treatment requires that the Soul should be encouraged and the animal nature checked. The Soul should be helped in its struggle with the animal nature. But for want of this distinction we find sociologists divided into two camps. One set propose to leave the child free to the guidance of its own instincts, without discrimination as to which of these are good and which bad; the other set advocate the old rule of restriction, and with similar want of discrimination restrict the Higher and the lower both.

A knowledge of the essential facts concerning human nature is necessary for the practical solution of the problems of heredity and education. If man is to work harmoniously with the rest of Nature, he must know her laws and fall in with them. If by his erroneous theories he thwarts these laws, the consequences will be failure and confusion. There are at present before the world many suggestions regarding reform in heredity, marriage, and kindred matters, which are not grounded on a sufficient knowledge. For these proposals are claimed various advantages which seem obvious — but obvious only so long as we confine our view to a narrow circle and overlook certain other considerations. It is believed that a restriction of the privileges of parenthood would avail to prevent the production of criminal and degenerate types. Setting aside the fact that this is hardly within the sphere of practical politics, we can see many influences that would

tend to prevent the anticipated result. Bad characters and degenerate types are continually produced from worthy parents. As long as conditions are so bad as they are, people adapted to them will be bred, no matter what the parentage. In short, such proposals for reform begin in the wrong place. Such hasty and ill-considered policies would be prevented if we had a fuller knowledge of the laws of life.

Heredity is but one small phase of a large question. It cannot be tackled alone. There is much worthy desire to reform things, but much tinkering at particular symptoms; co-ordination of efforts is needed. Above all, the would-be reformers so often ignore the more vital points and begin in the wrong place. Neither biology nor religion, still less the many wild (miscalled) "occult" theories, afford a reliable basis on which to work; hence the importance of teachings which like those of genuine Theosophy, can really afford light, and convince by their evident reasonableness.

GRATITUDE AND LOVE: by R. Machell

ATER is such a necessity of life on this earth, as we know life on the earth, that we take its presence for granted, much as the ordinary citizen takes the food supply for granted; and the stoppage of the supply causes him consternation and bewilderment. Yet the water supply in great cities, as well as in arid countries, where large territories are made fertile by irrigation, is established and maintained by an enormous expenditure of skill, labor, and engineering genius, with constant care and attention; and the proper distribution of the supply also demands the utmost care and ingenuity with extreme regularity and systematic attention; to all of which the ordinary person pays no heed whatever, but which is accepted as a natural right, while the taxes imposed to provide the necessary funds for this work are more or less resented as an imposition upon the long-suffering people; and so to a greater or less degree it is with all the adjuncts of social and civic economy. There is a lack of gratitude on the part of the general public to those who provide the means of distributing the necessaries of life, that gives cause for reflection. Are the people ungrateful? and would not their gratitude be perhaps rather unreasonable? Are the necessaries of life to be regarded as luxuries kindly provided by a bene-

volent lord? Or is not the apparent ingratitude of the people based upon a deep-seated conviction of their right to the necessaries of life? The term "necessaries" seems to justify this view of the subject, and the elasticity of the term has nothing to do with the justice of the sentiment or the sense of right involved in the acceptance of all that is provided for the comfort and convenience of the public. Such questions are usually settled by the simple means of "begging the question" by assuming some fundamental axiom, such as the equality of man, or the omnipotent wisdom of a God, or the abstract theory of pure chance, and including this assumption in the proposition, and then by elaborate reasoning trying to prove the truth of the axiom on which the whole argument rests. Which is waste of energy. But it is quite open to question as to whether the attitude of simple acceptance as a right of all that comes to us without our personal effort is a better attitude to assume than that of gratitude, which must include all the necessaries of life and indeed life itself to be reasonable. What is gratitude? Is a child grateful for its food and clothing? Is it grateful for the air it breathes? Or does it breathe the air unconsciously as a right and indeed as a necessity of life? Is not the joy of life of the child more akin to the high ideal of love — what we usually call gratitude; for we are so terribly commercialized in our modern civilization, that gratitude merely means paying back a debt, which is a mere matter of commercial probity: the reason why this is considered a high virtue today is that all our life is based upon the unwritten law of "get all you can and give as little as possible for it," and this becomes a general system covered by the old axiom "*caveat emptor.*" Against this view of life, which is perhaps perfectly justifiable if man is merely a material evolution without inner union with the rest of his kind, the heart rebels reaching out in love to all creation, yearning to give without thought of return, reward, or recompense. This deep yearning in the heart is so universal that almost every human being has at some time in his life felt the desire at least to give without thought of return, and this in spite of his acquired conviction of the folly of so doing and of the stern duty of getting all he can and of giving only what he must in return. Men have formulated and taught doctrines of the coldest selfishness and believed their own teachings, while constantly acting from motives of altruism and general benevolence that give the lie to their own theories. The heart-life is deeper than most of the thoughts that function through

the brain, and is not always subject to the ruling of the tyrant "egotism."

When the Samoans wanted to do something for Robert Louis Stevenson, who had won their confidence and affection by his love and wisdom in dealing with them, they proposed to build a road to his house for him; and he accepted, saying: "It shall be called the road of the grateful hearts." But they were hurt, and gently replied, "No! it must be called the road of the *loving hearts.*" The Samoans were not commercialized and they knew that the heart of humanity is one.

When the commercialized white man sets out to convert and to civilize the "poor heathen" or the "primitive savage races," he is constantly shocked by their lack of appreciation for the so-called Christian virtues; but it may well be that these primitive (?) races have inherited from their remote ancestors the remains of a more spiritual philosophy than we, who are evolving a new form of civilization, have as yet attained to. It may well be that when we have passed the stage of evolution, which is now marked by intense selfishness, separateness, and unbrotherliness, with the disintegration of society and the demoralization of great masses of the people as a necessary result, that we may learn that beyond the gratitude that merely pays its debts is the gratitude that gives. And then we may learn that giving is not limited only to giving money, but that giving means loving; that is, we shall feel that the life of others is our life and our heart is alive with the one life that is in all, and so must beat in sympathy with all others. When this becomes a truth to our minds, as well as a feeling in the depths of our hearts, we shall necessarily give the joy of life to all we meet; we shall be cheerful in appearance, kindly and courteous in manner, considerate of others in all ways, and all naturally and spontaneously. But as we are now walled in by our egotism and shut off from the world by a shell of complete indifference to the wants and feelings of others, we have to be taught specific virtues, which act as correctives to our brutal selfishness, and as stepping stones to civilization with its ultimate aim of true enlightenment. A man who is so brutally self-absorbed as to take no heed of any but his own wants must be taught to perform acts of courtesy as a kind of moral gymnastics; so he learns to say "please" and "thank you" instead of grunting; he learns to smile instead of scowling; to perform small services without waiting to be asked; to refrain from hurting other's feelings; and he is taught to give an

equivalent for everything he receives and this is his first lesson in gratitude. Later he learns to give without having received, and then he learns to accept without humiliating sense of obligation, which is a mark of one who knows that he would and will do for others on all occasions what is now being done for him; and then he learns to give that perfect fulness of joy which the flowers and plants give without thought of giving at all, simply living their life to the utmost of their ability, giving to the world their life in living, and their very selves in the necessity of self-expression. But as the lesser mysteries must precede the greater, and as a man must fulfil the lower law before he can invoke the higher, so a man must be perfected in virtue before he attains to wisdom, and he must practise gratitude until he has learned the higher law of Love which is the law of Life.

GREETING

WE men of earth have here the stuff
Of Paradise. We have enough!
We need no other things to build
The stairs into the Unfulfilled —
No other ivory for the doors,
No other marble for the floors,
No other cedar for the beam
And dome of man's immortal dream.

Here on the paths of every day —
Here on the common human way
Is all the busy gods would take
To build a heaven, to mold and make
New Edens. Ours the stuff sublime
To build eternity in time! — *Edwin Markham* (*Selected*)

SOME PRACTICAL ASPECTS OF "THE SECRET DOCTRINE": by W. L. B.

THE following notes design to present to the general reader, as simply as possible, some of the broader teachings to be found in the two volumes of *The Secret Doctrine,* by Helena P. Blavatsky, which were published in 1888. In the preface she explained that these truths were not put forward as a revelation, and that they are to be found scattered through thousands of volumes embodying the scriptures of the great Asiatic and early European religions, hidden under glyph and symbol. The volumes do not contain the Secret Doctrine in its entirety, only a select number of fragments of its fundamental tenets, and are a partial statement of what she herself had been taught by more advanced students.

It was stated unequivocally that these teachings, however fragmentary and incomplete, belong neither to the Hindû, the Zoroastrian, the Chaldaean, nor the Egyptian religion — neither to Buddhism, Islâm, Judaism, nor Christianity exclusively; for the Secret Doctrine is the essence of all these, which in their origins respectively sprang from it.

The aim of the work was to show that Nature is not " a fortuitous concurrence of atoms," and to assign to man his rightful place in the scheme of the Universe; to rescue from degradation the archaic truths which are the basis of all religions; and to uncover, to some extent, the fundamental unity from which they all spring; finally, to show that the occult side of Nature has never been approached by the Science of modern civilization.

Before proceeding with our subject it is pertinent to remark that the time is opportune for this résumé, because the teachings in these volumes, coupled with those in her later works, *The Key to Theosophy,* and *The Voice of the Silence,* have colored the lives of all true Theosophists, and thus led to the most important practical results. For, as Katherine Tingley has said:

> The value of the Point Loma Institution lies in the fact that it has proved the truth of its theories by its success. It has accomplished the mission which brought it into being. It has rescued Theosophy from the domain of an intellectualism which might readily have become more selfish, because more subtle, than the current thought of the world. It has demonstrated that the Theosophic life is the life of practical common sense, and that in the light of its philosophy the shadows pass away and man can enter into his birthright of knowledge.

It will readily be perceived that apart from the practical achievement and success above alluded to, which has especial reference to the Râja Yoga system of education, comment upon, or outlines of H. P. Blavatsky's great work — after the lapse of twenty-three years — would have been like mockery. Nor, having regard to prevalent conditions, would this success have been possible but for the stedfast encouragement given students by William Q. Judge, followed by the eminently practical Leadership of Katherine Tingley.

These considerations show plainly that Theosophy deals not alone with philosophical abstractions, that it has to do with living forces, and that it is nothing if not practically applied in daily life.

Practical ethics, which have in view the control of the living forces in human life, must in order to be properly effective be based upon sound philosophy. Do good and you will be happy, may be true enough but is hardly inspiring, because devoid of true philosophic basis. Do good and you will make others happy, appeals to the intuition as true; yet intelligence must be satisfied and asks, why is this so?

Man's intelligence is to a degree sufficiently alert to appreciate sound philosophy, and to find therein, when once clearly grasped, a new and wonderful stimulus to right action. Especially will this prove to be so, when it is realized that up to the time when H. P. Blavatsky was penning her great works, *Isis Unveiled* and *The Secret Doctrine*, the West had been to a large extent without a sound philosophy of life for several thousand years.

In approaching the consideration of the three fundamental postulates of the Secret Doctrine, we realize that the instinct to turn to science for light was natural, and would have been justified by results had science sufficiently extended its borders. Spencerian philosophy, quasi-metaphysical in some respects, was a scientific expansion of the borders of inquiry, and only failed because one branch of science — logic — was not carried far enough. Thus Spencer's "First Cause" is a contradiction in terms — presupposing something "first brought forth," "the first in time, space, and rank" — and therefore finite and conditioned. The "first" cannot be the absolute, for it is a manifestation.

Here we may seem to be in deep waters, but this primary point is at once simple and of paramount importance. People ought not to be frightened by words. Not one in a thousand has ever studied "metaphysics" — but they may be reassured, for nothing more than a

little common sense is needed, a quality not too conspicuous in metaphysical treatises by western writers, except where they have drawn inspiration from ancient Eastern sources, as Emerson and others did.

Consider anything in manifested nature, light and darkness, attraction and repulsion, joy and sorrow, positive and negative electricity, etc., etc. Always we find a duality. Is it not transparently evident that there must be something behind each duality, of which the duality is a manifestation? Something which now shines, now refrains from shining; something which now wakes, now sleeps; and so on.

Always there is a triad, one aspect hidden, and a duality manifested. In a word, Manifestation (dual), and something else, *hidden,* which manifests. Here is a key to many apparently difficult and even profound problems; a key without which we could never hope to understand anything.

An important application of this principle is that if there be manifested universes, there must be times when they are *in abscondito;* and that beyond (or rather, within) there is something capable of alternately manifesting and disappearing. This ultimate beyond (or within) is the field of Absolute Consciousness, that Essence which is out of all finite relation to conditioned existence.

The grasp of this is of importance, for it tends to place Man, the Thinker, in his true relation to Nature. Thought itself, be it remembered, is a manifestation, the thing thought of being the complement. Behind both, hidden, stands the thinker.

Once we pass from the field of Absolute Consciousness (to us, a negation) duality supervenes in the contrast of Spirit (or consciousness) and Matter: Subject and Object. Nevertheless these are but aspects of the absolute and are therefore, in a sense, illusory — that is to say, being manifestations, they are transitory, even though lasting for countles ages.

The importance of these simple statements will appear on considering three fundamental propositions which the Secret Doctrine establishes, which are as follows:

(a) An Omnipresent, Eternal, Boundless, and Immutable PRINCIPLE on which all speculation is impossible, since it transcends the power of human conception and could only be dwarfed by any human expression or similitude. It is beyond the range and reach of thought, " unthinkable and unspeakable." It is the one absolute Reality which

antecedes all manifested, conditioned, being. Seen from below, or from without, it has two aspects: pre-Cosmic Ideation and pre-Cosmic Substance.

(b) The Eternity of the Universe *in toto* as a boundless plane; periodically "the playground of numberless Universes incessantly manifesting and disappearing," called "the manifesting stars," and the "sparks of Eternity." "The Eternity of the Pilgrim" is like a wink of the Eye of Self-Existence. "The appearance and disappearance of Worlds is like regular tides of flux and reflux."

(c) The fundamental identity of all Souls with the Universal Over-Soul, the latter itself being *an aspect* of the Unknown Root; and the obligatory pilgrimage for every Soul — a spark of the former — through the Cycle of Incarnation in accordance with cyclic and Karmic law, during the whole term. (Karma is an ancient word expressing the ethical and dynamic law connecting cause and effect, within all realms, visible or invisible, of Nature.) In other words, no purely divine Soul can have independent conscious existence before the spark which issued from the pure Essence of the Universal Over-Soul has (1) passed through every elemental form of the phenomenal world of that particular Cycle, and (2) acquired individuality, first by natural impulse, and then by self-induced and self-devised efforts (checked by its Karma), thus ascending through all the degrees of intelligence, from the lowest to the highest plane of Creative Mind (not brain-mind activity, far above that) — from mineral and plant up to the holiest archangel. *The pivotal doctrine of the Esoteric philosophy admits no privileges or special gifts in man, save those won by his own Ego through personal effort and merit throughout a long series of metempsychoses and reincarnations.*

These propositions, which form the foundation of the archaic Wisdom-Religion, otherwise called Theosophy, appeal both to intuition and common sense; while at the same time they indicate realms of knowledge and of aspiration far in advance of any modern achievements in philosophy, science, or religion, whenever any of these attempt generalizations intended to cover and explain the fields of phenomenal existence.

One fact is seen to stand out prominently, namely, that every phenomenon has its noumenon. Logically and philosophically this is a self-evident truth. And it is obvious that whatever *manifests* transiently must be more potent, more *real,* than whatever is *manifested,*

be the latter what they may — gods or atoms. Has science grasped this simple truth yet? It may have recognized it, in a way; but science usually brushes it aside, as if outside its sphere, yet immediately proceeds to build up biological, physical, sociological, or cosmical theories upon the assumption that the phenomenal is the only reality — a conception more illogical, and hence more unscientific, than anything that could well be imagined. But the greatest scientists never committed this logical blunder. The Newtons and Faradays saw more clearly.

Surely it is evident that whenever science, philosophy, or religion mistakes the phenomenal for the real, all generalizations based upon so fundamental an error must lack one thing above all — truth!

The phenomenal never possesses more than relative reality; that is to say, it is only real from the standpoint of conscious perception dominant at the moment. This elementary truth is well-known to successful organizers of the world's work. Those in charge of great enterprises have to keep their attention, while so engaged, upon the practical ramifications of their work to the degree that for them all else is unreal. Had they not the power to do this, they would not occupy their posts for long. Thus we find successful business men, perhaps unconsciously, applying the very principle in question. The great composer takes his stand, while at work, in another realm of consciousness, where the only reality is music, along with the thoughts, pictures, or emotions cognate to that realm.

These are illustrative instances. But in dealing with the Secret Doctrine we have to recognize that there are very many realms of consciousness in Nature, to all of which Man is heir, but from most of which he is ordinarily at present excluded, owing to Karma, and to the general conditions prevailing during the current cycle. Each state of consciousness is also one of perception — that of an ant, or that of a Planetary Spirit, for instance, being unlike that of a human being. Bearing this in mind we shall be in a position to realize the philosophic exactitude of the following definition of " Matter " — a definition new to Western thought, yet none the less ancient, and profound.

Matter is that totality of *existences* in the Kosmos, which falls within any of the planes of possible perception.

As every state of consciousness has its own means and modes of perception, it should be clear (to take merely the grossest case of the foregoing definition) that what appears solid from one realm of

perception may be quite transparent from another point of view.

These ideas are practical, because Man should know himself as Soul, moving amid a world of Souls; and escape from the mental tyranny of fancying himself merely Body, moving among trees and stones — a nightmare, which the crude superstitions of the time only accentuate.

We should recognize that what is subjective to us, may be objective to others, or to ourselves in a different state of consciousness. Not that we need make artificial attempts to induce other states, for such practices are fraught with danger. But we can learn to understand things. Thought itself is objective, from a higher realm within. We should not allow ourselves to be overwhelmed by the illusions of time and space, even when the cause of suffering, knowing we have that within us which can rise, sooner or later, above illusion. Suffering teaches, and is — on the human plane — a reality, though transient. The Secret Doctrine does not teach that transient realities are unrealities, as some modern fads do.

We are dealing, so far, only with some elementary principles treated of in the Proem of *The Secret Doctrine,* and a few more remarks upon the three fundamental propositions above given seem essential here. Just as there are many planes or states of consciousness in Nature, so also there are many states of matter, mostly of far finer and subtler *texture* than any known to science. Thus the pre-Cosmic substance referred to, the substratum of all matter even in its finest and most recondite differentiations, could only be described as transcendentally objective. Apart from Cosmic Substance, Cosmic Ideation could not manifest. And in order that the latter can manifest there is something which links the two. It is the dynamic energy associated with cosmic ideation, the mysterious link between mind and matter, the animating principle electrifying every atom into life. In *The Secret Doctrine* this is called *Fohat.*

The second postulate asserts the absolute universality of the law of periodicity, of ebb and flow. An alternation such as that of day and night, life and death, sleeping and waking, is a fact so universally without exception, that it is easy to comprehend that in it we see one of the absolutely fundamental laws of the universe.

The third postulate rests upon the other two, while indicating generally the mode of manifestation in time and space. The root of every atom individually and of every form collectively, nevertheless, is still

the One Reality of the first postulate. This is *metaphorically* rendered in the *Bhagavad-Gîtâ,* where Krishna is represented as saying: "I established the whole universe with a single portion of myself, and remain separate."

Regarding the universe as a structure, we realize two things. Firstly, that as every atom and form change momentarily, the structure is by the nature of things impermanent as a manifestation. Secondly, that the structure must rest upon a foundation. This foundation is Absolute Consciousness.

Thus in order to apprehend the fundamental propositions clearly, we have to stand upon a different platform from that of modern science, and realize once for all that Consciousness is the primary fact in Nature, not physical appearances. Keeping this steadily in view the three postulates should be read repeatedly, for our minds have been so psychologized into looking alone outwardly upon the phenomenal, that to realize the superior *reality* of the noumenal takes something of an effort. We can try it on ourselves by saying, "I am." If this be done thoughtfully, we feel that the "I" is certainly not our body; and also that it is not even our thoughts, because the "I" stands behind the thoughts, and can change the current of them at will. Thus the "I" within us belongs to a deeper stratum than thought. It is, in fact, at its center, a ray of the Supreme. Compare this with the first clause of the third postulate, and we may realize the true meaning of the statement that brotherhood is a fact in Nature.

Practical readers will have already perceived many important truths. One of them is that between the consciousness of Man and that within a world, or a system, there must be many gradations, each having appropriate vehicles and means of perception. Another is that the processes of emanation from the Supreme Reality must also have had many gradations, and many different modes of operation. Another is that the Universe in manifestation is filled with realm upon realm of Being, cosmic, archetypal, dynamic, creative, in innumerable degrees — most of the fields of which must necessarily be in regions which to us, for the present, are subjective. Yet notwithstanding the almost infinite variety of forms and processes in visible Nature, it has been stated that the last word of human knowledge was uttered ages ago. This again is in accordance with common sense; for the hierarchies of Intelligences and Powers which are occupied in the bringing forth into manifestation of a Universe, must know more

about Nature than do the objectivized products of their work, including man — while at the same time those higher Intelligences who contacted our world without becoming so enmeshed in the effluvia of matter as we have, were for humanity the very sources of what we call the Wisdom-Religion.

Thus *The Secret Doctrine* has for theme both Cosmic Evolution and Human Evolution, for these are inseparably connected; while the preservation of the Secret Doctrine through long ages of spiritual darkness is due to the fact that humanity, fortunately, still has its Elder Brothers, those who have preserved and passed on the knowledge, throughout the many cycles of ascent and descent to which the race is subject. The reader may perhaps surmise that these Elder Brothers, or Helpers, are not wholly dependent upon merely physical existence for the continuance of their work. Nevertheless they live, are realities on our plane, and share our human life.

But it is above everything important to keep in mind that no theosophical book acquires the least additional value from pretended authority, a point H. P. Blavatsky was careful to impress on the reader, in the introductory remarks to *The Secret Doctrine*.

A few more reflections will be in order here. Clearly anything possessing form or function is conditioned, is phenomenal. Hence it follows that beyond the realms where ideas possess form, there are realms which owing to the very vividness of their reality are formless, the transcendental regions of consciousness intermediate between the Absolute and the first dawn, in any Great Cycle, of archetypal forms. Our notion of Mind is limited, being rooted mainly in one form or another of sensation, itself phenomenal and limited. Thus the personal god of old-fashioned theology perceives, thinks, and is affected by emotion; he repents, and feels "fierce anger." But the notion of such states involves the postulate of the externalness of the exciting stimuli, to say nothing of the impossibility of ascribing changelessness to a Being whose emotions fluctuate with events in the worlds he presides over. The conception of a *personal* God as changeless and infinite is thus unpsychological, and, what is worse, unphilosophical.

Yet there are Personal Gods, which is plainly indicated in the third postulate, but the ramifications of this subject will be in place later on.

The Omnipresent, Eternal, Boundless, and Immutable Principle, the one absolute Reality which antecedes, pervades, and succeeds all

manifested, or conditioned existence, is the ONE LIFE, which while without beginning or end, is yet periodical in its regular manifestations, between which periods reigns the dark mystery of non-Being; unconscious, yet absolute Consciousness; unrealizable, yet the one self-existing reality; truly, "a chaos to the sense, a Kosmos to the reason." Its one absolute attribute, which is ITSELF, eternal, ceaseless Motion, is called metaphorically the "Great Breath," which is the perpetual motion of the universe, in the sense of limitless, ever-present SPACE. That which is motionless cannot be Divine.

H. P. Blavatsky says that Plato proves himself an initiate, when saying in *Kratylos* that θεός is derived from the verb θέειν, "to move," "to run," as the first astronomer who observed the motions of the heavenly bodies called the planets θεοί, the gods. Later, the word produced another term ἀλήθεια — "the breath of God."

Theosophy has a noble conception of pure Deity. As said in the first postulate, the Supreme Reality could only be dwarfed by any human expression or similitude. Yet we may venture to regard IT in several aspects, when carefully dissociated from human limitations. Thus, Deity is an arcane, living (or moving) FIRE, and the eternal witnesses to this unseen Presence are Light, Heat, Moisture — this trinity including, and being the cause of every phenomenon. As an eternal abstraction it is the EVER-PRESENT; as a manifestation, it is finite both in the coming direction and the opposite, the two being the alpha and omega of successive reconstructions. It is only with reference to the intra-Cosmic Soul, the ideal Kosmos in the Divine Thought, that we may say: "It never had a beginning nor will it have an end." With regard to its body or Cosmic organization, though it cannot be said that it had a first, or will ever have a last construction, yet at each new Great Cycle, its organization may be regarded as the first and last of its kind, as it evolutes every time on a higher plane.

It is necessary to dwell upon these superlatively magnificent conceptions here, as well as to recur to them when we endeavor to follow the panorama of Cosmic Evolution, however inadequate the outline, in order that the grandeur of Man's true place in Nature may be kept in view. Being immortal in essence — a Soul traveling through the processes of Cosmic Evolution — visiting the scenes of phenomenal existence again and again, he is participator in, and heir to things whose splendor is absolutely without limit — provided he does not lose his way amid the entanglements of merely material existence.

Esoteric philosophy reconciles all religions, strips every one of its outward, human garments, and shows the root of each to be identical with that of every other great religion. It proves the necessity of an absolute Divine Principle in nature. It denies Deity no more than it does the Sun. Esoteric philosophy has never rejected God in Nature, nor Deity as the absolute and abstract *Ens*. It only refuses to accept any of the gods created by man in his own image and likeness, a blasphemous and sorry caricature of the Ever Unknowable.

It will be found as we proceed that the human race on this planet is much more ancient than all but a very few geologists and archaeologists have suspected — going back, in fact, for millions of years; and that countless civilizations have risen and gone down, as well as continents, etc. Moreover the members of several esoteric schools — whose ramifications may be found in China, Japan, India, Tibet, Syria, and South America — claim to have in their possession the sum total of sacred and philosophical works in MSS and type: all the works, in fact, that have ever been written, in whatever language or characters, since the art of writing began; from the ideographic hieroglyphs down to the alphabet of Kadmos and the Devanâgarî.

AN ENGLISH COUNTRY HOUSE: by F. J. Udall (London)

MANY of the stately homes of England have associations of romance or tragedy. The far-famed Haddon Hall stands perhaps pre-eminently in the former category, and Moyles Court, which is in the New Forest, close to Ringwood, may fairly claim to come in the latter. Moyles Court is a large red brick building in the Elizabethan style of architecture, and near it is a majestic oak, which many people regard as the grandest of all the grand oaks in the Forest.

In the British Houses of Parliament is a frescoe painting representing the arrest of Lady Lisle by Colonel Penruddock. This happened at a time when England was in a ferment because of the ill-fated rising under the Duke of Monmouth, in which he played such a sorry part. Lady Lisle's home was at Moyles Court. She was arrested on the charge of harboring rebels, and her execution was among the first fruits of the " Bloody Assize " held by the infamous Jeffreys after the

rout of the Duke's forces at Sedgemoor. A well-known Nonconformist minister named John Hicks had been with Monmouth's army, and for a few days after the defeat he managed to escape his pursuers. Lady Lisle agreed to extend hospitality to him and a friend of his, and it was this fact that brought about the visit of Colonel Penruddock to Ringwood and Moyles Court. It is a curious circumstance that this man Hicks had a brother who was Dean of Worcester and "an eloquent advocate of the right divine of kings."

It was at historic old Winchester that the trial of Lady Lisle took place, and

> the court rang with Jeffreys' fearful maledictions which, uttered with his terrific voice and infuriated visage, made not only those against whom they were directed but all who heard him, shudder, as if the thunder of the day of judgment had broke over their heads.

In passing sentence on Lady Lisle, who was well advanced in years, he sneered at her as one

> who all your life time have been a great pretender and professor of religion.

The sentence was that the lady be drawn on a hurdle to the place of execution,

> where your body is to be burned alive till you be dead. And the Lord have mercy on your soul.

He certainly did not have much mercy on her body. The sentence was too barbarous for the people of Winchester to allow, and during a reprieve of five days efforts were made to enlist the favor of James II on her behalf, but the king's clemency only extended to a change in the manner of her death — he granted beheading instead of burning. In the market-place of Winchester in the presence of a great crowd the execution took place.

> As her frail form was seen moving with a slow but undismayed step to the scaffold, the sight at once chilled with awe and moved with compassion all the hearts of the assembled multitude.

Her death helped on the cause of civil and religious freedom. The chivalrous sentiments of English gentlemen all the country over were aroused by the "judicial murder," and when William of Orange came in 1688, he received the support of those men of influence which was so conspicuously lacking in the cause of the Duke of Monmouth. Lady

Lisle's body was taken to Moyles Court, and lies buried in Effingham churchyard near by.

It was at Ringwood that the Duke of Monmouth was captured by the king's soldiers, who bivouacked in the market-place. After the crowning folly of Sedgemoor he escaped and sought shelter among his friends in the neighborhood of Ringwood, but was captured, disguised as a shepherd, just outside the town. An interesting relic of these troublous times has recently been added to the National Portrait Gallery in London. It is a picture of the Duke of Monmouth, painted after his execution on Tower Hill.

RECENT DISCOVERIES IN LIGHT: by H. Travers

IF we had to choose one word to sum up the results of modern discovery in physics, that word would be "light." Light in various forms has played the chief part in the study of *x*-rays, Becquerel rays, and radio-activity in general. Our researches have taught us to dissociate light from heat, though experience has rendered us so familiar with forms of light that are accompanied by the production of heat, that the newer idea is somewhat strange. Eventually we shall no doubt invent means of obtaining illumination without the present wasteful production of unnecessary heat and other forms of energy. Light without heat, or with very little heat, has of course long been familiar in connexion with the glow of phosphorus and of decaying organic matter, as also in the glow-worms and fire-flies. Certain crystals, when broken, give out flashes of light; and a familiar experiment is to break loaf-sugar in the dark, when flashes of blue light are seen. Crystals of arsenious acid emit flashes of light at the moment of their formation in a solution. Then came the study of the sulphids of calcium, strontium, and barium, white powders which, when prepared in a certain manner, are capable of emitting in the dark some of the light which they have absorbed. The elder Becquerel studied these compounds, while others have turned them to commercial advantage in the manufacture of luminous paint.

The Geissler vacuum tubes, which have been known since 1854, are almost too familiar to need description. Glass tubes of various shapes are exhausted till they contain but a residuum of air or some other gas, in which state they will serve as conductors of high-potential electricity.

In the ends of the tube are sealed platinum electrodes, the terminals of a high-potential current from an induction coil. The discharge across the interior of the tube is accompanied by a weird moonlight glow, the electrodes shine, the positive being usually red and the negative violet, and the inside surface of the glass is rendered luminous. The explanation was that the enclosed gas, in its rarefied state, was enabled to convey the current in the form of charges, the particles of the gas being freer to move across the space than they would be at the usual pressure. Later researches in radio-activity have given us the idea of the electron, and this further explains the phenomena of the vacuum tube. But we have had to wait a long time before the vacuum tubes gave rise to the discovery of the *x*-rays. The luminous rays within the tube cannot pass through the glass; but it was found by Roentgen that they cause invisible rays to be emitted from the outside of the glass. These invisible rays can render phosphorescent any fluorescent substance placed in their path; they penetrate opaque substances; they can disintegrate the structure of living tissue; they have marked chemical effects; these are the *x*-rays.

Henri Becquerel tried whether anything else besides the Geissler tubes would emit these rays, and began his investigations with the phosphorescent substances with which his father's researches had rendered him familiar. The sulphate of uranium and potassium was found to give off rays which could affect a photographic plate wrapped in black paper. But Becquerel did not stop here. Thus far he had followed the lead suggested by the glowing vacuum tube and had used his uranium while it was in a state of phosphorescence, giving out light previously absorbed. It now occurred to him to try uranium which was not phosphorescent; and he discovered that this also gave out the rays. Thus was discovered the phenomenon known as the "Becquerel rays," rays similar to the *x*-rays of Roentgen, but given out by uranium salts. In this summary we are following the lines of an article by a prominent English writer, and he gives this as an instance of the superiority of experiment over ratiocination, quoting a maxim attributed to Schliemann the discoverer of Troy, "Do not think! Try!" But it will strike others that Becquerel must have thought before he tried. It "occurred to him" to make the experiment. The professor, however, means, as indeed he says, that the most important discoveries are made by people who are not looking for them; a fact which, if admitted, should restrain us from unduly

exalting the authority or efficacy of scientific theory whenever the latter evinces a dogmatic tendency.

Other investigators then proceeded to examine other substances to see if they possessed the same power as uranium. The Curies went through the list of elements and discovered that only one, thorium, possessed properties comparable with uranium. They found further that in most cases the radio-activity of a mineral was proportional to the percentage of uranium present; but that in certain minerals this was not the case. In pitchblende in particular this was observed. The inference was that there must be in the pitchblende some other element besides the uranium, also possessing radio-active properties. This led to the discovery of radium; with commendable patience the Curies extracted from a ton of the residues of the Joachimsthal mining works (representing three tons of the pitchblende from which the uranium had been extracted) about four grains of a salt a million times more radio-active than uranium.

It has been remarked that recent discoveries have tended to re-establish the old emission theory of light. Rather should it be said that they have tended to render meaningless the question whether light is an emitted substance or a vibration in the ether. Our notions, both of matter and of force, have undergone such modifications that the two conceptions seem to merge into one another and become indistinguishable. Neither of the hypotheses was altogether right or wrong; both were partial statements. But it had of course been admitted by careful thinkers that matter and force, if these words are to be regarded as anything more than mere mathematical expressions, are not separable but interdependent; and experiment has but vindicated the logic of this position. When we are dealing with large masses, we can draw an appreciable distinction between inertia and force; but when we get to the refinements of research, the distinction begins to disappear. All we can say is that inertia and force are manifestations of some fundamental element which is neither of them, but the parent of both. Thus we approach to the unknown rudiment of all physical manifestation — something which must necessarily transcend physical means of identification, since it possesses none of the attributes of which it is the origin.

Intermingled with force and inertia we find light and electricity and magnetism. The rays within the vacuum tube can be deflected by a magnet, and in other ways a connexion between light and magnetism

is shown. These physical discoveries complement the chemical discoveries in indicating that physical nature springs from a common root which is the parent of all elements and all forces; while the distinction between that which is denoted by the word element and that meant by the word force grows fainter.

Professor Ramsay in his recent presidential address made a plea for pure science — the pursuit of science for its own sake and unhampered by ideas of profit.

A SOJOURN AT POINT LOMA:
by Consul Hjalmar Wicander (Stockholm)

(Translated from *Den Teosofiska Vägen,* October, 1911)

N the trip around the world just accomplished, I had planned a visit to Point Loma, the International Headquarters of the Universal Brotherhood and Theosophical Society, and when turning homeward from Japan there came the opportunity to go there. My desire to see the place came from the knowledge I had of the Theosophical Movement in Sweden, which had attracted my interest, though I am not a member. I made a firm resolution to see with my own eyes and hear with my own ears all the beautiful things which I had been told about it.

Point Loma is, as its name indicates, a point or tongue of land, forming with the mainland — where the city of San Diego is situated — the excellent harbor, which was the original cause of the foundation of the city and later has been the principal ground for its further growth. The promotory is quite large. The far end of it, where the light-house and the wireless station are, belongs to the U. S. Government, but a great part of the rest, dominating the crest of the hill and the shore of the Pacific, is owned by Katherine Tingley, the Leader of the Universal Brotherhood and Theosophical Society.

She secured this extensive property of about a thousand acres for a comparatively small sum twelve years ago, to use it for the headquarters of the Society and for the realization of her plans in founding an educational institution. Nearly the whole of Point Loma was then ground which had been undisturbed for centuries. But at present the very best class of roads (boulevards) stretch all the way from San Diego and over Point Loma, and are being extended constantly.

The Theosophical Headquarters' grounds are to a great extent covered by beautiful gardens and parks in the process of growing: the fields and forests are already considerable, and extend over a wider area each year. It seemed almost incredible that all that now grows there was not older than twelve years, but when I saw trees that were put in the earth as seeds four years ago which now looked like trees twenty or thirty years old here in Sweden, then I could understand what that magnificent and even climate can accomplish. Truly a wonderful climate!

Inside the Theosophical grounds are numerous large and small buildings, in which are found the official and executive departments, the class-rooms, the printing press, the book bindery, and a number of other offices. Among the larger buildings are the Râja Yoga College, the Aryan Memorial Temple — dedicated to the memory of Madame Blavatsky and Mr. Judge, Founders and former Leaders of the Society; the villa North House where I lived during my stay at Point Loma; the International Headquarters building, and several other fine residences.

Several hundred students live in these buildings, a noted English artist of ninety-three being the oldest, united in one sincere endeavor to live as true men, banishing selfishness; and to educate their children in the same spirit, in order that they in their turn may become teachers and educators there, or go out into the world and by their word and life spread the ideas of Theosophy and brotherhood and help the poor and oppressed, though, mark well, not as fanatical dreamers, but as wise and practical men and women.

The Students at Point Loma are of all nations and of all classes. There are whole families, also unmarried men and women; and children (both of members and non-members) who receive the benefit of the Râja Yoga education. There are many university professors and women of great culture, prominent business men and manufacturers, some still carrying on their private business wherever that may be; engineers and lawyers, and others of different vocations.

The general work along practical and educational lines is done by the members. Some are chiefly teachers, but between such duties they fill other offices. A prominent lawyer from the southern states is also director of the horticultural department. An important feature is that no work whatsoever is done for salary. In fact, the consciousness of forming a part of the Headquarters staff is in the eyes of these people

far more than any form of acknowledgment, not to mention remuneration. The consequence is that they are not so much concerned *what kind* of work they are doing, as *how* it is done.

The younger students are given the most loving and careful attention and training. I have never seen groups of children looking so happy, healthy, and balanced. Music is a great and important factor in their training and instruction. At a very early age they are given a small violin as a toy, though only for a short while each time, so as to keep the interest and desire for it alive. It is marvelous the things the youngsters can produce in the line of music. They have their own orchestra, which gives a concert in the Rotunda of the College every Wednesday, and a performance now and then in Katherine Tingley's own city theater. At one of the musicales I heard a four-hand piece remarkably well performed on the piano by two girls of six and eight years respectively.

The instruction is most thorough and stimulating all through.

From the excellent and devoted teachers — all of them members — the children receive splendid instruction and education, and they really know something, these youths! Great attention is paid to the development of character. If there be any competition, it is to excel in unselfishness, kindliness, and integrity.

One of the main points in this education is, moreover, that the older help the younger, even so far that babies of four assist those of two years in whatever way they can. All are taught to be useful. Children have in their nature the wish to be useful, and this quality is developed in the most rational way. Everything is arranged so simply and practically that order is easy to observe. There is no needless luxury, but that does not mean that there is asceticism or a puritan killing of the beautiful. One finds, for instance, flowers everywhere, in the class-rooms as in the sleeping-rooms.

The individuality of all the youth is studied and given opportunity of development. They can make almost everything themselves. There were boys who made their own violins, and really very good ones. One young man had arranged his own wireless station, of course on a small scale, but still functioning. He had even caught communications sent from American battleships in San Diego harbor.

Small children performed their mental arithmetic so rapidly that it was an impossibility for me to follow them. They get the habit of concentrating their thoughts, they are natural, do not show the slight-

est embarrassment, begin early to read papers and to speak publicly. I heard young men discuss and illustrate subjects which they received without notice, in an excellent manner. One would think that it was a gathering of geniuses specially picked out, but that is by no means the fact: they are quite ordinary children, and the shining results one sees are the fruit of the education, which here is conducted after the most effective, and — in my view — the most accomplished rational plan.

Just as great a care is given to their physical training and growth. They are beaming with health, joy, and happiness, all these children and groups of young men and women I saw and met on my walks and excursions on the grounds. Gentle reserve and purity were reflected in their faces and made them all look beautiful. I went about in mute admiration at what I heard and saw. Everything was at the same time so wonderful and yet so simple! Many of the great problems of life, which are discussed so much everywhere in the world, seemed to me to have been solved satisfactorily and answered.

Just as the children are so lovingly cared for and prepared as regards their future, the relation between the members is characterized by mutual respect and devotion. It seemed as if Râja Yoga had joined head to heart. Their strength evidently lies in the belief in the divine origin and immortality of the soul of Man, and their kindness, purity, and joy is the external expression thereof.

No trace of mere religious forms are to be found. No church, no pulpit for sermons. The people at this place are like real Christians, they live and act like such, consciously prepared to help the world and humanity to the same happiness, peace, and joy, which they enjoy and are ensouled by.

It was not in a few hours, but during several weeks that I experienced and gathered these impressions. I came as a sceptic, but left Point Loma converted and convinced; and I wished I could employ in my business and practical work such young men as I saw and learned to know there. *Râja Yoga education is now in my eyes the best diploma a young man and woman can receive.* They who have had the privilege of that training know something, they have learned to do their duty, and self-control, to keep order, to respect law, and are well prepared for the battles of life — not least, the practical life.

The Leader of the International Theosophical Society, which has departments, centers, and members, all over the world, is, as mentioned

above, Katherine Tingley, a highly gifted woman, who well deserves all the pure and devoted admiration, love, and trust which is given to her. She purchased land in Visingsö on her last visit to Sweden, for a similar school to that at Point Loma, California. It is my sincere hope to live to see this work realized, which — as I am firmly convinced — will be of great and beneficent significance for our land and people.

ASTRONOMICAL AND OTHER NOTES: by C. J. Ryan

HE Astronomical Society of Barcelona, Spain, an energetic body recently organized to popularize the noblest of the physical sciences, has aroused great interest by a series of public demonstrations of Foucault's celebrated pendulum experiment, first devised and shown by him in 1851 in the Panthéon, Paris, which actually makes the rotation of the earth visible to the eye. It consists in the swinging of an immense pendulum, freely suspended, to which is attached a sharp point which cuts lines through some fine sand heaped upon a table. After a few swings of the pendulum it becomes apparent that the point is not simply cutting the first line deeper, but that it is cutting new lines, crossing each other at the center, until after half an hour or so the direction of the oscillation has distinctly changed. Instead of swinging due north and south as it did at starting, it now swings along a line directed from a little east of north to a little west of south. In a double oscillation of eight seconds the 52ft. pendulum at Barcelona University turned 1′ 19.5″. But as a matter of fact the turning of the pendulum is an illusion; it is the *earth* that turns under the freely swinging pendulum, which keeps its original direction practically unchanged. Anyone can illustrate this idea in a small way by holding a pendulum in one hand and rotating a piece of card under it while swinging; the cause of the apparent change of direction will then be plain. Fifty thousand persons, including thousands of school children, attended the lectures and watched the experiment with great interest. The same experiment was shown in the United States a few years ago. It is not often tried.

HALLEY'S comet, though lost to sight even in the largest telescopes, appears to have left some visible effects. The earth passed through

its tail in May, 1910, and a short time afterwards a mysterious self-luminous haze, in the form of long glowing strips slowly drifting among the stars, became visible. Professor Barnard, perhaps the keenest living observer, whose acquaintance with the appearance of the sky is unrivaled, declares he never saw anything like this luminous haze before June 7, 1910, and he guardedly suggests that there may be " some relation between this condition of the atmosphere and the probable passage of the earth through a portion of the tail of Halley's comet."

Halley's comet, which will return again in 1985 or so, is one of the most interesting of these strange celestial visitors, and, if it can be proved that some distinct effect has been produced by it upon our atmosphere, an entirely new field of speculation will be opened for science. It is a remarkable " coincidence " that ever since its appearance last year, there has been an extraordinary increase of political and other unrest throughout the world. Revolutions and wars, new and unexpected experiments in legislation in unlikely quarters, the breaking up of time honored ideas in many departments of thought, and other changes have startled the world. Can it be that something more than a merely physical effect was produced by the contact with that mysterious traveler we call by the name of the great English astronomer, who first discovered by studying its past records that some comets belong to our Solar System and return periodically? Intelligent students will hardly venture to deny it.

ONCE more attention is being drawn to the fact that electric or magnetic forces play a much larger part in the constitution and control of the Solar System than has been suspected outside the ranks of students of the Ancient Wisdom. The latest suggestion to this effect comes from Professor Birkeland of Christiania, Norway, a most eminent astronomer and physicist, who declares his belief that the extraordinary Rings surrounding the planet Saturn are a purely electrical phenomenon, and not myriads of minute material particles traveling round the planet in elliptical orbits and presenting the appearance of a series of flat rings. Saturn's unique appendages have always been objects of intense interest, both from their beauty and from the mystery in which their nature and origin is enwrapped. The diameter of the outermost is about 170,000 miles, and yet the thickness of the Rings is less than twenty miles, perhaps less than thirteen!

Speaking of the electric theory of Professor Birkeland the *Scotsman* says:

> Professor Birkeland has been making careful research into the nature of electricity, following up the splendid work of Crookes and Thompson. And his experiments have shown that we have now good warrant for the belief that electric forces, whose origin no one has dreamt of, operate on the sun and have an effect on planets and comets too. He is of the opinion that the same forces have played, and still do play, an important rôle in the origin of the spheres and their evolution. . . . Those who were recently invited to hear his present results, and to see solar phenomena reproduced in his laboratory, recognize that many physical mysteries are near solution. . . . His researches have led him to the conclusion that the ring of Saturn is an electric phenomenon, due to the emitting of radiating matter from the planet, so that the ring is constantly renewed. And he reproduces the ring of Saturn in miniature with the most surprising similarity of detail. From Ladenburg's and Wood's investigations regarding luminant gases, we have good reason to suppose that such a radiation will show light and shade effects, such as Saturn displays; and all other known observations can thus be accounted for. . . .
>
> Sunspots, as is well known, have been the subject of the most careful investigation; but there is not yet any general agreement regarding their physical nature. But Birkeland's experiments have led him to believe that the sunspots are great electric arcs of light which penetrate the photosphere, with negative poles on its external surface. . . . The light and heat of the sun, therefore, are possibly due to the agency of the electric light arcs. . . .
>
> Professor Birkeland's volumes will be awaited with interest, and will be subjected to the most searching criticism. But those who have seen his conclusions reproduced before their eyes await the result with assured equanimity.

In view of such new ideas as these, and of the established fact that electro-magnetic vortices play an important part in the solar economy, as shown by Dr. Hale in his recent sunspot researches, it is pretty clear that H. P. Blavatsky's teachings about the importance of magnetic forces in the solar system cannot be ignored much longer. She gives hints which, if followed out, will lead to unexpected discoveries. In *The Secret Doctrine* she unveils the meaning of the hitherto obscure myths of the eastern sacred books which contain, albeit in a form which is curious to us, profound teachings of natural law, the result of ages of research. When will our learned students of science, who assure us that Truth is their only aim, awaken to the priceless jewels of wisdom that they quite overlook in consequence of their unfamiliar appearance?

The chief interest for students of Theosophy in such advances as

those of Professor Birkeland is due to the fact that electricity is one of the forms in which the great Life which underlies all things manifests; it is no dead, mechanical thing, and, as the scientific world begins to realize that purely mechanical conceptions of the universe are wholly inadequate it will bring nearer the time when it will be compelled to seek the spiritual basis of all energy. Then we may expect a higher development of science upon Theosophical lines.

MARS is still a brilliant object in the eastern sky early in the evening; it is close to the Pleiades. The controversy as to the existence and meaning of the lines called " canali " by Schiaparelli, which some astronomers see and even photograph, while others deny them, is again raging. Professor Barnard is about to make a special study of Mars with the aid of the great sixty-inch telescope in California. He may settle the question of the reality of the " canals."

The Lowell Observatory at Flagstaff, Arizona, reports having discovered the first " autumn frost " in the sub-Antarctic regions of Mars on November 3. The observers say it was seen as a bright mist on the planet's edge at a high latitude, vanishing away as the planet turned towards the sun. Other astronomers are not satisfied that the whiteness is really frozen water or mist rising from melting frost in the early morning. The suggestion has been made that it is congealed carbonic acid, but Professor Lowell combats this with strong arguments from a chemical and physical standpoint. Whatever it is there is no doubt that something exists on Mars which behaves like snow. The white polar caps increase and diminish in harmony with the seasons, etc.

The arguments that have waxed so warm during the past ten years or so concerning the physical condition of Mars and the possibility of life existing there are all based upon the analogies supposed to exist between it and the earth. *Nothing is really known* by science of the states in which matter exists upon any other planet but our own; and, furthermore, matter was not always in its present condition — density, cohesion, power of chemical combination, etc. — in past ages of the earth's duration. Matter itself (whatever it may be) undergoes evolution, i. e., that which affects our senses as physical matter today has displayed other properties in the past, and will bring forth still others in future, all being in harmony with the particular cycle of life-activity then prevailing. How, then, can we imagine that the terrestrial ana-

logies of today will be the only certain means for deciphering the riddles presented by other planets, which, though on our plane of perception, are not in our exact state, physically or chemically? H. P. Blavatsky earnestly warns us against falling into that error, and points out that only trained occultists can really break through the maze of illusion which surrounds us. As *Light on the Path* says, when speaking of intuitive knowledge as the only real knowledge: "Matter is in itself a perfectly uncertain substance, continually affected by change." Let us, however, take even more interest in the enthusiastic and indefatigable researches of noble-minded and devoted scientists, for some discoveries of importance will assuredly be made and others which will be valuable in teaching that there is a better way of learning the deep truths about the universe, i. e., that of the ancient philosophers, by the development of the spiritual powers *which are latent in every man* and of which every man holds the key. *Light on the Path* also says:

> But I hold scientific men are the pioneers of modern thought. . . . But the scientific workers are progressing, not so much by their own will as by sheer force of circumstances, towards the far line which divides things interpretable from things uninterpretable. Every fresh discovery drives them a step onward.

H. P. BLAVATSKY, in *The Secret Doctrine,* tracing the evolution of the human races, advances a very curious piece of information, which has recently received some confirmation from scientific sources. The records upon which she drew state that the density of the materials constituting the Earth's substance was not always the same as at present. At first the Earth was in a comparatively ethereal condition; this gradually became grosser and more material, until, "during the middle period of the Lemuro-Atlantean Race," many millions of years ago, it attained its greatest hardness. Since then the cycles intervening have carried us onward, on the opposite ascending arc, some steps towards "dematerialization." Until lately the ascertained facts of science would not have permitted physicists to understand the possibility of such modifications of matter. It was thought, and still is by many who have not exercised the faculty of "scientific imagination" or who have not followed closely the most recent pronouncements of science, that the atom was a changeless fundamental unit, and that matter was eternal in the familiar forms. But since the discovery of electrons and the transmutation of radium, etc., our views of the possibilities of matter have greatly enlarged, and he

would be a bold man who would put a limit to speculation upon the subject. Professor Bragg, in a recent article in *Science Progress,* states that there is very strong evidence that any two "atoms" can pass through one another, given sufficient velocity of approach, which condition is fulfilled by some of the particles shot off from radium. This is a most extraordinary claim, but it is nothing new to students of Theosophy, who have always believed in the illusionary nature of the matter apparent to our senses. William Q. Judge, an authority upon this subject, gives many significant hints in his works, elucidating the teachings of H. P. Blavatsky upon the different grades of illusion in matter.

Now in connexion with the "dematerialization" of the material substance of the earth (including the atmosphere) which has been taking place extremely slowly for a good many millions of years, as the cycles move onward towards a more spiritual condition, we are reminded of a curious scientific suggestion that has lately been published in *Cosmos* and widely circulated in the scientific press. It has arisen through the study of the problem of aviation. Owing to simple mechanical causes flight becomes more and more difficult as weight increases, for the weight increases in a greater proportion than the area of supporting surface.

> Large birds substitute, as far as possible, sailing flight for flapping of the wings. Thus the size of animals capable of flight has an upper limit, and this seems to be reached, in the present state of Nature, by the large birds so far as sailing flight is concerned, and by the large insects so far as flight by wing vibration is concerned.
>
> And yet in past ages much greater animals have flown. One reptile of the group Pterodactyl has a span of over thirty feet, which exceeds that of a racing Blériot aeroplane; this creature lived during the Cretaceous period, and flew as far as ninety miles inland.
>
> Certain dragon-flies of the Carboniferous era measured over three feet from tip to tip of their outstretched wings. Under present conditions it would be quite impossible for these creatures to fly. The most natural supposition is that in the times when these creatures flew through the air, the atmosphere had a greater density than it has at present. This is the conclusion reached by Mr. Harle, the palaeontologist.

It would be difficult to find a more reasonable testimony from a scientific standpoint to the Theosophical assertion that the general density of the Earth was greater in the late Secondary Age than now.

"VIVISECTION" IN A DICTIONARY:
by Walter J. Renshaw

HAPPENING upon the word "Vivisection" in one of the standard dictionaries, the writer — with his feeling for words, which is expanded and gladdened by some words, and contracted and saddened by others, "vivisection" being one of the latter — wondered how the dictionary treated it, and read as follows:

> Dissection of a living body; the practice of anatomizing alive, or of experimenting upon living animals, for the purpose of investigating some physiological function or pathological process which cannot well be otherwise determined. Vivisection strictly includes only cutting operations; but the term is extended to any physiological experimentation upon living animals, as compression of parts by ligatures, subjection of the creature to special conditions of atmospheric pressure, temperature, and food, exhibitions of poisons, or other drugs, inoculation of disease, etc. Vivisection in competent and humane hands, under proper and reasonable restrictions, is fruitful of good results to the sciences of physiology and pathology.

It was very depressing to read such a statement — unqualified save for the implications in an extract from the *Encyclopaedia Britannica:*

> The Vivisection Act of 1876 . . . is intended for the protection of vertebrate animals liable to be employed alive in physiological experiments.

For in the definition of "vivisection" not only is the whole question begged by the words "process which *cannot well be otherwise determined*"; but we know what the "special conditions" mean, in the scope of the previous words: "*any physiological experimentation upon living animals.*"

What do these "special conditions" include? *Anything.*

Of atmosphere: intense pressure or vacuum, prolonged or alternated; suffocation, partial or complete, by poisonous gases.

Of temperature: baking, freezing, or boiling (*alive*).

Of food: starvation or repletion (to death if desired); ingenious and outrageous mixtures, etc.

Exhibitions of poisons.

Inoculation of disease: loathsome or painful, swift or lingering, often the products of man's worst vices.

The "etc." which follows this horrible list suggests — as is alas! only too true — "not fit for publication." And this, we read, is fruitful of good results to the sciences of physiology and pathology.

Alas for a science in whose name such criminal practices are permitted and gloried in. One wonders if it were the *non*-scientific who caused the Act to be passed " for the *protection* of animals liable to be employed alive "; and who interprets and enforces it; and how far it is effectual; in short, where the line is drawn.

Thus far the dictionary on the word " vivisection " — the essential nature of which is indicated by the fact that specifically " *painless* vivisection " is given another name altogether.

The first thought of the reader was: It is curious if a dictionary should decide a question going to the roots of morality in man's relation to his dumb brothers of the lower kingdoms, in such an offhand manner; ignoring not only the unvoiced plea of the victims, but the moral effect on the vivisector himself (as set forth in " The Plight of the Vivisector," THE THEOSOPHICAL PATH, Vol. I, p. 341, Nov.); especially when " doctors differ " as they do so fundamentally and vehemently upon even the scientific fruitfulness of the practice.

However, having merely defined the word itself, the dictionary lets daylight on its results in the definitions or illustrations of its derivatives. " Vivisectionist " being defined, the usual quotation displaying its use is thus given (italics the writer's):

> Physiology, it is said, *can scarcely be called a science as yet,* and the contributions of *vivisectionists* to the understanding and amelioration of human suffering *have been almost nothing.* — G. S. Hall, *German Culture,* p. 20

The quotation following the definition of " vivisector " is:

> A judge or jury might have opinions as to the comparative value of the results obtained which would differ widely from those of the *vivisector* himself. — Buck's *Handbook of Medical Sciences,* viii, 682

And in illustration of the use of " vivisectorium " we read:

> Students have turned away sickened not only from the *vivisectorium,* but from the study of medicine. — G. S. Hall, *German Culture,* p. 20

While making these notes the writer received a letter from an English friend in which occurred the following:

> There must be something seriously wrong with anyone who cannot feel the wrong of vivisection. Surely the best part of such a man has not yet awakened! I'm thinking of —— —— [mentioning two prominent men who have recently spoken in favor of vivisection].

Doctors themselves differ, as we have seen, and the quotation

from the letter represents the unspoiled, instinctive feeling of the lay (unprofessional or non-technical) student of life and its problems — the intuitive revolt of the soul against practices admittedly cruel and painful; of doubtful and disputed scientific value; degrading to the operator; and which H. P. Blavatsky, with her profound knowledge of life and its laws, inner as well as outer, stigmatized in the name of Theosophy as " BLACK MAGIC."

MODERN FREE ANIMAL HOSPITAL: Memorial to be erected by Mass. S. P. C. A., to George Thorndike Angell, Pioneer Protector of Animals --- Contributed

A HOSPITAL for animals is soon to be erected in Boston by the Massachusetts Society for the Prevention of Cruelty to Animals as a fitting memorial to the late George T. Angell, founder and for nearly half a century president of the Society. Already interest in the great humanitarian project is actively manifest not only throughout the state of Massachusetts, where Mr. Angell built up and directed one of the most efficient and energetic anti-cruelty organizations in the world, but wherever human hearts beat in sympathy with those principles which he so widely promulgated, namely, " kindness, justice and mercy to every living creature."

Under the direction of President Francis H. Rowley of the Society a site has been purchased and plans for the building rapidly developed.

While the influence of the Society in the prevention of cruelty is felt throughout the length and breadth of Massachusetts by the presence in nearly every city and town of one or more representatives, the Society believes that the time is at hand when it must enter a larger field.

As yet the Society is not in possession of sufficient means to start actual building operations. It has however entered upon a campaign for raising the necessary funds and among its multitude of members, friends and the animal-loving public of Massachusetts and the nation it has every confidence that the required capital will be quickly forthcoming.

The life of George T. Angell was not limited in its influence to the city of Boston nor even to the state of Massachusetts. The scope

of his activity was nation-wide. Humanity at large as well as all animal kind benefited by his far-reaching efforts. As the father of the Band of Mercy movement in America his influence will be felt more and more in the humane education of coming generations.

PRINCESS HELENA: A True Story for Young Folk: by Ralph Leslie

(Concluded from January issue)

II

IT is Saturday afternoon, one week later. This time the Râja Yoga children are spending their outing beneath the trees of the eucalyptus grove on the slope of Point Loma, close to the ocean. This is perhaps their favorite place for picknicking. It is so pleasant to sit on the soft, leaf-strewn ground, and to watch the sunshine chase the shadows across the soil as the slender branches of the trees are swayed by the ocean breeze. Can't you imagine them flitting hither and thither, in and out between the trees, playing a game of blind-man's-buff, as it were?

Wouldn't you like to join the Râja Yoga children this afternoon? Imagine them sitting in circles under these trees — a circle for each group, from the tots up to the seniors of the graduating class — eating their open-air supper. Now they have finished, and while the big children of each group are hurrying to clear away the things and pack the baskets (they never leave a single piece of paper or débris of any kind behind them) the little ones are running about to stretch their limbs preparatory to sitting down again to hear Uncle Frank's continuation of last week's story.

"Let me see, where did we leave off?" asked Uncle Frank.

"Oh, I know!" exclaimed Marie. "And I!" "And I!" added several others.

"Princess Helena said she was going to be a Goddess of Liberty 'all her life.'" said Marie.

"Now I should like to know how she could do that," drawled Albert.

"Ah, yes! I remember now; Helena and her little sister, Vera,

had gone to live with their grandparents at Saratow," hastily resumed Uncle Frank. "Saratow is situated on the great river Volga, which is from two to three miles wide there. It is surrounded by bare and frowning hills."

"Excuse me," interrupted Frederick, "but is not Nijni-Novgorod, famous for its annual fairs, on the Volga also?"

"Yes, Frederick; but we must not get side-tracked on another subject, for there is so much to be told about our heroine," replied Uncle Frank.

"General Fadeef, Princess Helena's grandfather, was the military governor of that district and the governor's villa must have been some little distance in the country, as a deep wood was near by. It must have been a romantic old place. Let me read a description of it," said Uncle Frank, drawing a paper from his pocket and reading: "'The great country mansion occupied by us at Saratow, was an old and vast building, full of subterranean galleries, long abandoned passages, turrets, and most weird nooks and corners. It had been built by a family called Panchulidzef, several generations of whom had been governors at Saratow and Penja — the richest proprietors and noblemen of the latter province. It looked more like a medieval ruined castle than a building of the past century.' The account goes on to say that a former tenant of the place had been noted for his cruelty and tyranny, so that there existed stories of the torture and imprisonment of unfortunate serfs in dark underground dungeons, and likewise of ghosts who walked the corridors at night manacled in chains."

"'Oh! how awful! please skip that, Uncle Frank," said sensitive Vera.

"Well, I will only add that such tales caused the children to fear the dark and being left alone at night," resumed the story-teller; "all but Helena, in whom they aroused a greater interest. To allay their fears, I suppose, they had been allowed, in company with half a dozen men-servants with torches, to explore these underground rooms and passages, to the delight of Helena. Nor was this fearless child satisfied with one or even several visits to these damp regions under such conditions. On the contrary she selected one of these vaults as a 'Liberty Hall' where she built herself a tower with old discarded chairs and tables piled high in one corner in order to reach the faint beams of light that came through an iron-barred window in the ceiling. And thither she would flee whenever she wished to be

undisturbed, spending hours together reading a favorite book called *Solomon's Wisdom,* that told of all sorts of old legends. On more than one occasion she could hardly be found by the servants headed by the soldier on duty in the governor's hall, having lost herself in the dark passages. Not even such experiences daunted her, and if the spirit moved her she returned on the morrow to play with her 'little hunch-backs,' as she called her imaginary playmates—'imaginary' only to her seniors, but to her quite alive."

"Oh! do you suppose they were gnomes or pixies, Uncle Frank?" asked little chubby-faced Tor, his blue eyes wide with amazement.

"I am sure I couldn't say," answered Uncle Frank.

"After her 'Liberty Hall' underground failed to afford her the desired seclusion, she would take refuge in the virgin forest back of the castle, seldom visited by people, and the alleged home of robbers and bandits.

"Their grandmother was a great collector of natural-history specimens, her collection being famous in those days. To add to it, excursions were sometimes planned for the purpose of gathering material in the thick woods, the home of countless varieties of Nature's inhabitants other than humans. At times these excursions were by day, and again at night, and it was the latter occasion that gave the children the most pleasure. The night trips were for catching the great night butterflies and moths that are unusually fine in the forests along the Volga. Extensive preparations were made beforehand for these excursions. Boys and girls from the town were invited, children from twelve to seventeen, and, in addition, several dozen young serfs, both boys and girls. The latter were included to satisfy Helena's desire, probably; for, although noble by birth, she often preferred playing with the servants' children rather than with others — a trait which, by the way, she never lost, for she always felt a deep sympathy for those less fortunate than herself and was continually helping those needing help. In the rear of the young people came a dozen or so of servants, and one or more soldiers armed with real guns for the protection of the party. It was in the main a merry party, as their childish hearts were all unconscious of the cruelty of their mission — all but one heart, I should say; for I cannot believe that our kind Princess Helena entered into these occasions in the same spirit as the others. Indeed, we know for a fact that she protected and saved from destruction all the sphynxes — a dark moth

whose fur-covered head and body bears the image of a white human skull — she could, saying, ' Nature having imprinted on each of them the portrait of the skull of some great dead hero, these butterflies are sacred, and must not be killed.'

" In this connexion, I think it will interest you to know Princess Helena's ideas about Nature and her myriad lives. Rather than tell you in my own words, let me refer a minute to what her younger sister, the little Vera referred to before, says regarding the peculiar ideas of her older sister. 'For her all nature seemed animated with a mysterious life of its own. She heard the voice of every object and form, whether organic or inorganic; and claimed consciousness and being, not only for some mysterious powers visible and audible for herself alone in what was to every one else empty space, but even for visible but inanimate things such as pebbles, mounds, and pieces of decaying phosphorescent timber.' And many years later she taught that ' Everything in the universe, throughout all its kingdoms, is conscious,' and held that even the stones possess a kind of consciousness of their own, though not perceptible to our senses.

" But to return to her childhood, which chiefly concerns us," said Uncle Frank. " There was one room in the castle that Princess Helena liked above all others and that was her grandmother's large museum lined with cases filled with stuffed birds and animals, with zoological collections, as well as with objects of historical interest in connexion with both ancient and modern people. She was familiar with the history of each creature and specimen there, and so realistic were her stories she told concerning them that it seemed to her attentive audiences as if the animals were telling their own biographies. After night-fall she would gather together a party of the younger children and hold them spellbound with stories of the greatest vividness, or, at other times, with accounts of herself as the heroine of thrilling experiences she pretended to have been through. Her favorite position on these occasions was the back of a large stuffed seal, upon which she would sit or lie, stroking its soft, white fur while she talked."

" Oh, how lovely! " exclaimed Irene, our little half-Danish maid. " I could tell fairy tales, too, if I could lie on the back of a seal."

" Poo! I would have a walrus," added Leonard.

"And I —— " Margarita was starting to say, but checked herself as Uncle Frank raised his hand for silence.

" I will admit," he continued, " that one's surroundings have a

great deal to do with the success of a story, but not more so, I think, than a sympathetic and interested audience," smiling at his young Râja Yoga auditors.

" There is an old saying, I believe, that a good story-teller makes a good listener, or words to that effect. At any rate, this held good in Princes Helena's case, for she was as fond of listening to fairy tales and stories as she was of telling them, and she never forgot what she heard. Among one of the servants in the Fadeef family was an old Russian woman whose catalog of stories was wellnigh exhaustless, and the children, especially Helena, were always delighted when they could prevail upon her to tell them one. Many a summer twilight was so spent upon the grass under the trees in the orchard, or a long winter evening by the blazing fire on their nursery-room hearth. Have you ever heard a Russian fairy tale, children? No! Well, perhaps we can have one some day. Among the tales told by this old woman were those concerning the adventures of 'Ivan Zarewich,' of 'Kashtey the Immortal,' of the 'Gray-Wolf' — the wicked magician who travels through the air in a self-moving sieve — and of Meletressa, the fair Princess, who is liberated from a dungeon by the Zarevich with the aid of a golden key. One of the characteristics of Russian folk-lore, as I remember the few tales I have read, is the way and frequency with which the characters change their forms at will, and the altogether elfin spirit that prevails throughout them.

"Another person who greatly fascinated Princess Helena was an old, old man, reputed to be a hundred years old, indeed, who lived in a valley in the deep forest not far away. He was known as 'the magician,' but one of the good kind, and was said to understand the language of bees, birds, and animals. Be that as it may, it was a fact that as he walked among his many beehives clothed in a living garment of swarming bees, he could do with them whatever he liked without fear of the consequences; and as soon as he began making a peculiar noise between a chant and a muttering, the almost deafening buzzing would practically stop, as if the bees were listening to him. Of this, Helena was quite certain. Whenever she found the opportunity she would slip off to him and ply him with questions about the mysteries of nature. There seems to have been quite a friendship between them. That he was interested in her seems evident from this reputed remark of his concerning her: 'This little lady is quite different from all of you. There are great events lying in wait for her

in the future. I feel sorry in thinking that I will not live to see my predictions of her verified; but they *will all come to pass!'* "

" Speaking of prophecies," interrupted Miss G—, " that reminds me of another, that appears to refer to Princess Helena, to the effect that ' in 1831 a woman would be born who would reconcile the beliefs of the extreme East with the Christian beliefs of the West, and would be the founder of a Society which would create a great change in the minds of men.' "

" Why, Miss G—," said Uncle Frank, " did you know Princess Helena? I entirely forgot that your family is connected with Russia. You must know a good deal about Princess Helena and her connexions; will you tell us something about her? "

" Some time! " replied Miss G—.

" Well, I see we shall have to stop in a few minutes anyway, as the sun is almost down to the horizon," continued Uncle Frank, " so let us hurry through some of the interesting events. Before going on, however, let me say that while the children were living at Saratow, her father took Princess Helena on her first extensive journey, visiting Paris and London. That was in 1845 or '46, when she was fourteen or fifteen years old. While in England they spent a week in the interesting old town of Bath.

" In 1848 this young girl of seventeen was married to General Blavatsky at Jellallogly, a summer resort near Tiflis, in the Russian Caucasus. This marriage was much to her distaste and against her will, her husband being at least three times as old as she and there not being anything congenial in their tastes." While saying this Uncle Frank had difficulty in restraining the children from rising in a body and shouting their recognition of Princess Helena's identity.

As soon as he could get an opportunity to speak, Monty exclaimed, " I knew it! I knew it! I was sure Princess Helena was going to turn out to be Madame Blavatsky."

"And I did, too!" exclaimed Robert; "And so did I," added Marie with a chorus of others.

" Yes, I thought you had discovered the secret," replied Uncle Frank. " But let us leave Princess Helena as she starts on a series of long journeys through strange and distant lands, during the succeeding ten years, in which time she visited Central Asia, India, South America, Africa, and Eastern Europe; and let us start on our own homeward journey."

" Oh, Uncle Frank! " exclaimed Hazel, " won't you please tell us next Saturday about Princess Helena's or Madame Blavatsky's later life and how she came to found the Theosophical Society? "

" Yes, yes! " shouted several eager voices; and Rex added, "And tell us about her work for Humanity and how she was persecuted; we should also like to hear something about her great teachings."

"Ah! but I must not monopolize all the story-telling," replied Uncle Frank. " Besides, you older children already know a great deal about that, all of which would not interest the younger girls and boys as much as what we have just heard about her girlhood. See! there dips the sun below the edge of the Pacific; come! we must go." And they turned their faces homeward.

THE fourth bulletin of the Seismological Society of America shows a distinct advance in interest of topics treated. It opens with an account of the important publications of Major Dutton. A paper on earthquake epicenters gives a simple method of determining their position. The elements required are the latitudes and longitudes of the observing stations, together with the time-differences at each between the preliminary, or longitudinal, and the secondary, or transverse waves — the precise mean solar time of each observation not being essential. The importance of studying the displacement of objects within megaseismic areas, is next dealt with. It is shown that objects having a small frictional coefficient will be displaced *towards* the epicenter, and those with a relatively large frictional resistance *away* from it. The causes producing rotation and overturning are also touched upon. Another paper on post-glacial faults in Ontario, illustrated, suggests that in place of these having been due to the forces classed as orogenic, they may have been of comparatively superficial character, due to change of volume after relief from ice-load, or to the expansion produced by temperature-changes, etc. An analysis, with map, of the California earthquake of July, 1, 1911, follows, the epicenter of which was near Coyote. All the seismographs at the Lick observatory were put out of commission by this shock, whose effects were, however, not felt further south than Los Angeles. An excellent map is given, showing the locations of all the seismographs in North America. There are very few between 23° and 37° north latitude.