

# THE THEOSOPHICAL PATH

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NATURE gives up her innermost secrets and imparts true wisdom only to him who seeks truth for its own sake and who craves for knowledge in order to confer benefits on others, not on his own unimportant personality.—*H. P. Blavatsky*

## INFLUENZA AND OZONE; SCIENCE FOLLOWING

H. P. BLAVATSKY'S LEAD: by H. T. Edge, B. A. (Cantab.)



THE task of surveying the records of current thought keeps us busy marking the instances wherein contemporary speculation or discovery confirms the teachings and forecasts made by H. P. Blavatsky a quarter of a century ago. In the domains of archaeology, science, and religion, so many of her statements — considered at that time so unorthodox — have been confirmed, and many of the unfamiliar ideas which were then slighted or neglected are now commonplaces. This result is due partly to the natural progress of thought and discovery, following the lines she predicted; partly to the intense dynamic power of Theosophical ideas, introduced by H. P. Blavatsky and since fostered by students; and partly to more direct connexion with her teachings. But whatever the source of the new ideas, it is rarely indeed that we have the pleasure of recording either an acknowledgment of indebtedness to the great Theosophical teacher or an admission of her priority. Time, however, will redress this inequality, as the teachings of Theosophy become better known and the value of their source better appreciated.

In what follows we give quotations from an article written by H. P. Blavatsky in 1890, followed by quotations from a lecture given by an American physician in 1911. The practically literal confirmation of her statements is most striking; though in this case, of course, there is no suggestion that the writer was conscious of aught but originality in his views. He will be interested to hear that these views are confirmed on such good authority.

Writing in the magazine *Lucifer*, for February, 1890, under the

caption "The Last Song of the Swan," H. P. Blavatsky says the following about the influenza at that time prevalent:

Does it not seem, therefore, as if the causes that produced influenza were rather cosmical than bacterial; and that they ought to be searched for rather in those abnormal changes in our atmosphere that have well-nigh thrown into confusion and shuffled seasons all over the globe for the last few years — than in anything else?

It is not asserted for the first time now that all such mysterious epidemics as the present influenza are due to an abnormal exuberance of ozone in the air. Several physicians and chemists of note have so far agreed with the occultists, as to admit that the tasteless, colorless, and inodorous gas known as oxygen — "the life supporter" of all that lives and breathes — does get at times into family difficulties with its colleagues and brothers, when it tries to get over their heads in volume and weight and becomes heavier than is its wont. In short — oxygen becomes ozone. That would account probably for the preliminary symptoms of influenza. Descending, and spreading on earth with an extraordinary rapidity, oxygen would, of course, produce a still greater combustion: hence the terrible heat in the patient's body and the paralysis of rather weak lungs. What says Science with respect to ozone? "It is the exuberance of the latter under the powerful stimulus of electricity in the air, that produces in nervous people that unaccountable feeling of fear and depression which they so often experience before a storm." Again: "The quantity of ozone in the atmosphere varies with the meteorological condition *under laws so far unknown to science.*" A certain amount of ozone is necessary, they wisely say, for breathing purposes, and the circulation of the blood. On the other hand "too much of ozone irritates the respiratory organs, and an excess of more than one per cent of it in the air kills him who breathes it." This is proceeding on rather occult lines. "The real ozone is the Elixir of Life," says *The Secret Doctrine*, Vol. I, p. 144, first footnote. Let the reader compare the above with what he will find stated in the same work about oxygen viewed from the hermetic and occult standpoint (*Vide* pp. 113 and 114, Vol. II) and he may comprehend the better what some Theosophists think of the present influenza.

But our American doctor had been yet further anticipated; for H. P. Blavatsky goes on to quote from a writer in *Novoyé Vremya*, November 19 (O. S.), 1889, as follows:

It thus becomes evident that the real causes of this simultaneous spread of the epidemic all over the Empire under the most varied meteorological conditions and climatic changes — are to be sought elsewhere than in the unsatisfactory hygienical and sanitary conditions. . . . The search for the causes which generated the disease and caused its spread is not incumbent upon the physicians alone, but *would be the right duty of meteorologists, physicists, astronomers, and naturalists in general*, separated officially and substantially from medical men.

This man knew what he was talking about, she says; but his re-

marks raised a professional storm. A scapegoat was ready, it seems.

The modest suggestion was tabooed and derided; and once more an Asiatic country — China, this time — was sacrificed as a scapegoat to the sin of FOHAT and his too active progeny.

Let us, before proceeding, sum up the chief points of the above remarks, to facilitate comparison with what is to follow.

1. The causes of influenza are cosmical rather than bacterial.
2. They are to be sought in abnormal atmospheric conditions.
3. They consist mainly in an over-abundance of ozone.
4. Too much ozone produces nervous fears, over-exhilaration, too rapid consumption of the tissue, and even death.
5. The real ozone is the Elixir of Life, and is either identical with or closely related to the cosmic force known as FOHAT and the lesser forces proceeding therefrom.

And now to our quotation from the eminent American doctor — C. M. Richter, M. D., in a paper before the American Medical Association. Referring to previous papers by him, he sums up his conclusions, which we epitomize as follows:

Epidemics of pneumonia and grip are not merely concomitants of cold weather. They depend, in the northern hemisphere, on anticyclonic weather, summer and winter, and not on cold weather. Similarly the epidemics of enteritic disease do not depend on hot weather but on cyclonic conditions.

Pneumonia and grip are due to excess of oxygen, especially ozone. Anticyclonic conditions may increase the amount of oxygen present in the air, or, by increased pressure or wind-force, cause more oxygen to enter the system.

It is not only anticyclonic conditions that cause an increase of ozone, but also solar activity; the epidemics of grip and pneumonia follow the cycles of the sunspots, and so do the epidemics of enteritic disease.

In support of these conclusions the writer brings forward a number of charts giving the conditions as regards pressure, solar activity, and epidemics, in places as far apart as San Francisco and Berlin. These show that anticyclonic conditions are coincident with the grip complaints, and cyclonic conditions with the enteritic; but that sometimes the solar influence prevails over the pressure influence. In seeking an explanation of the fact that both anticyclonic conditions

and periods of sunspot minima accompanied the grip, the writer was led to consider the effect of too much oxygen or ozone on the system. He quotes authority to the effect that excess of oxygen inhaled may cause pneumonia. A maximum of air-pressure brings increased oxygen into the lungs. Also:

Physicists have brought out the facts that the circulating atmosphere—the cloud zone—ends at about six miles height; oxygen, diminishing gradually in its percentage of the atmosphere, cannot be found at about forty-five miles height; nitrogen, increasing first to twenty-one miles, then diminishing rather rapidly, ends at about fifty miles height. . . . Two kinds of polar light are seen in this atmosphere at a height of about thirty-six and about three hundred miles respectively. They represent the cathode rays, coming from the sun and deflected by the magnetic field of the earth. They appear in cycles which follow quite accurately those of the sunspots. . . . A certain dependence of air-pressure conditions on polar lights seems established in the vicinity of the latter. Further investigation proves that the total amount of violet and ultra-violet in the solar radiation changes from time to time . . . and it seems quite probable that this intensity must be least at the time of maximum sunspot disturbance. . . . Ozone is produced by the action of ultra-violet light on cold dry oxygen. The amount of ozone in the outer atmosphere must, therefore, vary with the amount of ultra-violet radiation sent out by the sun. When this ultra-violet solar radiation is at a minimum, presumably during a sunspot maximum, the amount of ozone in the upper layers of the atmosphere will be a minimum, unless maintained by some other process (auroral discharges). On the other hand, with a maximum of ultra-violet radiation, presumably during a sunspot minimum, there will be a maximum amount of ozone.

San Francisco, it appears, is practically immune against enteritis epidemics, even during periods of great heat. In Berlin these epidemics, appear during the heat of summer, but not in proportion to the heat. But the cyclonic conditions explain these effects. In other cases, particularly the grip epidemics of 1831-5 and 1889, the pressure was abnormally high, and the solar activity was low.

Thus he shows on good authority that these two kinds of epidemic follow each other, and follow the conditions as regards ozone, whether these conditions are determined by pressure or by sunspots or both. He thus confirms the statements of H. P. Blavatsky quoted above.

It would seem that grip is a purificatory influence, due to the sudden arrival of a wave of pure and vitalizing air, which burns up accumulated rubbish in the system. If the health is much impaired, the wave may leave the system permanently weakened; otherwise its first weakening effects are followed by a gain. The blame for grip, therefore, should be on the bad conditions allowed to prevail before-

hand, and not on the wave that brings their results to the surface.

Attacks of influenza are often "preceded" by a period of enhanced exuberance of the vital energy; but it would be more correct to say that this exuberance is the real beginning of the disease. It is like the flare-up of an expiring candle, and due to the same cause, namely, that the reservoir is exhausted, so that it no longer maintains a check on the consumption. The patient had gotten into a bad vital cycle, and the purificatory influence came and knocked out the pivot, so to say. Then there was a brief rush, as the dying flame leapt up, followed by exhaustion. The grip takes away the support on which we had been relying, and leaves nervous fears and despondency. But if the departing and dispossessed regents quail, we need not quail with them; we ought to try to rise to the occasion.

A word should be added on what H. P. Blavatsky says about the real ozone and the Elixir of Life. On referring to the passages in *The Secret Doctrine* indicated by her in the above quotation, we find the following:

He who would allotropize sluggish oxygen into *Ozone* to a measure of alchemical activity, reducing it to its pure essence (for which there are means), would discover thereby a substitute for an "Elixir of Life" and prepare it for practical use.

This note refers to a chapter on the seven Elements and their numerous derivative sub-elements; and the other passage referred to is on the same subject. The gross physical elements with which we are acquainted are derivatives of finer and more potent elements, which again proceed from still higher ones, and so on. Since H. P. Blavatsky wrote, science is provided with a far more ample equipment of ideas and terms, which ought to enable us to understand more of her teachings. For we have now the whole machinery of radio-activity, with its conception of a state of matter (or energy) finer than the physical atoms. It is now considered correct to speak of electricity as a form of matter. The electrons, with their marvelous connexion with light and electricity, provide us with the means of forming some idea of what she meant by the higher and finer elements. It is generally admitted that solar radiation affects the magnetic body of the earth, thus influencing the weather and even the solid globe itself. With so much admitted, it becomes easy to admit that if ozone is a more vitalized form of oxygen, there may be still more vitalized forms beyond the ozone itself. It is, doubtless, a question of future discovery.

When the ancients spoke of elements, they often meant these higher elements, as is evident from the qualities they assigned to them, frequently referring to them as gods. The alchemical idea of the Elixir was no idle dream; but it is easy to see why people fail so often to realize it. We have seen that even so slight a thing as a breath of ionized air from the upper regions of the atmosphere is enough to make people fall sick by the thousand; and that a very dilute mixture of ozone will burn up this gross clay. How then would we be able to stand the Elixir Vitae, which might well prove an Elixir Mortis for our sluggish blood and unresponsive tissues? Has not Lytton in *Zanoni* given us a picture of the dangers of experimenting in such essences? Evidently alchemy is a science that demands self-preparation on the part of the alchemist. And will not this be a characteristic of the science of the future — that it will be a science which only the fit can pursue with success?

## WITH GEORGE BORROW IN “WILD WALES”:

by Kenneth Morris



**I**N the summer of 1854, George Borrow, philologist, churchman, pugilist, unique interpreter of the gypsies, and generally queer, lovable character, who has written himself out in a full length portrait in several delightful volumes, “determined upon going into Wales, to pass a few months there.” From north to south he tramped, seeing everything external, noting down everything he saw. The result was the book *Wild Wales*, from which the following passages are quoted; a book less famous than *Lavengro* and *Romany Rye*, but still one dear to the hearts of all true Borrovians, “a small but fierce tribe,” as they have been called. The charm of the book lies in the fact that there are, apparently, no omissions. The goose that crossed the road here, the quality of the ale in this or that inn, the beauty of that mountain, the views of this or that peasant or pedlar, all find their places in a quaint jumble side by side with dissertations, vigorous enough, on church matters, sectarian fulminations, passages on Welsh or Dutch or Spanish poetry, records of conversations with this one in Arabic, that one in Irish Gaelic, these many in Welsh; comparisons of the latter language with Sanskrit — it was his pride to know all

languages, or at least, after reading his books, you wonder which may have escaped him. It is a man to laugh with and to laugh at; to love also, especially at this little distance; for in personal contact, his dogmatic egotism would perhaps have been a little trying. No mean petty little egotism, though; egotism, but not selfishness; he looked out upon the world and mankind strictly from the standpoint of George Borrow, but did not forget to love them. A fine old country gentleman, sir; withal, *nihil humanum se alienum putavit* — except perhaps Romanism, Nonconformity, teetotalism, and such matters. A true John Bull, but no Podsnap; an enthusiast for anyone, you may say, with a strange language that he might learn, and after, air it to his own high satisfaction. There was no pompous patronage of or contempt for “inferior races” with him. He talks high-handedly of those who imagine Welsh unpronounceable; then gives directions for its pronunciation, very amusing indeed to a Welshman. Peace to his ashes! — you must expect a few slips in such very wide learning; he says so himself. Where else in all literature will you find such a minute portrait of anyone — unless it be in Boswell, indeed, or in Pepys’ immortal Diary? And it is the portrait of a man whom you will end, I hope, by loving; in spite of ale and uncompromising Borrowianism, he was one “on the side of the angels,” and did much for human brotherhood.

The following excerpts are from his chapter on Capel Curig district and the Conway.

After leaving the village of Pentre Voelas I soon found myself in a wild hilly region. I crossed a bridge over a river which brawling and tumbling amidst rocks shaped its course to the northeast. As I proceeded the country became more and more wild; there were dingles and hollows in abundance, and fantastic-looking hills some of which were bare and others clad with trees of various kinds. Came to a little well in a cavity dug in a high bank on the left-hand side of the road, and fenced by rude stone work on either side; the well was about ten inches in diameter, and as many deep. Water oozing from the bank upon a slanting tile fastened into the earth fell into it. After damming up the end of the tile with my hand and drinking some delicious water I passed on and presently arrived at a cottage just inside the door of which sat a good-looking middle-aged woman engaged in knitting, the general occupation of Welsh females.

“Good day,” said I to her in Welsh. “Fine weather.”

“In truth, sir, it is fine weather for the harvest.”

“What is the name of the river near here?”

"It is called the Conway, sir."

"Dear me; is that river the Conway?"

"You have heard of it, sir?"

"Heard of it! It is one of the famous rivers of the world. The poets are very fond of it — one of the great poets of my country calls it the old Conway."

"Is one river older than another, sir?"

He inquires if she can read, and what books she has, and is shown the inevitable Bible:

On opening the book the first words that met my eye were "Gad i mi fyned trwy dy dir!" — Let me go through your country. *Numbers* xx. 22.

"I may say these words," said I, pointing to the passage. "Let me go through your country."

"No one will hinder you, sir, for you seem a civil gentleman."

"No one has hindered me hitherto. Wherever I have been in Wales, I have experienced nothing but kindness and hospitality, and when I return to my own country I will say so."

"What country is yours, sir?"

"England. Did you not know that by my tongue?"

"I did not, sir. I knew by your tongue that you were not from our parts — but I did not know that you were an Englishman. I took you for a Cymro of the south country."

Returning the kind woman her book, and bidding her farewell I departed, and proceeded some miles through a truly magnificent country of wood, rock and mountain. At length I came to a steep mountain gorge down which the road ran nearly due north, the Conway to the left running with great noise parallel with the road, amongst broken rocks, which chafed it into foam. I was now amidst stupendous hills, whose paps, peaks and pinnacles seemed to rise to the very heaven. An immense mountain on the right of the road particularly struck my attention, and on enquiring of a man breaking stones by the roadside I learned that it was called Dinas Mawr or the large citadel, perhaps from a fort having been built on it to defend the pass in the old British times. Coming to the bottom of the pass I crossed over by an ancient bridge and passing through a small town found myself in a beautiful valley, with majestic hills on either side. This was the Dyffryn Conway, the celebrated Vale of Conway. . . . When about midway down the valley I turned to the west up one of the grandest passes in the world, having two immense doorposts of rock at the entrance, the northern one probably rising to the altitude of nine hundred feet. . . .

I presently crossed a bridge under which ran the river . . . and was soon in a wide valley on each side of which were lofty hills dotted with wood, and at the top of which stood a mighty mountain bare and precipitous with two paps like those of Pindus opposite Janina, but somewhat sharper. It was a region of fairy beauty and of wild grandeur. Meeting an old blear-eyed farmer I enquired the name of the mountain and learned that it was called Moel Siabod or Shabod. Shortly after leaving him, I turned from the road to inspect a mon-



ticle which appeared to me to have something of the appearance of a burial heap. It stood in a green meadow by the river which ran down the valley on the left. Whether it was a grave hill or a natural monticle, I will not say; but standing in the fair meadow, the rivulet murmuring beside it, and the old mountain looking down upon it, I thought it looked a very meet resting-place for an old Celtic king.

Turning round the northern side of the mighty Siabod I soon reached the village of Capel Curig, standing in a valley between two hills, the easternmost of which is the aforesaid Moel Siabod. Having walked now twenty miles in a broiling day I thought it high time to take some refreshment, and enquired the way to the inn. The inn, or rather the hotel, for it was a very magnificent edifice, stood at the entrance of a pass leading to Snowdon, on the southern side of the valley in a totally different direction from the road leading to Bangor, to which place I was bound. There I dined in a grand saloon amidst a great deal of fashionable company, who probably conceiving from my heated and dusty appearance, that I was some poor fellow travelling on foot from motives of economy, surveyed me with looks of the most supercilious disdain, which, however, neither deprived me of my appetite nor operated uncomfortably on my feelings.

### RECENT HITTITE DISCOVERIES: by Archaeologist

OUR notions of history may be compared with our notions of geography, and, like the latter, represented by maps. Every schoolboy is familiar with those pictures in the early part of geography or history text-books, showing "the world as known to the ancients," in which the center of the map is a few countries surrounding the Mediterranean, outside which come nebulously defined lands with outlandish names, and finally the trackless ocean. Our knowledge of history has been like one of these maps. A good deal of information about recent times, less about preceding times; beyond a millennium or two nothing but vague sketchiness and trackless expanses; and the whole distorted by wrong views which may be compared with a flat-earth theory. Once in a while writers have made themselves unpopular by suggesting ampler and more reasonable views, chief among whom must be mentioned H. P. Blavatsky towards the end of last century. But to her statements she added predictions as to the probable course of discovery and scholarship in this present century, and these forecasts are already being fulfilled.

Mr. D. G. Hogarth, Fellow of the British Academy, recently read a paper on "Hittite Problems and the Excavation of Carchemish."

The British Museum decided to resume the exploration of Jerablus, intermitted for thirty years. This place, situated on the Euphrates, is probably to be identified with Carchemish, the capital of the Hittite people dwelling south of the Taurus. Some twenty slabs were found, with sculptured scenes, one of them inscribed with one of the longest and most complete Hittite texts yet found; and many other fragmentary inscriptions were also obtained. The discoveries showed, in the opinion of the lecturer, that Carchemish had had a very long pre-Hittite existence, and they suggest that it was occupied by Hittites before the great descent of the Cappadocian Hatti in the 14th century B. C. Egyptian civilization has left little trace, but there are unmistakable signs of another influence, and this seems to have been derived from the late Aegean civilization and to have been communicated from Cyprus. Thus the jig-saw puzzle of ancient history is being gradually pieced, and the Aegean civilization is now accepted as a landmark firm enough to steer by.

### ARE PLANTS CONSCIOUS? by H. Travers



THE love of generalization led science in the past century to attempt to class living beings with the so-called non-living and to inaugurate a universal reign of dead matter and blind forces. In this century the same desire for unification is tending to lead men of science to classify the lower kingdoms with the higher in a universal reign of life and sentience. *The Literary Digest* (Jan. 6) says:

That plants see, touch, and taste, and also have an elementary sense of direction, appears to Henri Coupon, who writes on the subject in *La Revue* (Paris), to be undoubted. These words must not be interpreted in a human sense, of course; but we habitually use them without so interpreting them, in applying them to the lower orders of animal life. The sight of an insect is of quite a different kind from that of man; and the sight exercised by a plant is of course lower still. What the writer means is that plants react to the stimuli around them and apparently even discriminate between different stimuli in this reaction, so that they may be assumed to have something in the nature of perception, using the word very broadly.

The most highly developed sense in plants, says M. Coupon, is sight, which permits them to perceive light but not (he says) to distinguish objects. This is shown by heliotropism or turning to the

light. An attempt to explain this on chemico-mechanical lines consists in pointing to the lens-like cells in the skin of the leaves, which are supposed to concentrate the light and transmit its stimulus to the muscles of the stalk. A striking experiment cited consists in getting the greenish water out of a pool and putting it into a glass tube coated with lampblack. Words are then traced on the lampblack, and the tube is placed in the sun. After a day or so the lampblack is cleaned off, and the words are found written within the tube in letters of green algae. The phenomena of response to touch is illustrated by reference to sensitive plants, of which the instances are familiar. Touch the base of the stamen of the barberry with a pin; instantly it will fold itself against the pistil; the movement is rapid and of brief duration, and the stamen flies back when the stimulus is removed. The sense of taste exists, thinks the writer, in the lower orders of plants, such as the algae. If we place in their water particles of diverse nature, only certain ones will be assimilated. Carnivorous plants, like the sundew, will close upon meat, but not upon a pebble. Moreover the tentacles secrete a fluid as if the mouth were watering. The sense of direction is shown by the way in which a root planted upside down will throw its sprouts upwards and its rootlets downwards.

But what is the difference between a sense and a reaction to stimulus? Most people would answer that the former is conscious and the latter is not. But a little reflection will show that we can attach no real meaning to such words as "automatic," "reflex," and the like. Some kind of consciousness and volition must lie at the root of every action, though we need not assume that these kinds of consciousness are like our own. The objective study of nature familiarizes us with phenomena but does not reveal their causes. If it be within the range of human attainment to contact nature more intimately, there must be vast ranges of knowledge yet before us.

*Μακάριοι οἱ καθαροὶ τῆ καρδία, ὅτι αὐτοὶ τὸν Θεὸν ὄψονται.*

"Fortunate are the pure in heart, for it is they who will see —."



INTELLIGENCE is, from its nature, as universal as the laws of the Universe. Bodies are merely the local fitting of intelligence to particular modifications of universal matter or Force. — *World-Life*

## EVOLUTION OF ANIMALS: by H. Travers



CORRESPONDENT to *The English Mechanic* writes in reference to some query:

Palaeontologists rarely consider the past in the light of the present. Within historic times many species have disappeared from the earth; but in all cases that disappearance may be traced to the action of man. It has not been due to upheavals of the earth, nor to shortage of food, nor to any natural cause of that kind. What certain evidence have we that such causes were more operative in the past? The dodo has disappeared without leaving a descendant. What evidence have we that it had an ancestor—that it ever was anything but a dodo? What evidence have we that the great bird-like monsters of geological times did not simply die out without leaving anything to perpetuate their race? Is there any evidence that the crocodiles and alligators of today can claim descent from the saurians of days gone by? . . .

With regard to man himself we may speculate, but have we a tittle of real evidence that he was ever anything but what he is today?

There has, of course, been too much tendency to attribute effects to the operation of “laws” and “forces,” rather than to the actions of living and intelligent powers. We have always thought, too, that the influence of man as a geological agent has been too much ignored. Think of the stupendous transformations he effects today, in changing the surface of the ground, transporting materials, bringing about chemical changes. Think of the animals he kills, exterminates, imports, and breeds.

The writer’s remarks about the animal species would seem to require, either that the number is continually lessening, or that new ones appear. The teachings in *The Secret Doctrine* are to the effect that the major transformations in animal forms are partly accomplished on one of the formative astral planes.

The following quotations from *The Secret Doctrine* illuminate this point:

Every new Manvantara brings along with it the renovation of forms, types and species; every type of the preceding organic forms—vegetable, animal and human—changes and is perfected in the next, even to the mineral, which has received in this Round its final opacity and hardness; its softer portions having formed the present vegetation; the astral relics of previous vegetation and fauna having been utilized in the formation of the lower animals, and determining the structure of the primeval Root-Types of the highest mammalia.—*The Secret Doctrine*, Vol. II, p. 730.

There are centers of creative power for every ROOT or parent species of the host of forms of vegetable and animal life. . . . There are certainly “designers.”

. . . That they work in cycles and on a strictly geometrical and mathematical scale of progression, is what the extinct animal species amply demonstrate; that they act by *design* in the details of minor lives (of side animal issues, etc.) is what natural history has sufficient evidence for. In the *creation* of new species, departing sometimes very widely from the Parent stock, as in the great variety of the *genus Felis*—like the lynx, the tiger, the cat, etc.—it is the “designers” who direct the new evolution by adding to, or depriving the species of certain appendages, either needed or becoming useless in the new environments. Thus, when we say that *Nature* provides for every animal and plant, whether large or small, we speak correctly. For it is those terrestrial spirits of Nature, who form the aggregated Nature; which, if it fails occasionally in its design, is neither to be considered blind, nor to be taxed with the failure; since, belonging to a *differentiated* sum of qualities and attributes, it is in virtue of that alone *conditioned and imperfect*.—*Ibid.* II, 732.

In giving the above sample extracts from *The Secret Doctrine*, we have no wish to interfere with the beliefs of people who are satisfied in their own minds and seek no further knowledge. But there will be many among our readers in whom the desire for more knowledge about evolution and kindred subjects prevails. To such it may be said that it is hopeless to expect to arrive at the *truth* if we begin by ignoring facts. And the particular fact to which attention is here called is the fact that *the body of an animal is not the animal itself*. Therefore, if we wish to achieve results in our speculations as to animal evolution, we must decide to regard the animal as primarily a living (animal) soul which *has* a body or is incarnate in a body. The main question in evolution, then, is What is the origin, history, and destiny of this living soul? (The word “soul” is of course not used in the theological sense or as implying a self-conscious immortal Soul such as pertains to Man.) To put the matter in another way, we cannot hope to gain an adequate idea of evolution by studying its physical aspect alone; we must consider also the psychic and mental aspects. It will also be readily conceded by a judicious mind, not harried by impatience, that the full and actual facts regarding such a stupendous subject cannot wholly lie within the compass of our present limited stock of ideas; and that much time and study are demanded. Knowledge (of the kind worth having) must be *won*, nor does a smattering of education and notions of self-importance necessarily qualify the possessor for the post of Sage.

## ATOMS, MOLECULES, AND ELECTRONS:

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



IT has often been pointed out that chemistry, while familiar with the states of substances before and after a chemical reaction, has known practically nothing about their condition during the time that elapses between those initial and final states. When molecules break up, their constituent atoms recombining into different molecules, there must be a time when the atoms exist for the moment in the free state. The phenomenon of "nascent hydrogen" was thus explained. Compounds which cannot be deoxidized by passing hydrogen gas into their solution can often be deoxidized if the hydrogen is generated *in* the solution — for example, by adding zinc and a dilute acid. The explanation given is that in the former case the hydrogen exists in the form of diatomic molecules, the affinities of the atoms being thus largely satisfied by each other; while in the latter case the hydrogen is liberated from the acid in the form of disunited atoms, which combine with the oxygen of the compound to be deoxidized, before they have time to combine with each other into molecules of hydrogen. In short, hydrogen is more active in the atomic form than in the molecular form. Professor Silvanus Thompson, writing on electricity, many years ago, mentions a theory of electrolysis based on the same idea. According to this, all molecules are in a continual state of throwing off and interchanging their atoms, so that the diatomic molecules of gases like hydrogen and oxygen are not permanent couples but couples in which the partners are often exchanged. In electrolysis the electric current seizes upon any atoms that happen to be loose at the time and carries them to the positive or negative electrode. This explains why so little energy is necessary, for the process is not one of decomposition so much as one of delicate sifting.

Lately Sir J. J. Thomson has devised means of examining substances while in the state intermediate between decomposition and recombination. This is done in a vacuum tube by observing the effect produced on the rays of the electric discharge; and Thomson has shown that an examination of the positive ray spectrum of marsh gas discloses the presence of molecules of the composition  $\text{CH}$ ,  $\text{CH}_2$ , and  $\text{CH}_3$ , intermediate products, unable under ordinary circumstances to exist in the free state. But his investigations have gone farther than this; and we are now becoming familiar with the conception of an *atom* as a system of still smaller particles (electrons) revolving

around one another in a way similar to that of the planets in a solar system. These atomic systems are constantly throwing off particles and receiving others, so that the chemical elements are more like waves in the ocean than like pebbles on the shore.

But when we think of a wave apart from the water, we at once quit the plane of physical objects. In the physical world we cannot have a wave alone, but there must always be some fluid substance in which the wave-motion can inhere. And when we try to *imagine* a wave as existing by itself and apart from any fluid, then we simply create in our imagination an imaginary fluid, like air. In short, we have now substituted an imaginary object for the physical object; we are studying the contents of our imagination. Most people, in performing this process, merely transfer the sea-water to their imagination, so that their ideal wave becomes precisely similar to the actual wave, and their analysis has not really carried them a single step farther. But if we are to conceive of a wave *per se*, with the object of finding out what is that thing which so agitates the water, then clearly it is essential to eliminate from our imagination all ideas of physical matter and its properties of extension, inertia, etc.

Returning to the question of the atoms — we have the idea of an atom as a particular grouping of electrons. Take away the electrons and what is left? Only the grouping remains. A company is a number of men standing in rank and file; we can have a company of men or a company of ants, but not a company *alone*. So the wave, the company, and the atom all belong in one class — they are abstractions. Those who prefer to think in concrete terms would say that something is added to the electrons to make them become atoms, something is added to the water to throw it into waves, something is added to the men to make them assume the form of rank and file. But some scientific thinkers often seem to imagine that nothing can exist unless it has extension, inertia, and other characteristics of the physical plane. It is surely a mistake thus to limit nature by the limits of our own powers of conception.

*Life* is everywhere in the universe, and physical matter is one of its manifestations. But life itself must be able to exist in a state wherein it has none of the peculiar properties of physical matter, so that it does not “occupy space,” is not subject to gravitation, does not conform to the mathematical equations connecting energy, velocity, etc. The more delicate means recently invented by physicists

have enabled us to track life down a stage or two farther; though it no longer affects our senses, we can trace it by some of its effects. But finality cannot be reached by this method, nor can we obtain an adequate explanation of what life is by attempting to define it in terms of physical space, etc. Yet we feel life in our own body, where we find it intimately connected with *mind*; and this gives a hint as to the direction our researches ought to take.

### ANCIENT AND MODERN CALENDARS: by T. Henry



THE Perpetual Calendar: Its Reproduction as a Lost Art," is the subject of a paper in *The Scientific American Supplement* by L. J. Heatwole, Co-operative Observer U. S. Weather Bureau. The writer speaks with admiration of the perpetual calendar system which seems to have been universally known in antiquity, and which provided for the unevenness of the solar year with at least as much exactitude as does our Gregorian system, while being far more symmetrical, especially in the matter of weeks and months, than the latter. This system, he points out, was based on the number SEVEN, the greatest of all the mystic numbers. Six days with a sacred seventh made up the week, and 52 weeks made the year. An extra week was intercalated at fixed intervals, and this intercalation was omitted at certain other and longer intervals. The Egyptian system comes in for commendation, the writer pointing out that long ages of observation must have preceded so perfect a system. And indeed we must either suppose such ages or else infer that the ancients had other means of ascertaining the exact length of natural cycles — such, for instance, as a knowledge of the mathematical principles underlying the motions of the celestial bodies.

The existence of these ancient calendars, especially that of the Hindûs and their marvelously accurate tables of the revolutions of the planets and their nodes and apses, constitutes one of the most irrefragable proofs of the truth of the Theosophical teachings with regard to the Wisdom-Religion of antiquity. And the marvel becomes all the greater if we deny to these ancient astronomers the knowledge of those elaborate instruments which to us are so indispensable. Only by long ages of careful investigation and recording, or by *some other means* not at our disposal, could they have arrived at the data.



During the earlier years of our civilization we formed the habit of regarding all antiquity as representing a more rudimentary stage of intelligence and culture, and this led us to view ancient ideas with a prejudiced vision. Later on the progress of geographical and archaeological discovery revealed to us in part the fact (which will be more fully disclosed as years roll on) that our view of antiquity was erroneous, being due to the impetuosity of our youth. In respect to the calendar, we had supposed that certain civil years and rough approximations which were in use among ancient nations represented the extreme limits of their knowledge on that subject. Closer examination has shown that in India, although many different kinds of year are in use even today, the exact length of the solar year was known in very ancient times; and it is the same in other countries. Altogether, in studying chronology, we find a great mass of data concerning various kinds of civil calendars and systems of intercalation; and the whole points to a very extensive knowledge and study of the subject in antiquity. It would be a curious commentary on our previous attitude towards antiquity if we should find ourselves obliged to re-adopt some one or more of the systems used by the ancients.

Our present knowledge of natural cycles seems deficient in many respects. It is mainly limited to the day, the month, and the year; but it seems unlikely that the scale stops short of these divisions at either end. If so many days make a month, and so many months make a year, then what comes after the year, and what divisions are there smaller than the day? It is possible that there are natural cycles so far unknown to modern astronomy but known of old; and, if so, then these cycles might, by their intersections with the smaller cycles, give rise to more than one species of year. This would account for the use of years of 360, 364, etc. days. Again, we have no *natural* divisions corresponding to the hour, minute, or second; though it would seem that there should be some such divisions approximating to the numbers 24 and 60, just as the natural month and year approximate to 30 and 360.

However, a pursuit of the subject of chronological systems would lead us into many details and carry us very far afield. Such a study will be found to confirm the opinions above expressed — namely that great knowledge of natural laws existed in pre-Christian times, and that this knowledge included the possession of a profound mathematical key, applicable to astronomy, chronology, architecture, etc.

## PREHISTORIC AMERICA: by an Archaeologist



THE amount of archaeological research now being carried on in the Americas is enormous and provides such ample material that one can only make a random selection from it. Taken together, these discoveries amply confirm the teachings of Theosophy, that the present aboriginal races in America were preceded by great civilizations, of which they are probably the remote descendants; and that these civilizations were connected with those in the Old World, such as Egypt and India. The following are a few items, chosen almost at random from a large quantity.

### MEXICO

In *The Mexican Herald* for October 16, 1910, is an article on the prehistoric ruins of Guerrero, which begins by quoting the words of Orozco y Berra, the Mexican historian, written sixty years ago, that "In the state of Guerrero will probably be found one of the oldest sites of the American race." The author of this article is William Niven, the well-known archaeological explorer in Mexico; and the territory of which he writes lies south of the Balsas River, about 300 miles southwest of Mexico City. Over a region of fifty square miles there are remains of prehistoric dwellings and scores of pyramids and mounds. One mile north of the town of Placeres del Oro there are three of these pyramids in a row, and the river at its yearly floods has been for ages encroaching on the bank whereon the pyramids stand, until about one-fourth of the structures has been washed away down to the foundations, revealing a perpendicular section. Projecting from this surface the explorer found a slab of diorite rock, under which was another similar slab; under the second was a third slab, which proved to be sculptured, while ten inches below this was another sculptured slab. The space between was filled with a number of interesting objects.

The carvings on the slabs represent the geometrical patterns familiar to students of these American antiquities, together with faces, snakes, and figures believed to represent signs of the zodiac, the sun, and other astronomical emblems. In the space between the carved slabs were found a gray diorite incense burner, representing the profiles of two animal heads; a smaller one containing human teeth and a green jade amulet carved in a human face; a number of square shell buttons; two conch shells; and many other articles. The most

interesting were two large shells, one of which, in perfect preservation, was covered with engravings of monkeys, and other hieroglyphics.

The explorer says that judging by the depth of the sepulcher, the depth of the channel of the Río de Oro from below the foundations of the pyramids, over twenty feet in solid formation, and the extent of the territory over which the ruins are scattered, in reality hundreds of square miles, the race must have been of great antiquity.

#### BOLIVIA

In the *Chicago Blade*, April 22, 1911, W. D. Boyce writes on explorations in Bolivia. On the shores of Lake Titicaca are the ruins of large buildings built by a race that inhabited this region before the rise and power of the Incas. These people trace their origin to an "Adam" and an "Eve," who lived in a "Garden of Eden" on the Isla del Sol in Lake Titicaca. The pre-Inca foundations are of huge granite stones accurately cut; the writer thinks they must have been brought from the mountains by water in specially cut channels. The railroad has taken out 500 car-loads of these stones from Tiahuanuco to use in constructing bridges. There are four large stone steps leading to a head step which is a single hewn stone 32 by 16 feet, and on each side of it are two huge pillars. This is the entrance to the court of the Temple of the Sun, and all around are strange figures cut from blocks with curious inscriptions on them. Archaeologists say that in Tiahuanuco flourished the most advanced of the ancient American civilizations. In this section are found the Aymarás, descendants of a people conquered by the Incas.

#### GUATEMALA

The remains of the Mayas in Guatemala and British Honduras form an interesting study; for in a land of almost impassable jungles are found the vestiges of a cultivated country with roads and stone-built cities. Archaeologists from Harvard University have been exploring these sites for 25 years, and *The Boston Post* for June 5, 1910, gives an account of a recent expedition by Dr. A. M. Tozzer and R. E. Merwin. After encountering the perils of the forest, with its wild animals and hostile tribes, they discovered and unearthed four buried cities. The meaning of the Maya language systems and hieroglyphics still forms a puzzle which many savants are striving to solve; and the massive and elaborately carved architecture proves that the race which executed it was equal to that which executed the monuments of ancient Egypt. Their sculptures evince great taste in decorative

art and skill in portraiture; while, like the Egyptians, they evidently possessed pigments that were both beautiful and enduring. So far as the symbols have been interpreted they suffice to show that this ancient people possessed that wonderful but forgotten astronomical and chronological knowledge which the ancient world seems to have had.

#### ECUADOR

From Ecuador it is reported by an expedition under the direction of Dr. Marshall H. Saville, professor of archaeology at Columbia University, that at least 3000 tombs have been opened in the neighborhood of Ángel in the province of Carchi. All this excavation took place in consequence of a gold rush, and the gold and silver objects found in the tombs went into the melting-pot; but the archaeological expedition profited by the work of the gold-seekers and brought away the other relics. This again proves the existence of a highly cultured people in times long past, which disappeared and was followed by tribesmen.

#### ARIZONA

Arizona is another site of ancient life. In the Los Angeles *Examiner* for Jan. 8, 1911, is an account of an expedition by Mr. A. Lafave, a mining engineer and archaeologist, who investigated an ancient city in the Mazatzal Mountain, near the town of Payson, which he believes to be older than Babylon and Nineveh, older even than the Chimu civilization discovered by Hewitt Myring in Peru. The buildings, made chiefly of sandstone, show architectural skill. An accumulation of ten feet or more of earth covers the ruins on a plain where it could only be accumulated by wind. This wind-blown dust would require ages to accumulate, and it cannot be wash, because the city lies higher than the surrounding country. There were the usual exquisitely designed pottery, stone-work, and other evidences of culture.

#### QUIRIGUÁ

At Quiriguá, in the center of the Guatemalan jungle, Charles F. Lummis, an archaeologist of Los Angeles, California, investigated ruins which he says "prove the nation that dwelt there was superior to the native races of the American continents. A spot of twenty acres had to be cleared and many lofty trees felled. This had to be done with extreme caution to avoid injuring valuable monuments. One of these monuments was twenty-six feet above the ground and

sixteen feet below, and weighed about 140,000 pounds; and there were many like it. But the greatest discovery was a palace which must have been magnificent. It was surrounded by columns, and the frieze around the base of the walls, one hundred and ten feet on two sides, was covered with carved human heads."

Writing in *The Theosophist*, Vol. I. (1879), H. P. Blavatsky says:

All along the coast of Peru, all over the Isthmus and North America, in the canyons of the Cordilleras, in the impassable gorges of the Andes, and especially beyond the valley of Mexico, lie, ruined and desolate, hundreds of once mighty cities, lost to the memory of men, and having themselves lost even a name. Buried in dense forests, entombed in inaccessible valleys, sometimes sixty feet underground, from the day of their discovery until now they have ever remained a riddle to science, baffling all inquiry, and they have been muter than the Egyptian Sphinx herself. We know nothing of America prior to the Conquest — positively nothing. No chronicles, not even comparatively modern ones, survive; there are no traditions, even among the aboriginal tribes, as to its past events. We are as ignorant of the races that built these cyclopean structures as of the strange worship that inspired the antediluvian sculptors who carved upon hundreds of miles of walls of monuments, monoliths, and altars, these weird hieroglyphics, these groups of animals and men, pictures of an unknown life and lost arts. . . .

How came these nations, so antipodal to each other as India, Egypt, and America, to offer such extraordinary points of resemblance, not only in their general religious, political, and social views, but sometimes in the minutest details? The much needed task is to find out which of them preceded the other; to explain how these people came to plant at the four corners of the earth nearly identical architecture and arts, unless there was a time when, as assured by Plato and believed in by more than one modern archaeologist, no ships were needed for such a transit, as the two worlds formed but one continent. . . . [See *Century Path*, Aug. 25, 1907]

"The coast of Peru," says Mr. Heath, "extends from Tumbes to the River Loa, a distance of 1233 miles. Scattered over this whole extent, there are thousands of ruins besides those just mentioned . . . while nearly every spire and hill of the mountains have upon them or about them some relic of the past; and in every ravine, from the coast to the central plateau, there are ruins of walls, cities, fortresses, burial-vaults, and miles and miles of terraces and watercourses. Across the plateau and down the eastern slope of the Andes to the home of the wild Indian, and into the unknown impenetrable forest, you still find them. . . . Of granite, porphyritic lime, and silicated sandstone, these massive, colossal, cyclopean structures have resisted the disintegration of time, geological transformations, earthquakes, and the sacrilegious destructive hand of the warrior and treasure-seeker. The masonry composing these walls, temples, houses, towers, fortresses or sepulchers, is uncemented, held in place by the incline of the walls from the perpendicular and by the adaptation of each stone to the place designed for it, the stones having from six to many sides, each dressed and smoothed to fit another

or others with such exactness that the blade of a small penknife cannot be inserted. . . . These stones . . . vary from one-half cubic foot to 1500 cubic feet solid contents." . . . Estimating five hundred ravines in the 1200 miles of Peru, and ten miles of terraces of fifty tiers to each ravine . . . we have 250,000 miles of stone wall, averaging three to four feet high — enough to encircle this globe ten times. [See *Century Path*, Sept. 29, 1907]

#### THE CHIMU

In the Chimcana Valley of Peru, Mr. T. Hewitt Myring recently discovered a civilization dating back at least 7000 years, showing high culture and civilization. Seven hundred and fifty examples of pottery were unearthed, of an age which some estimate at 5000 and others at 10,000 B. C.; and all this was dug out of a single tumulus, some three miles in extent and containing 2000 graves. No photographs can give an idea of the delicacy of the coloring, high finish, and wonderful preservation of the art-works; the painting and modeling give a graphic picture of the life and character of these people. There are many heads, statuettes, and vessels ornamented with heads; and the most remarkable point is the portraiture. The features of this ancient race seem to have been what we now call "Aryan." They exhibit not only great refinement of type but remarkable variety. Contrasted with bold warrior heads or with faces of intellectuality are snub-nosed grotesques and grinning caricatures; the whole showing, on the part of the artists, a versatility, a richness of resource, and a variety of material for models, such as is quite out of keeping with the idea of an elementary or secluded civilization. Eminent artists have declared that the work could not be excelled by any people now on earth. Much of the symbolism reminds us of the Egyptians: there are asp head-dresses, conventionalized wings, and symbolic crowns. One of the pieces represents a vulture gnawing at the vitals of a man bound to a rock — in which we recognize the same allegory that is preserved in the legend of Prometheus.



IF man ceases to exist when he disappears in the grave, you must be compelled to affirm that he is the only creature in existence whom nature or providence has condescended to deceive and cheat by capacities for which there are no available objects. — *Bulwer-Lytton*

## PLATO, THE THEOSOPHIST:

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

Immortal Plato, justly named divine,  
 What depth of thought, what energy is thine!  
 Whose godlike soul an ample mirror seems,  
 Strongly reflecting Mind's celestial beams:  
 Whose periods so redundant roll along  
 Grand as the ocean, as the torrent strong.<sup>1</sup>



P. BLAVATSKY says: "For the old Grecian sage there was a single object of attainment — *Real Knowledge*. He considered those only to be genuine philosophers, or students of truth, who possess the knowledge of the *really existing* in opposition to the merely seeming; of the *always existing* in opposition to the transitory; and of that which exists *permanently* in opposition to that which wanes and is developed and destroyed alternately."<sup>2</sup> Therefore, in the truest sense, Plato was a student of Divine Wisdom — a Theosophist.

Out of Plato come all things that are still written and debated among men of thought. . . . One would say that his forerunners had mapped out each a farm or a district or an island in the intellectual geography, but that Plato first drew the sphere.<sup>3</sup>

In modern times although generally misunderstood, the founder of the Academy has had at least one true interpreter, Thomas Taylor, who is referred to by H. P. Blavatsky as "that honest and brave defender of the ancient faith whose memory must be dear to every true Platonist."<sup>4</sup> And again in her words: "There are hundreds of expressions in the Platonic Dialogues, which no modern translator or commentator — save one, Thomas Taylor — has ever correctly understood."<sup>5</sup>

Plato came to fulfil and not to destroy the Law and the Prophets, and his words were not his own but the words of those that sent him. Therefore he represents Sokrates as saying just before his death:

My words, too, are only an echo; but there is no reason why I should not repeat what I have heard; and indeed, as I am going to another place it is very meet for me to be thinking and talking of the Pilgrimage which I am about to make.<sup>6</sup>

1. Thomas Taylor, on the Title-page of his Translation of the *Phaedrus*, 1792.

2. *Isis Unveiled*, Vol. I, p. xii.

3. Ralph Waldo Emerson: *Plato, the Philosopher*.

4. *Isis Unveiled*, Vol. II, p. 108.

5. H. P. Blavatsky: "Old Philosophers and Modern Critics," from *Lucifer*, Vol. X, August, 1892, p. 453.

6. Plato: *Phaedo*, 62, c.

## 1. Plato's teachings in regard to the Absolute Deity.

Plato teaches that

beyond all finite existences and secondary causes, all laws, ideas, and principles, there is an Intelligence or Mind (the Spirit), the First Principle of all principles, the Supreme Idea on which all other ideas are grounded; the Monarch and Law-giver of the universe; the ultimate Substance from which all other things derive their being and essence, the First and Efficient Cause of all the order, and harmony, and beauty, and excellency, and goodness which pervade the universe — called by way of pre-eminence and excellence the Supreme Good — “the God over all.”<sup>7</sup>

As every pool reflects the image of the sun, so every thought and thing restores an image of the Supreme.<sup>8</sup>

In the words of Thomas Taylor, Plato and the Platonists

believe in one First Cause of all things whose nature is so immensely transcendent that it is even superessential (i. e. beyond and above the realm of existence); and that in consequence of this it cannot properly either be named or spoken of, or conceived by opinion or be known or perceived by any being.<sup>9</sup>

This immense principle is superior even to being Itself; exempt from the whole of things, of which it is nevertheless ineffably the Source.<sup>10</sup>

If it be lawful to give a name to that which is truly ineffable, the appellations of the One and the Good are of all others the most adapted to it; the former of these names indicating its transcendent simplicity as the Principle of all things, and the latter indicating that it is the ultimate desire of all things.<sup>9</sup>

However, these appellations are in reality nothing more than the parturitions of the soul, standing as it were on the vestibule of the Adytum of Deity, and announce nothing pertaining to the Ineffable, but only indicate the spontaneous tendencies of the soul towards It.<sup>10</sup>

It is thus evident that this Platonic conception of the Supreme Deity is identical with the first fundamental of Theosophy, defined by H. P. Blavatsky as

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.<sup>11</sup>

## 2. Plato's teachings in regard to the Cyclic Law and the Periodical Catastrophes.

The second fundamental is stated by H. P. Blavatsky to be the eternity of the Universe in toto as a boundless plane; periodically “the playground of numberless universes incessantly manifesting and disappearing.”<sup>12</sup>

7. Cocker: *Christianity and Greek Philosophy*, p. 377. 8. Ralph Waldo Emerson: *Plato, the Philosopher*.

9. Thomas Taylor: *Miscellanies* (The Platonic Philosopher's Creed), 2nd Ed., 1820, p. 30. 10. Thomas Taylor: Introduction to *Proclus on the Theology of Plato*, 1816, p. ix.

11. H. P. Blavatsky: *The Secret Doctrine*, Vol. I, p. 14. 12. H. P. Blavatsky: *Ibid.*, Vol. I, p. 16.



For in the words of Plato:

if generation were in a straight line only and there were no compensation or cycle in nature, no turn or return into one another, then you know that all things would at last have the same form and would pass into the same state and there would be no more any generation of them.<sup>13</sup>

There have been and will be again, many destructions of mankind arising out of many causes; the greatest have been brought about by the agencies of fire and water and the lesser by innumerable other causes.<sup>14</sup>

STRANGER: Do you believe that there is any truth in the ancient traditions?

KLEINIAS: What traditions?

STRANGER: The traditions about the destructions of mankind occasioned by deluges and by pestilence and in many other ways, and of the survival of a remnant?

KLEINIAS: Every one is disposed to believe them.

STRANGER: Let us consider one of them which was caused by the famous deluge.<sup>15</sup>

There occurred violent earthquakes and floods; and in a single day and night of rain — the island of Atlantis — disappeared and was sunk beneath the waves. And that is the reason why the sea in those parts is impassable and impenetrable because there is such a quantity of shallow mud in the way; and this was caused by the subsidence of the island.<sup>16</sup>

3. Plato's teachings in regard to Karma, the nature of the Individual Soul, its Pre-existence, and Rebirth.

Plato emphatically affirms the doctrine that the soul is judged unerringly and recompensed exactly according to its merit or demerit, for "Justice always accompanies the Deity and is the punisher of those who fall short of the Divine Law."<sup>17</sup> "To go to Hades with a Soul full of crimes is the worst of all evils."<sup>18</sup> "When a man dies he possesses in the Other World a destiny suited to the life which he lived here."<sup>19</sup> And again, "we shall in Hades suffer the punishment for our misdeeds here."<sup>20</sup>

The Deity ought to be to us the measure of all things. . . . And he who would be dear to God must, as far as possible, be like Him and such as He is.<sup>21</sup>

Of all things which a man has, next to the Gods, his soul is the most Divine and most truly his own.<sup>22</sup>

We are plants not of earth but of Heaven.<sup>23</sup>

Sir Thomas Browne, the author of *Religio Medici*, is echoing Plato

13. *Phaedo*, 72, a-b. 14. *Timaeus*, 22, c. 15. *Laws*, 676, c; 677, a-b. 16. *Timaeus*, 25, c-d. 17. *Laws*, 716, a. 18. *Gorgias*, 522, e. 19. *Republic*. 20. *Republic*, 366, a. 21. *Laws*, 716, c. 22. *Laws*, 726, a. 23. *Timaeus*, 90, a.

when he declares: "There is surely a piece of Divinity in us: something that was before the elements and that owes no homage unto the sun!" "In the human soul there is a better and a worse principle; and when the better has the worse under control, then a man is said to be master of himself."<sup>24</sup> Thoroughly Platonic also is the following magnificent passage of Plotinos thus translated by the Cambridge Platonist, John Smith:

Having first premised this Principle "That every Divine thing is immortall" (saith Plotinos), let us consider a Soul not such a one as is immerst into the Body, having contracted unreasonable Passions and Desires; but such a one as hath cast away these, and as little as may be communicates with the Body: such a one as this will sufficiently manifest that all vice is unnaturall to the Soul, and something acquired only from abroad; and that the best Wisdome and all other Vertues lodge in a purged Soul, as being allyed to it. If therefore such a Soul shall reflect upon itself; how shall it not appear to itself to be of such a kind of nature as Divine and Eternall Essences are? For Wisdome and true Vertue being Divine Effluxes can never enter into any unhallowed and mortall thing; it must therefore needs be Divine, seeing it is fill'd with a Divine nature by its kindred and consanguinity therewith. Whoever therefore amongst us is such a one, differs but little in his Soul from Angelicall Essences; and that little is the present inhabitation in the Body, in which he is inferiour to them. And if every man were of this raised temper, or any considerable number had but such holy Souls, there would be no such Infidels as would in any sort disbelieve the Soul's Immortality. But now the vulgar sort of men beholding the Souls of the generality so mutilated and deform'd with vice and wickedness they cannot think of the Soul as of any Divine and Immortall Being; though indeed they ought to judge of things as they are in their own naked essences, and not with respect to that which extra-essentially adheres to them; which is the great prejudice of knowledge. Contemplate therefore the Soul of man, denuding it of all which itself is not, or let him that does this view his own Soul: then he will believe it to be Immortall, when he shall behold it, fixt in an Intelligible and pure nature; he shall then behold his own Intellect contemplating not any Sensible thing, but Eternall things, with that which is Eternall, that is, with itself, looking into the Intellectual World, being itself made all Lucid, Intellectuall, and Shining with the Sunbeams of Eternall Truth, borrowed from the First Good, which perpetually rayeth forth his Truth upon all Intellectual Beings. One thus qualified may seem without any arrogance to take up that Saying of Empedocles — "Farewell all earthly allies, I am henceforth no mortall wight, but an Immortall Angel," ascending up unto Divinity, and reflecting upon that Likeness of It which I find in myself. When true Sanctity and Purity shall ground him in the knowledge of Divine things, then shall the Inward Sciences, that arise from the bottome of his own Soul, display themselves; which indeed are the only true Sciences; for the Soul runs not out of itself to behold Temperance and Justice abroad, but its own Light sees them in

24. Plato, *Republic*, 431, a-b.

the contemplation of its own Being, and that Divine Essence, which was before enshrined within itself.<sup>25</sup>

Plato, therefore, as every true Theosophist, teaches the complete Immortality of the Soul, its birthlessness as well as its deathlessness. Formerly, it dwelt in the world of Divine Ideas amid the essential realities whose shifting shadows alone are now beheld upon earth in the present condition of bodily imprisonment; but in the Empyrean is the glorious world of Incorruptible Truth, Beauty, and Goodness, the Abode of the Gods, and the native land of the human Soul, now a banished Pilgrim in this physical world of ours.

With true Platonic insight Maximus Tyrius says: "The very thing which the multitude call death is the birth into a new life and the beginning of Immortality."<sup>26</sup> And Plotinos declares: "The body is the true River of Lethe; for souls plunged in it, forget all."

Plato states that:

The ancient doctrine . . . affirms that the souls of men go from this world into the Other and return hither and are born from the dead.<sup>27</sup> The living come from the dead just as the dead come from the living.<sup>28</sup> I have heard from certain wise men and women who spoke of things Divine that the soul of man is immortal, and at one time has an end, which is termed dying, and at another time is born again, but is never destroyed. And the moral is that a man ought to live always in perfect righteousness. For in the ninth year<sup>29</sup> Persephone sends the souls of those from whom she has received the penalty for "the ancient crime" back again into the light of this world and these are those who become noble kings and mighty men, great in wisdom and are called holy heroes in after ages.<sup>30</sup> The soul, then as being immortal and having been born again many times and having seen all things that are, whether in this world or in the world of unembodied spirits, has knowledge of them all and it is no wonder that she should be able to call to remembrance all that she ever knew about virtue and about everything, for as all nature is akin and the soul has learned all things, there is no difficulty in her eliciting or as men say learning all out of a single recollection, if a man is strenuous and does not faint; for all inquiry and all learning is but recollection.<sup>31</sup> And if the truth of all things always existed in the soul, then the soul is immortal. Wherefore be of good cheer and try to recollect what you do not know or rather do not remember.<sup>32</sup>

25. Plotinos: *Enneads*, IV, 7, 10; John Smith, *Select Discourses*, London, 1660, pp. 104-5.  
 26. Dissertation xxv, on Since Divinity Produces Good, Whence do Evils Originate?  
 27. Plato: *Phaedo*, 70, c. 28. *Phaedo*, 72, a. 29. The number nine refers to a mystic cycle of Orphism, and is one of "the seven boundaries of the soul" represented symbolically by the numbers 1, 2, 3, 4, (2<sup>2</sup>), 8 (2<sup>3</sup>), 9 (3<sup>2</sup>), 27 (3<sup>3</sup>), that is, the first three numbers and their first three powers. 30. Quotation from Pindar, given by Plato. 31. Plato: *Meno*, 80, d-e; 81, a-d. 32. *Meno*, 86, a-c.

In regard to the Platonic teaching that knowledge is soul-recollection Thomas Taylor says with great appropriateness:

Our looking into ourselves when we are endeavoring to discover any truth, evinces that we inwardly contain truth, though concealed in the darkness of oblivion. The delight, too, which attends our discovery of truth, sufficiently proves that this discovery is nothing more than a recognition of something most eminently allied to our nature, and which had been, as it were, lost in the middle space of time, between our former knowledge of the truth and the recovery of that knowledge. For the perceptions of a thing perfectly unknown and unconnected with our natures, would produce terror instead of delight; and things are pleasing only in proportion as they possess something known and domestic to the natures by which they are known.<sup>33</sup>

It is ordinarily claimed that Plato taught transmigration, that is, the possible passing of a human soul into animal bodies, but in this connexion it is noteworthy that the passages quoted in substantiation of this claim occur in the Platonic eschatological myths, which Plato himself warns us should be interpreted symbolically and figuratively, *not* literally. In consequence of this fact we are certainly justified in interpreting Plato's teachings in accordance with those of Theosophy which in the words of H. P. Blavatsky affirms

that nature never proceeds backward in her evolutionary progress. Once that man has evolved from every kind of lower forms—the mineral, vegetable, animal kingdoms—into the human form, he can never become an animal except morally and hence metaphorically.<sup>34</sup>

Therefore the ancient Neo-Platonist Sallust declares:

The Rational Part of man never becomes the soul of an irrational nature, but the truth of rebirth is shown by the environments of individuals at birth; for (how else is it possible to explain) why some are born blind, others imbecile, and others with vicious souls? And, besides, since souls are naturally fitted to perform their own peculiar functions in bodies, it is not appropriate that when they have once left a body they should thereafter remain indolent forever.<sup>35</sup>

Similarly, another ancient Neo-Platonist, Hierokles, in his Commentaries upon the Golden Verses of Pythagoras, explains that

If through a shameful ignorance of the Immortality of the human soul, a man persuades himself that his soul will die with his body, he supposes what can never happen; also he who believes that after his death he shall put on the body of a beast and become an irrational animal because of his vices, or a plant because of

33. Thomas Taylor: *Complete Works of Plato*, Vol. IV, p. 282, note. 34. H. P. Blavatsky: *Isis Unveiled*, Vol. I, Point Loma Preface, p. 15. 35. Sallust: *On the Gods and the World*, xx.

his dullness and stupidity — such a man . . . is infinitely deceived and absolutely ignorant of the essential form of the soul, which can never change; for being and continuing always man, it is only said to become God or beast by virtue or vice, though it cannot be either the one or the other.

The teachings of Plato in regard to the human soul when thus interpreted are in full accord with the third and last basic truth of Theosophy:

the fundamental identity of all souls with the Universal Over-Soul, the latter being itself an aspect of the Unknown Root; and the obligatory pilgrimage for every soul — a spark of the former — through the Cycle of Incarnation or “Necessity” in accordance with Cyclic and Karmic Law.<sup>36</sup>

Therefore Plato is in the fullest sense a Theosophist; for his teachings are the same old truths of the primeval Wisdom-Religion, which have been again brought forward in modern times by the three Theosophical Leaders, H. P. Blavatsky, W. Q. Judge, and Katherine Tingley.

## THE DISCOVERIES IN CRETE AND THEIR SIGNIFICANCE: by Ariomardes



IN reference to the prediction made by H. P. Blavatsky that the early years of the 20th century would witness discoveries tending to confirm the outline of past history given in her great work *The Secret Doctrine*, the results of Sir Arthur Evan’s exploration in Crete are of peculiar interest. This is a matter that is often referred to but can hardly be mentioned too often, since it is only by frequent repetition that a lesson so important can impress itself on the mind. These discoveries have been made in such a way that it is impossible for any historian or archaeologist to ignore them, as there is sometimes a tendency to do in the case of facts that clash awkwardly with our settled convictions and require a troublesome readjustment of our scheme; and though there will naturally be plenty of controversy over the precise inferences to be drawn and the exact significance of the various facts revealed, everybody must make some concession.

The discovery of this civilization, or rather series of civilizations having their center on the island of Crete, has done much to bridge a

36. H. P. Blavatsky: *The Secret Doctrine*, Vol. I, p. 17.

great gap in our knowledge — that gap which is vaguely represented as pre-Hellenic and in which we have broadly indicated, as in the sketchy map of an unknown country, such things as the Pelasgians, the Trojan War and other so-called legends, and the migrations of the several tribes that united to form Greece. The Mycenaean civilization discovered by Schliemann and Dörpfeld had already enlarged our knowledge of the times preceding the later Grecian civilization and done much to confirm the stories of the Greeks themselves; but Evans' explorations deal with a period that *ends* with Schliemann's Mycenaean age and reaches back indefinitely to times contemporary with those of the earliest Egyptian dynasties.

The name by which the discoverer has preferred — provisionally, at any rate — to designate his periods, is "Minoan"; and whatever may be said about the appropriateness of this title, it at least serves conveniently to distinguish them. The name is of course taken from the Palace of Minos, which is believed to form the principal of the discoveries in Crete; and its fitness is confirmed by the fact that the name appears to have been widely known and used at the epochs in question. The whole time has been tentatively divided into nine epochs, namely:

Early Minoan, I, II, and III.

Middle Minoan I, II, and III.

Late Minoan I, II, and III.

The distinguishing of so many periods, each with its particular characteristics, reminds us of what takes place when a previously unexplored territory is mapped. A region which we have been accustomed to slight as of small importance, because the lack of details has made it seem small, at once looms large as soon as the details are filled in. Sir A. Evans himself alludes to the danger of "thinking in millenniums," and refers to a certain book written shortly before his discoveries as giving the impression that between the Neolithic and the Geometric Age there was just time for the Pelasgians to be overthrown by the Achaeans. The writer of this book, he says, has not stopped to think whether the events at his disposal are adequate to account for the happenings of two or three thousand years; and we feel as we might do if required to accept the conquest of the Britons by the Saxons as a full history of the thousand years preceding the Norman invasion of Britain.

One of the most striking and unexpected features of the civiliza-

tion unearthed is its *modern* character, a circumstance which at first led many to doubt its antiquity. As said in Ronald Burrow's *Discoveries in Crete* (1907), from which our quotations are taken:

Minoan art is startlingly modern, and there are few scholars philosophic enough not to receive a series of shocks when they see a scientific drainage and lavatory system and magnificent staircases assigned to a date which is nearer the Third than the First Millennium before our era. The regularity and perfection of the wall-building is of itself staggering to those whose differentiation of the various styles of cyclopean, polygonal, fifth century, fourth century, and Roman construction is based on the comparisons they have made at Tiryns or Athens or Eleusis. This tendency, however, to doubt the early character of Minoan art, natural enough as a first impression, does not generally outlast a day's thinking.

In this connexion we shall do well to remember that a few years ago Hubert Myring discovered in the Chimcana Valley, Peru, the remains of a civilization to which a date of from 5000 to 10,000 years old is assigned, and whose productions showed the same startling modernity. A very large quantity of vases, statuettes, and other utensils and objects of art were found there; and the portraits, grotesques, and other designs on them gave indisputable evidence of an extremely varied and versatile culture among their fabricators. All this is proof of the real law of history — namely, that progress moves in spirals and that humanity consists of many successive races which pass through similar phases. Of this we find further illustration in the following:

The last of Mr. Evans' nine epochs, . . . late Minoan III, is that which has hitherto been most closely associated with the word Mycenaean. Beginning, as it does, shortly before 1400 B. C., it certainly does not close till the end of the XXth Dynasty in 1100, and perhaps stretches on another century into the XXIst. . . . Degeneration has set in, and proceeds steadily and without a break. . . . New types cease to be invented; technical skill lingers on and dies hard, but inspiration has gone. . . . In the later phases . . . technique itself begins gradually to degenerate. . . . The great lesson that Cretan discoveries have taught us is that the art of what we used to call the good or mature Mycenaean type is not on the upward grade, soon to be arrested by a catastrophe, but well on the downward grade, with a catastrophe behind it.

In *Five Years of Theosophy* (published 1885) is the following:

No "traces of old civilizations" we are told! And what about the Pelasgi — the direct forefathers of the Hellenes, according to Herodotus? What about the Etruscans — the race mysterious and wonderful, if any, for the historian, and whose origin is the most insoluble of problems? . . .

Shall the Easterns, like the Westerns, be made to believe that between the high civilizations of the pre-Roman (and we say — *prehistoric*) *Tursenoi* of the Greeks, with their twelve great cities *known* to history; their Cyclopean buildings, their plastic and pictorial arts — and the time when they were a nomadic tribe “first descended into Italy from their northern latitudes” — only a few centuries elapsed? Shall it be urged that the Phoenicians with their Tyre . . . their commerce, fleet, learning, arts, and civilization, were only a few centuries before the building of Tyre but “a small tribe of Semitic fishermen”? — p. 267

In regard to the prospect of yet further elucidation of the problem of history, we are told that pictographic and script writings have been discovered but not yet interpreted; and, having regard to what happened in the case of the Egyptian hieroglyphs and the cuneiforms, we may surely expect the discovery of some bilingual inscription that will give the key.

Of the nine epochs designated as Minoan, the first immediately succeeds the Neolithic Age. Its deposit reaches to a depth of 17 feet below the surface of the soil, while below it the Neolithic remains are found to a depth of from 21 to 26 feet. Sir A. Evans seeks to fix its date by the analogy of its remains to some found in Egypt. Some black hand-burnished ware is stated by Professor Flinders Petrie to be “indistinguishable in color, burnish, and general appearance” from certain vases he found in Ist Dynasty tombs at Abydos; and a syenite vase, and liparite and diorite bowls, found in the Palace of Knossos, if not imported from Egypt are certainly based on Egyptian models of a very early period.

If we thus allow about 3 feet of deposit for every millennium, we get a great age for the Neolithic strata that are below. . . . We need not shrink from the dates of 10,000 or 12,000 B. C. which are thus given to the first settlement of man upon the hill at Knossos.

A great deal of Mr. Burrows' book is occupied with tracing analogies and connexions between the Minoan civilizations and various other centers, Egypt, Asia, the North, the West, etc. This is a process that may easily lead to endless and involved speculation. Similarities are not always due to derivation or migration or intercommunication; they may be due to community of origin. According to the Theosophical teachings, the races which have occupied the earth during our historical period and up to the present have been minor branches of a parent trunk, scattered descendants of a one-time homogeneous race and culture. Archaeology is finding odd pieces of the historical jig-



saw puzzle and trying to fit them together. Frequently, too, it is limited by its own ideas as to what the pattern ought to be.

In the fresco of the Cupbearer the colors were almost as brilliant as when first laid on over three thousand years ago. The portraits show men close-shaven and with flowing hair, the women with puffed sleeves and flounced skirts, altogether ladies of fashion, of whom a French explorer remarked, "Mais ce sont des Parisiennes!"

Of the Palace itself we read:

The great Palace itself, as now excavated, is a vast complex of chambers, courts, and corridors. . . . The dominating feature in the situation is the great central court, a paved area 190 feet long by 90 feet wide, with corridors, halls, and chambers grouped around it, so that the whole forms a rough square that is about 400 feet each way. . . . While the central court was the focus of the inner life of the Palace, there was another court on the west that formed the meeting-ground between Palace and city. Due north of this again, at the extreme northwest corner of the Palace, is the Theatral Area, a paved space, about 40 feet by 30, backed on two sides by tiers of steps. . . . They must have supplied standing-room for rows of spectators. . . . From the theater a paved way led west about 300 yards to the "Little Palace" already mentioned.

The modern plumber may be interested to hear that there was an elaborate drainage system in the living-rooms, with an arrangement of lavatories, sinks, and manholes that is "staggeringly modern." The main drain, coated with cement, was over 3 feet high and nearly 2 feet broad, and smaller stone shafts discharged into it. Terracotta pipes served for connexions; each of them is about  $2\frac{1}{2}$  feet long, with a diameter of 6 inches at the wide end and less than 4 inches at the narrow end, where it fitted into the broad end of the next pipe. Jamming was prevented by a stop-ridge running round the outside of each narrow end at a few inches from the mouth; while the inside of each broad end was provided with a butt to receive the stop-ridge of the next pipe and give a firmer hold for cement. On one staircase there is an elaborate piece of hydraulic science for checking the flow of water. A stone runnel descends the stairs in a series of parabolic curves, which would reduce the velocity of the water and prevent flooding below. Burrows thinks that, apart from the drainage found by Hilprecht at Nippur, we can find no parallel in classical or medieval days for the sanitation of Knossos, but must take the leap direct into our own times.

Those churchmen, of whatever church, who are interested in tracing the venerable foundations of the institutions they reverence, can,

if they so desire, go farther back than medieval or even early Christian times. If competent and candid students of history, they must perforce agree with us that many of the Christian institutions were *adapted* from non-Christian institutions; and it must be their care to justify and sanctify that borrowing. To quote again:

It was long ago suggested that the Roman Basilica, which formed the earliest type of Christian church, was derived both in structure and in name from the "Stoa Basilike" or King's Colonnade at Athens. This was the place where the King Archon . . . tried cases of impiety. It had further seemed possible that the building as well as the title was a survival from some earlier stage, when a king was a king in more than name. What we have found at Knossos seems curiously to confirm this suggested chain of inheritance. At one end of a pillared hall, about 37 feet long by 15 wide, there is a narrow raised *daïs*, separated from the rest of the hall by stone balustrades, with an opening between them in which three steps give access to the center of the *daïs*. At this center point, immediately in front of the steps, a square niche is set back in the wall, and in this niche are the remains of a gypsum throne. The throne is broken beyond repairing, but on the second step a tall lamp of lilac gypsum still stands intact in position. We seem to have here . . . a pillar hall with a raised "Tribunal" or *daïs* bounded by "Cancelli" or balustrades, and with an "Exedra" or seated central niche which was the place of honor. Even the elements of a triple longitudinal division are indicated by the two rows of columns that run down the Hall. Is the Priest-King of Knossos, who here gave his judgments, a direct ancestor of Praetor and Bishop seated in the Apse within the Chancel, speaking to the people that stood below in Nave and Aisles?

"When the King was a King in more than name." In other words, perhaps one may say, when the people were so united and competent that they could nominate a chief and give him their confidence. If this King should by any mischance fail—cease to be a King in more than name—he would cease to be a King even in name; he would step down to make room for another. But as long as he fulfilled the duties and functions of a King, King he would be—to the great advantage of the whole nation.

While on the subject of religion we may mention the Virgin. Deity in ancient times was represented under a feminine as well as under a masculine aspect, as we see in the Isis of Egypt, the Athene of Athens, etc. As the writer points out, sometimes the feminine aspect was over-emphasized, and it was even degraded, thus giving rise to cults. It is to the presence of such cults in the Mediterranean area that our author attributes the greater stress laid by Levantine Christianity on certain aspects of Christianity, as compared with the

more northern Christians. In the sanctuary at Knossos is also found the square equal-armed cross, which may be the reason why the Greek world has preferred this symbol to the Latin cross with its longer upright. But the Cross, of various shapes, is a very ancient symbol of the Wisdom-Religion.

There are no fortifications at Knossos, and doubtless it relied on its insular position and sea-power. Yet this was ultimately the cause of catastrophe; for we find signs of a sudden and overwhelming end involving a great conflagration and plundering. Nearly all metals were carried off, yet probably the conflagration has contributed to the preservation of the clay tables by baking them hard.

With regard to the ceramic art we read:

The fabric of porcelain introduces us to an art that was utterly unexpected in the Aegean world, with its delicate shades of green and white and brown and lilac. . . . The technique of the Minoan craftsman in ivory was no less perfect than in porcelain. . . . In one case it has been possible to reconstitute the whole figure of a boy, about 11½ inches high. He is in the act of jumping, with head gracefully thrown back, and arms and legs outstretched. Not only are the muscles faithfully rendered, but even the veins on the back of the hand, and the finger-nails; while the hair is represented by curling bronze wire plated with gold. . . .

The bank of crushed murex shell that Professor Bosanquet found here [the island of Leuke], and again at Palaikastro, in company with a whole mass of Kamáres pottery, shows that the men of Sidon and Tyre were not the first to practise the dyeing of purple.

[Of the figures on a vase:] The ideal grace and dignity of these two figures, the pose with which they throw head and body back, is beyond any representation of the human figure hitherto known before the best period of Archaic Hellenic art.

Other places must be mentioned besides Knossos itself, and these will doubtless yield up more secrets to the future.

At Gournia, in a sheltered bay on the northern coast, Miss H. A. Boyd has unearthed a whole city, continuously inhabited during the greater part of the Minoan age, but since that time so entirely deserted that many of the best objects of bronze and terracotta were found within less than 2 feet of the surface. We see here the ground-plan of masses of houses, with their upper walls of fire-baked brick on a basis of stone, and traces of staircases and second stories. . . . We can pass up to the palace on the hill through street after street of the houses of the people, treading the narrow five-foot roadway of flagged stones as it winds through them like the Sacred Way at Delphi or at Rome. . . . At Roussolakkos, the "red hollow" at Palaikastro, . . . there has been excavated just another such city as at Gournia. . . . Above all, at Phaestos, in the center of the southern

coast, some ten miles from Gortyna, Dr. Halbherr and the Italian Mission have excavated a Palace which from the architectural point of view is as magnificent as that of Knossos itself.

The discovery of the scripts, linear and pictographic, has brought out a most important point, that writing was familiar to this ancient civilization. Crete has also made a notable contribution to the Homeric problem by proving that the glowing descriptions in the Iliad and Odyssey, such as that of Achilles' shield and the Palace of Alkinoos, were no mere imaginings, but drawn from actual observations. That weapons were not begrudged splendid ornamentation is shown by the dagger-blades at Mycenae. In the porcelain plaques decorating a chest of cypress wood we have a picture of life such as is described in the 18th Iliad.

The book, as said above, naturally speculates a great deal as to the connexions of the Minoan civilizations with various quarters of the surrounding country, with the East, the West, the North, and the South. This is an inconclusive occupation; similarities may be due to derivation, migration, community of origin, and so forth. Without attempting, therefore, to thread the mazes of these conjectures, we conclude with apposite quotations from *Five Years of Theosophy*:

Times have changed, are changing. Proofs of the old civilizations and the archaic wisdom are accumulating. Though soldier-bigots . . . have burnt books and converted old libraries to base uses; though the dry-rot and the insect have destroyed inestimably precious records; though within the historic period the Spanish brigands made bonfires of the works of the refined archaic American races, which, if spared, would have solved many a riddle of history; though Omar lit the fires of the Alexandrian baths for months with the literary treasures of the Serapeum; though the Sibylline and other mystical books of Rome and Greece were destroyed in war; though the South Indian invaders of Ceylon "heaped into piles as high as the tops of cocoanut trees" the *ollas* of the Buddhists, and set them ablaze to light their victory—thus obliterating from the world's knowledge early Buddhist annals and treatises of great importance: though this hateful and senseless vandalism has disgraced the career of most fighting nations—still, despite everything, there are extant abundant proofs of the history of mankind, and bits and scraps come to light from time to time by what science has often called "most curious coincidences."—p. 266

That no "appreciable trace is left of such high civilization" is due to several reasons. One of these may be traced chiefly to the inability . . . of the modern archaeologist to distinguish between excavations and ruins 50,000 and 4000 years old.—p. 263

So far archaeology knows nothing of the sites of other and far older civilizations, except the few it has stumbled upon, and to which it has assigned their

respective ages, mostly under the guidance of biblical chronology. . . . There are other sites where it could profitably excavate. The immense "Salt Valley" of Dasht-Beyad by Khorassan covers the most ancient civilizations of the world; while the Shamo desert has had time to change from sea to land, and from fertile land to a dead desert, since the day when the *first* civilization of the Fifth Race left its now invisible, and perhaps for ever hidden "traces" under its beds of sand. pp. 264-5

### CYCLES WITHIN CYCLES: by C. W. A.



WRITER in *Cosmos* recently reminded us that a large number of elements are now known to be radio-active on their own account, besides that some of them are so because containing radium. Radio-activity may doubtless be assumed for all of them, despite that experimentation has as yet shown no results in the case of lead and a few others.

Radio-activity means that the atoms are breaking down, disintegrating, flinging away electrons and becoming simpler, more elementary.

In addition to this a grosser disintegration is going on, also probably in all of them. It was found a few years ago that even gold, kept under glass for a sufficient time, loses by *evaporation* a minute proportion of its weight, depositing a (spectroscopically) detectable film on the glass or a plate of lead above. The crystals and systems of molecules are breaking down into separate molecules, the atoms of these into electrons.

Lucretius was right; nothing is stable. When little particles of matter, carbon or anything else visible enough, are suspended in a fluid medium, microscopic examination shows that they are in constant rapid oscillatory motion — called, after its discoverer, "Brownian." The less resistant the medium the faster the motion. And also the smaller the particles the faster the motion. There is reason to suppose that when the particles are as small as molecules the same law holds, the oscillation being inconceivably rapid. It is doubtless this ceaseless motion that in the end proves the death of the crystals, their disintegration. And the same motion, obtaining as it must *within* the molecule and atom, motion of the composing electrons, causes the disintegration which is responsible for radio-activity.

Everywhere disintegration, evolved substance returning to more

elementary conditions, perhaps to *the* elementary condition of all. But what of the opposite, the other half of the cycle, integration? Inorganic chemistry has not yet lighted on anything of the sort, on the opposite of radio-activity, the growth of an atom, say of helium or hydrogen, up the scale say to potassium, still less to radium.

In the organic world there is of course plenty of visible growth. Cells build up complex molecules from simple ones. The force with which they work comes from the sun, and it is only during a certain cycle of *life* that they can absorb this. When that cycle is over for them the complex molecules they have built resolve again into the simpler ones. Is there something in the inorganic world corresponding to this life in the organic, enabling the atoms to harness and absorb free electrons and thus rise in the scale? And does radio-activity of an atom imply the ending of its life-cycle, its death? If, during its life-cycle it can and does utilize solar energy to build itself with, we end again in the sun. Where did *he* get his energy? From disintegrating radium, is the most modern of answers. But in that we are back to our former place. How came the growth of that radium whose ungrowth feeds us? By every path we get to some such problem in the end. If theory will not accept *the will to live* as the ultimate integrating force, there is nothing finally comprehensible. If, keeping to the solar system, we were to follow Schopenhauer, we should say that the solar consciousness willed its manifest life-cycle, and built and builds. On the outskirts there is unbuilding with liberation of energy as light and the rest. With this are fed the lesser monads, whose ever recurrent but lesser wills to live are thus enabled to satisfy themselves more easily. There may perhaps, as some astronomers have speculated, be another sun, the sun of the totality of suns. But it does not follow that he must be visible to our eyes — as they are now, at any rate. His body and radiations may belong to another degree of substance altogether. He may even be diffused throughout the universe, and the visible suns only the focal points where his radiations are taken in and translated downward into visibility— much as a beginner might translate what he had learned from his master into simpler terms for the benefit of *his* students.

## LITERARY EXPRESSION IN SCIENCE:

by a Râja Yoga Teacher



NE is glad to notice in the columns of a scientific periodical a tribute to the literary qualities displayed by Huxley and other scientific writers of his school. These men not only shone in their own special firmament but were also examples of good literary English. Their style is lucid and precise; it is also beautiful. But we often find, adds the writer, instances of obscurity and carelessness in scientific writing; and this he attributes to the lack of literary atmosphere such as that of Oxford and Cambridge wherein the above-mentioned writers wrote.

These men were in fact men of wide general culture, able to focus on their special work the light from a large area of study and experience; and the above remarks bring out two important points: first, that general culture is essential, even for the specialist; second, that the writing of books is in itself an art, and as such demands study and practice.

It does not follow that because a man is good at science, he will therefore be able to write a good scientific book; indeed it may well be that a man knowing very much less on the subject, but being a skilled writer, would acquit himself better. To write a good book on any subject, one must have skill and experience as a writer. It is the lack of this that makes so many scientific books and papers obscure, badly arranged, faulty in grammar and construction, ambiguous and clumsy in expression.

And what goes to make up such a literary education? It is difficult to specify anything. Indeed the very idea of such a general literary culture precludes the notion of set rules or a fixed curriculum. Such a procedure would defeat the purpose for which it was intended, by narrowing down the culture to the limits of a schedule; whereas by its very nature it is to be liberal. Its motive must be broad and indirect, the student being moved by a love of knowledge rather than attracted to any definite goal. Huxley and his fellow-writers were men of such liberal education; and they brought to bear upon their scientific writings, to the delectation of their readers, the fruits of much study and culture in many fields. The power of facile and lucid expression was second nature to them, and they were able to lend wings to their words by the graceful imagery which came so readily to their well-equipped minds.

And how important is the art of expression! It is impossible to

overestimate its importance. For life itself is the art of expression in one form or another. With what gratitude we listen to a speaker who can express himself clearly and attractively; and how much is lost, both in speaking and writing, through failure to attend to this.

There is much talk of so-called "practicality" in education nowadays, together with a tendency too hastily to discard certain elements that have stood the test of time and experience. Yet it is not always easy to point out the defects in reform without seeming to advocate the defects of undue conservatism. Discrimination alone can enable us to discern what is right and what is wrong on both sides.

We are apt to be too narrow and direct in our aims, too desirous of seeing the goal plain before our eyes from the start, too prone to think that a culture which has no immediate result that we can see is unpractical. And those who hold this view are unfortunately able to bring to their support many instances of the futility of general culture, which, however, are not due to the cause they assign, but to other causes. Colleges turn out men who are failures, it is true; but this is due to defects that are not peculiar to colleges but shared by them with other institutions. The fault lies not in the principles and ideals but in the way in which they are carried out. If college education really is a failure (which it is not), then *what we need is a better college education.*

An all-around education makes for a well-balanced mind. Want of balance is quite a characteristic feature of the mental life of today. There is too much running to extremes, too much concentration and circumscription. This accounts for many of the one-sided and extravagant theories that are so rife. A wider culture on the part of the theorists would have obviated this. It is among the semi-educated that the fads and crank religions find a fertile soil.

Sometimes papers published in the interests of engineering or some other applied science will have a dig at college education, bringing forward all the defects they can find in the college system and enumerating particular instances of failures in support of their thesis. Whether or not these writers are justified in their strictures on the colleges, they are wrong in so far as they attack culture itself. But their attacks are useful in calling attention to deficiencies in our institutions for imparting culture—defects which have laid those institutions open to the charges. A world given over to people drilled into a mechanical way of regarding things would not be a pleasant world



to live in. A man who has been *properly* educated at a university is infinitely the better for it, whatever calling he may afterwards embrace; and we often see people who have not had this advantage striving to make it up by private study afterwards — conscious that there is something the matter with them.

But true education has to go deeper than mere culture, or we shall get merely quick-witted men weighed down with moral infirmities, whose knowledge is a burden to them. Command of all the faculties, poise of temper, health of body — these are the essentials; and the training in them cannot begin too early in life.

How to instil such a balance and self-command is of course the great question; and we need a more adequate conception of the meaning of life, the nature of Man, and the destinies of human Souls; without which our schemes are based on erroneous theories.

Anyone whose lot it is to have experienced the world's methods of bringing up and educating children, and afterwards to have had similar experience of the way these things are done under the Râja Yoga system, has a pretty good idea of what is needed. Naturally, too, he is anxious to have this knowledge diffused as widely and speedily as possible. But what more can he do than continue to call attention to those Theosophical truths upon which the Râja Yoga system is based and which alone render it possible? By giving more attention to the *essentials* of life, we should make a better success of all our special subjects, scientific, literary, or what not. Unbalance of character ruins everything; but the well-balanced man is successful everywhere. And success means a good deal more than the ability to feather one's own nest; it means being a power for good in the world; it means the power to be happy, and to make others happy, in *any* circumstances.



THE Secret Doctrine teaches that every event of universal importance, such as geological cataclysms at the end of one race and the beginning of a new one, involving a great change each time in mankind, spiritual, moral, and physical — is precogitated and preconcerted, so to say, in the sidereal regions of our planetary system. — *H. P. Blavatsky*

## IS DEATH THE END? by H. T. E.



IN looking over the reports of the addresses delivered at a recent meeting of the British Association for the Advancement of Science, we come upon one by Professor J. Walker, D. SC., F. R. S., President of the Chemistry Section. The subject was "Theories of Solutions"; but it is not upon this that it is proposed to comment, but upon an incidental expression used by the learned lecturer. Following a full report in *The Pharmaceutical Journal and Pharmacist*, we find that he expressed regret that the recent decease of the celebrated van t'Hoff had prevented him from being present at that meeting; and that he added these words:

His activity is merged in the final equilibrium of death.

Now this might be considered a fine metaphor, were it not for that one word "final"; why "final"? we may justly ask. The use of the word is surely unscientific, for experience of nature reveals a law of periodicity and alternation from activity to latency, rather than any finality. It is quite a familiar idea in science nowadays to regard the universe as analogous to a self-winding clock, and to say that the kinetic energy which "runs down," and was formerly supposed to be thereby done for, becomes again kinetic, being restored to the cycle of transformations. And to illustrate this point we shall quote from a summary in *The Literary Digest* of an article by Professor A. W. Bickerton in *Harper's Magazine* (September). The very heading of this summary seems to rebuke Professor Walker's remark about the finality of death, for it is "Eternal Life for the Universe." We read that Professor Bickerton tells of agencies which he thinks are even now winding the falling weights and making for eternal activity in the universe, instead of a single period of life, and then light quenched in age-long darkness. The idea of an unending number of cycles of life in the universe—separate periods of activity, each starting and ending in inactivity and death, though familiar to some, is vague from lack of details. Professor Bickerton, speaking of Lord Kelvin's reluctant conclusion that our universe could not renew itself, says:

Is it not possible that in coming to his conclusions his logical mind overlooked some important physical factors? . . . We instinctively feel that what has so long been prepared for, what has been so minutely and correctly correlated, and so lately comprehended in much of its glory and beauty, can not have appeared only to be quenched again in endless night. Agencies exist that can deal with the

ceaseless radiation that is continually being so prodigally poured forth from the sun and his peers, the stars, seemingly to be dissipated and rendered unavailable. Degraded energy can be lifted up, agencies can diffuse matter as well as concentrate it.

Then he points out that just as gravitation tends to collect the heavy masses, so the light masses tend to collect in other parts of the universe; so that while old worlds may consist of heavy inert matter, the newly-forming worlds consist of light gases. And the solar energy which is apparently lost in space may all the time be warming into life this fine matter and preparing it for its coming activity. And he instances a number of other facts known to science which give promise of affording a confirmation of the idea.

This, therefore, as it seems to us, is the thought that should naturally have been suggested to the chemical lecturer by his comparison of death to a running-down of energy. But for some reason or other he thought fit to spoil his analogy by introducing that unfortunate word "final." What was the reason for introducing this word? Can we be right in suggesting that it was due to an unconscious legacy from old-fashioned theology? The very fact that the word was introduced seems to suggest that the opposite idea was present in the speaker's mind. Did it occur to him that his analogy suggested rebirth? And was the word put in to obviate that inference? In short, are we wrong in supposing that this remark is an excellent example of intuition marred by preconception?

What a pity the analogy was not carried to its full conclusion! Would it not have been better to have left out the word "final" and to say that the man's activity was merged in the equilibrium of death—the temporary equilibrium? But equilibrium implies latent energy, and latent energy is scarcely consistent with conventional ideas of death. Hence perhaps the qualification — which however destroys the consistency and leaves us to digest the strange notion of "final equilibrium." Science, faithfully adhered to, conducts to the portals of truth; and when it seems to conduct elsewhere, it is because we have temporarily mistaken our guide. Was it science that conducted us to materialism, or was it that spirit which science inherited from medieval theology? The latter, surely.

The faithful pursuit of science will one day lead to the conclusion that the life of a man on earth is but a temporary phase of activity, during which the inscrutable Self manifests itself in a particular mode,

passing then into another mode wherein its activities are beyond our mortal ken. Can we suppose that the wonderful life and mind and character of the man suddenly came to a final end, that all was to no purpose? Let us consider our own particular case; will bodily death be the final end of our existence? Are all our hopes, loves, ambitions, mere mockery? Analogy, if we are to draw analogies, suggests that death is a state of latency which will in turn generate a state of renewed activity. In a word, "Life and death are the world's eternal ways," generating each other; and the Soul experiences life in many successive births.

### THE STUDY OF PHILOSOPHY: by H. Coryn, M. D., M. R. C. S.



**P**HILOSOPHY is often studied — *always*, by the college student — somewhat in the Linnaean or classificatory spirit, not in the hope that one of the systems may actually have the truth about the universe and man. Descartes thought this, Leibnitz or Herbart that, Fichte, the other.

But what do *you* think? You know now what *they* thought. Are you with Spinoza, Hobbes, Hegel —?

The question is confusing. You probably read the systems — or abstracts of them in the textbooks — for examination purposes, or for the charm of the intellectual exercise. You can say who were the sensationists, who the intuitionists, who owned Kant for their father, and who Hegel. Moreover you have not finished your survey. Bradley, Caird, Royce, Bergson, Haeckel, and the rest, are still at work, the mills of thought still grinding. All the problems are still open. Are not the leaders still replying to and irrefutably confuting one another?

It is a fact. The great questions *are* still open. The average thinking man hardly hopes to get at any rock-based truth from the systems. It is hardly he who reads the philosophies at all. Pragmatism is an expression of the philosopher's own weariness of the grind. So "truth" is between inverted commas; it is a matter of *for-you-ness*; any research into regions judged too abstract for immediate utility, too ethereal to influence practical thought and conduct, is superfluous.

So Pragmatism is really a confession.

But before "truth" was put between inverted commas the retreating intellect might have considered whether its *mode of work*, rather than the work itself, was not mistaken.

Yet what other mode is there or can there be?

Is it possible that antiquity might have something worth saying here? In some of the ancient colleges philosophy was not taught at once to the pupils, often not for many years, to some never. The capacity to think was not considered as necessarily one with the capacity to philosophize. Philosophy was a double process and the higher part of it was an activity of consciousness now never fully taught and practised, mostly indeed now unknown.

A little device in the training of common observation may illustrate. One looks attentively all over a crowded scene, say a landscape or a show window, taking off an eye-picture. This is then mentally examined to see how many of the details can actually be found there.

Well, so in philosophy. The universe is to be "looked at" and *afterwards* in some sort rendered into terms of thought. It is that "looking," or rather the training which makes it possible, which modern philosophy neglects, knows nothing of. For this specific activity the instrument has not been trained, cultured, whatever its perfection for some others. The attempt, made for instance by Bergson and Hegel, to throw it into the condition for perceiving, consequently falls short of success.

The thinkers have not always made this attempt, even. They have often proceeded as science does in trying to conceive, for instance, the ether. Science invents and then as it were "tries on" possible structures to see if some one of them will fit; that is, explain the phenomena. Thus Leibnitz, for example, "tries on" his monads, Herbart his "reals." But just as the ether may be a kind of matter altogether foreign to our sensuous experience, and consequently not yet imaginable at all by the recombination of material forms and processes already known to us, so may the heart of the universe be inapprehensible to the brain not specifically trained. Any ordinarily known and practised kind of thought may be inadequate, the necessary conceptions out of reach.

Well then, *what* kind of thought? How train for it?

All agree that the mind must be mastered. It is the extent of the mastery that now really comes into question. Mind has now to reflect

the inner or higher essences of being. It has to get away from the visible in there where is the cause and other being of the visible.

No man would try to think philosophy while he was in a rage or desiring dinner. He would know that the gross perturbation of the mental surface would make fine mirror-work impossible. Though he would not *say* mirror-work, it is possible that the term may be more than metaphor.

The work of mind is ordinarily hindered, made unconcentrated, broken up as a stream of thought, by intrusive pictures, either of what is now in front of the eyes, or from memory, imagination, and anticipation.

Every one of these pictures arouses or is called up by waves of feeling, emotion, pleasures or pains as having been undergone or as hoped or dreaded to be undergone by me, the personal ego. The personal ego's continuous pulse of personal emotion, fine or gross, is in the way of his philosophical thinking, breaks up his would-be-sustained stream of philosophical realization. If he could get himself out of his own way, if he as philosophy-lover, wisdom-lover, had no interest in what we call "himself," his personality and its feelings, looked at it dispassionately as but one in and of the crowd of other personalities, these pulses of personal emotion would not occur. In the peace that followed the silencing of wish, of desire, of emotion, he could find real truth.

But as things are now there is continual interruption. Some center stirs with emotion or desire, throws up a picture. The flow that should be onward steadily, is broken across and must be resumed a good way — or all the way — this side of the point reached. If while the eye was passing over the show window there were a thought of some insult received yesterday, of an unpleasant interview to come, or of dinner, the lapse of attention would involve loss of details, perhaps all details. If while the musician was rapt in his inspiration he should think of a rival or of the fame that the composition under his hand might bring, or indeed of *himself* at all, he is down on the earth and by the time he gets back again to the sky much may have irrecoverably passed.

Nor need these emotion-charged pictures have *much* feeling in them, nor take much time, nor even mount to full consciousness at all. The average inattentiveness and want of observation are more due to practically *unconscious* lapses and unfelt pulses of personal feeling

than to conscious ones. The surface of the mind is *never* still, never white; *always* there is the fine play of ripple and emotional color. And the ripple always sets from that personal-self-center which must be got out of the way, reduced to passionlessness. The would-be thinker in philosophy must not suppose his mind *ready* if in the between-whiles of his thinking his personality is still capable of self-centering perturbation. A man is not healthy merely for the fact that he has not at that moment an inflammation or a fever. Consciousness was not, according to the old teachings, fully available for philosophy, fully concentratable, while there remained in it any possibility of being stirred by passion, by self-interest, ambition, personal hope or fear, prejudice, or what else.

So besides the ordinary training in concentration, there must be another — that of suppression of personality. Then only would the thinker be free.

To get rid of one's "self" there is but one way — to find a certain center which is *out of time* and to expand from it into the greater life. Self must be made at home in circles ever widening beyond itself. So only does it cease to be troubled and sight-dimmed with personal feeling.

What is "out of time"? What is time? Time is a succession, a passing on. What passes on? Now. *Now* is the ring that slips along the chain, the camera that slowly sweeps the landscape — or, if you will, before which the landscape passes. The motor of time is cosmic will or desire. We live out of the Now and in time because of memory and anticipation, both resting on desire for or against. Time is made by desire. To destroy desire we must live and act in Now, the eternal, and find in meditation, in holding it, its exhaustless containment of subjectivity, gradually learning that Now is the magic word of exorcism against desire. *Now* is the permanent splendor of the sun; *time* — dawn, noon, evening, night — is but the rotating earth, the changeful, the desire-driven. Time is infinitely divisible; Now indivisible. It contains each moment in succession—for the beginner; all moments for him who has really achieved the philosophic task.

Now is also the true center of selfhood, or the center of true selfhood. But it is instantly lost unless *that* aspect of its meaning is likewise practically developed. As Now, followed home, contains all moments, so self, followed home, contains all selves. The path to realization of this is no longer inward but outward — *to* all selves.

The life within must be made to answer, tone for tone, to life without. The fragment, the individual's sample, is not enough. He must expand, intensify what he has by letting into himself more. He must train himself to feel the entire universe on its conscious side — *beginning with man*.

“So you are just going to recommend us brotherhood and compassion in the name of philosophy?” says someone.

Exactly! Brotherhood and compassion are two names for highly philosophical states and activities. The individual consciousness must be thrown open to the vast sea of consciousness without, of every color, every kind, every degree; all must be accepted. Every man has the divine in him, however distorted and limited. In him too that divine is at work on its inexpressible plan, and to know it we must join it in its work. We must become forces of active beneficence, centers of outgoing compassion. At any cost compassion must be aroused and sustained. Constantly must the heart be set on the true weal of all, whether they suffer or rejoice. Modern philosophy will never get upon the path, our civilization will never be crowned with its gnosis, till it is accepted as a fact that the individual man *can* break down the barriers of his consciousness and let in all the tones of the world — collectively *the* tone of the universal soul. Compassion for all who need help and enlightenment, brotherliness for fellow-workers of every degree, respect for those higher up the path — it is this threefold unity of feeling, manifesting, as necessary, in constant action, that will clear the mind, reinforce the indwelling divine, and make it knowable and known. *Then*, thought may perhaps construct the system which, attempted otherwise, will be but one more to the number that in our centuries have been thrown up by the hundred.



THE mind that has been so trained that the ordinary modifications of its action are not present, but only those which occur upon the conscious taking up of an object for contemplation, is changed into the likeness of that which is pondered upon, and enters into full comprehension of the being thereof.— *Patañjali*



## THE "THEORY OF RELATIVITY": by T. Henry



PEOPLE may have heard of a new something known as the "theory of relativity" and associated with the name of Einstein, which is at present supposed to be working a kind of revolution in mathematical and scientific minds; and they may have experienced difficulty in understanding just what it is. The name itself is not very illuminating, and much that is written about it conveys the impression that the writers themselves have not grasped the idea and hence are unable to communi- ciate it to their readers. But we come upon a statement in a letter to an English contemporary which at all events gives us a definite idea. It is this:

The hitherto independent variabilities — length, time, and mass — are really functional expressions of the "universal constant."

In other words the three postulates of length, time, and mass, upon which we have hitherto based our compound units and our measurements, and which have been (certainly wrongly) considered as independent of each other, are really themselves derived units, being the children of one parent. There is a single cosmic rudiment or "universal constant," which is neither space nor time nor mass, but from which all three are derived, or of which they are functions. Properly understood, this is good Theosophy. It is, however, deplorable to use the word "space" when extension of physical matter alone is meant.

Attempts to connect space and time with each other in this way have frequently been made, sometimes seriously, sometimes as a sport. We have a suggestion of the import of this in connexion with the question of local time. Thus we have heard of the ship, crossing the 180th meridian, where it was Sunday at one end of the ship and Monday at the other. We know, too, that it is four in the morning in California when it is noon in London; and that, in one sense, it is farther from New York to London than it is from London to New York, inasmuch as we have to add or subtract a quantity due to the earth's rotation. An observer stationed on one of the fixed stars and looking at the earth, would see Noah coming out of the Ark — so long does light take to travel from one orb to the other. And, in general, our history may be described as unfolding itself forever on light-waves into infinite space, so that it remains perpetually recorded in etheric vibrations and might be lived over again by anyone chancing to be at the required spot. Considerations like this raise the question, "What do we mean by synchronism?" — in other words, if there were a clock

on Sirius, under what circumstances could it be described as being synchronous with a clock on the earth? By what are we to measure? If by light signals, the two clocks might be years apart. The natural answer would be that in setting the clocks together, one should allow for the time taken by the light-signals to travel to and fro; but this raises the question of how much to allow; and it is on this very question that trouble has arisen. For the so-called "theory of relativity" is mixed up with debates about the ether, as readers will doubtless have found out; and Einstein's theory seems to be an attempt to reconcile difficulties by a new mathematical conception.

The problem is whether the ether stands still while the earth moves through it, or whether the earth sweeps along a portion of the ether with it. On the one hand, if the ether is still while the earth moves through it, this ought to interfere with the propagation of light, just as raindrops falling vertically appear to have a slanting direction to a man moving forward through them; just as the whistle of a rapidly approaching train is elevated in pitch. Yet optical phenomena do not show any difference dependent on our motion to or from the sun; on the contrary they behave as though the ether were stationary in relation to the earth. Yet, if a portion of the ether is swept along by the earth, this would mean that the ether is in a state of fluidic motion and full of currents; and this again would upset the undulatory theory of light. The logical conclusion from the contradictory or apparently contradictory observations is that two planetary bodies may be moving relatively to each other, while neither of them is moving relatively to the ether! — a result which certainly seems to need some explaining. Einstein's theory of "relativity" is regarded as in some way affording or suggesting an explanation of this apparent anomaly by giving us new conceptions of space and time.

With regard to the third postulate — mass — it has already been suggested, in connexion with phenomena in radio-activity, that the momentum of bodies is a function of their velocity. The conclusion was arrived at as a possible explanation of certain anomalies in that field of study, and of course it upsets all preceding notions of the meaning of the word "momentum." Furthermore, mass itself has been spoken of as a function of energy; which is sufficiently perplexing in view of the fact that energy has hitherto been defined as a function of mass.

All this indicates what is meant by the suggestion that space, time,

and mass may not after all be independent, but that they may be functions of some other things, which is neither space, time, nor mass, but their common parent. What an interesting question! What should we call this new god! How conceive of his presence and his awful attributes? Has the appropriately named Einstein discovered the philosophers' stone, the fundamental unity? Confusion unbounded we must expect in the treatment of such a topic in a world where our every word and thought is based on assumptions we are now called upon to give up. Our grammar provides us with adverbs of time and place, but now none of these are adequate. *Here* and *now* become synonymous, as do *there* and *then*. It is anticipated that the new idea will revolutionize kinematics. It remains to be seen whether, from observed anomalies, we can deduce the value of that eternal Here-Now-This — to invent a name for it — to which all else is relative. But it is not easy to say whether, in this analysis, it is the objective or the subjective that we are analysing. That is a matter which needs clearing up; so here again we find ourselves on the border between physics and metaphysics. Can that "universal constant" be said to have any objective existence? To what sense in our organism does it respond?

But such a conclusion as this of Einstein's might have been anticipated; for otherwise the physical world would be a universe complete in itself. Physical science takes no account of such a mode of energy or matter (whichever one prefers to call it) as *thought*; where does thought, a dynamic energy of tremendous power, come into the equation? So the inexactitudes in our equations may be explained by the fact that we have left some factors out of them.

Another point is that we get a new idea of the nature of the fundamental Substance (using that word in its etymological sense). In this new idea the question as to whether that Substance is energy or matter does not arise, for it is evidently neither of these. It is, by hypothesis, the parent of space, time, and mass; something quite supersensual, unconceivable perhaps.

To sum up the main conclusion — it is now suggested that our physical measurements, if carried to an extreme of refinement, will always prove inexact, owing to our having taken as our fixed points of reference certain things (space, time, and mass) which are variable. And these three in their turn are variable in relation to a so far unknown something which may be called the "universal constant."

**ASTRONOMY, ASTROLOGY, ASTROMANCY: by W.**

STRIKING sign of the changing times appears in a lecture given before the Newcastle Astronomical Society in England, by Lt.-Col. Jasper Gibson, on the subject of "The Relationship of Astronomy to Astrology at the Present Day," a condensed report of which we read in the *English Mechanic* (Dec. 29, 1911). It is certainly remarkable that such a subject should be seriously offered and seriously received by a body of astronomical savants, and the lecturer began by expressing his diffidence. He attributed the hostile attitude of astronomy to astrology to misunderstanding, to the false information supplied in most standard works of reference, and to the prevalence of many quacks who have misused the name of astrology. Lest people of this class should be inclined to hail this lecture as a tribute to themselves, it is well to emphasize the distinction drawn by the lecturer. He proposed the name of "astromancy" for that which he rightly designated as mere fortune-telling, and he used more epithets than we care to quote in giving his opinion of the fortune-telling "astrologers" of today. An astrologer proper he defines as one who uses the science of the stars for the benefit of humanity. Thus he not only vindicates astrology against the sneers and misrepresentations of learned ignorance, but also against the foes within its own household.

If we look up the subject of astrology in learned works of reference, we shall find a few trivialities which from the point of view of scholarship can only be described as contemptible. But the same facts as those to which these facetious pedants had access bear a very different appearance when interpreted without prejudice. The lecturer speaks of the vast antiquity, universality, and high credit of astrology, and rightly supposes that it has not been left to our civilization to bestraddle the ages and utter the last word of wisdom on this subject. Finally he pointed to the great advances in physical science, which provide it with the means for approaching to an explanation of the rationale of stellar influence.

But the most important point is that about the true function of astrology — for the benefit of humanity. There can be little doubt that it formed a part of the Mysteries of Antiquity, the sacred Knowledge guarded against profanation and devoted solely to human benefit. Nor can there be doubt that the exoteric or publicly given-out part of this science has formed the basis of what we have inherited through

our own Middle Ages and now use in our trivial systems of fortune-telling. As to the real science, that is safe against profanation, for the reason that only the fit and worthy would be capable of mastering it.

The bar to knowledge is the thirst for results, which biases our mind and keeps it down in certain grooves; like a bird fluttering to and fro in a room, when, if it could but pause for a moment, it might escape through the window. This restless element must be eliminated and the mind rendered disinterested. To what extent can it be said of today that knowledge is devoted to the general good? Even in the case of those who are not conscious of a selfish motive in the pursuit of knowledge there may lurk latent imperfections due to their ignorance of their own nature. Clearly the aspiration to rise above the plane of personality and realize one's better Self should come first; for thus only can we overcome the hankering for unprofitable knowledge, thus only can we grow harmoniously like a sheltered flower that draws to itself only the elements it needs. This is enough to explain why Theosophy pays more attention at present to the living of the life than to the study of curious arts, and why those who have forsaken the former to run after the latter are side-tracked.

### CHEMICAL ELEMENTS ON THE STARS: by H. Travers



**I**N *Scientia* (Bologna, London, Paris, Leipzig) for October, 1911, "The Chemical Unity of the Cosmos" is discussed by A. Fowler, of the Imperial College of Science, London. The question is whether the same or different chemical elements exist on our sun, or on the stars, as on the earth; but the answer given is somewhat inconclusive. The author favors on *a priori* grounds the hypothesis that the elements are the same; and thinks there is a fair prospect that future observations will prove it. Uniformity, he tells us, was to a certain extent implied by the nebular hypothesis of Kant and Laplace, but the only evidence available was that afforded by meteorites—until Kirchhoff and Bunsen introduced spectrum analysis. Then it was found that some of our familiar chemical elements exist in the atmosphere of the sun, and that the same is true of the stars and other cosmical bodies. Arrangement of the stars in groups according

to the character of their spectra further suggested that they had reached different stages in an orderly process of evolution from masses of identical composition, thus strengthening the nebular hypothesis; which was still further strengthened by Huggins' discovery that the chief radiation from many of these bodies was emitted by luminous gases.

In inferring the constitution of stars from the position of their spectral lines, and in using the same evidence to calculate the motion of these stars in the line of sight, we are to a certain extent reasoning in a circle; but the liability to error in this respect diminishes with the number of observations, and the spectrum of an element is judged not only by particular lines but by the positions of its several lines relatively to each other. In the case of the sun the displacement of spectral lines when due to rotational motion is soon determined and allowed for; and extended observations provide for the making of similar allowances in the case of the stars. Making all due allowances for movements of the earth and of the sun's atmosphere, the conclusion is reached that calcium preserves its most characteristic property, whereby its molecules show the same set of vibration periods, under these widely separated conditions of space; and it is inferred that what is true of calcium is true of all the elements which have been spectroscopically identified in the sun and stars.

Complete uniformity has, however, not yet been established. Several of the well-known elements have not yet been traced in any celestial source, and some of the lines found in celestial spectra have not yet been identified with known chemical elements. Still there has been a gradual removal of this inequality, and we may look forward to the time when all celestial spectra will come within the scope of laboratory reproduction. Not only may new elements be discovered on earth, but some of the old elements may be found to give new kinds of spectra under certain conditions. It has for instance been found that carbon monoxide at extremely low pressures changes its familiar spectrum to one like that observable in the tails of comets. Also the comparatively new element Dysprosium has recently been detected by Ross in the chromosphere. In many stars which exhibit spectra of earlier evolutionary type than the sun, it has been found that a large proportion of the lines correspond with metallic lines which are specially developed in the electric spark, whereas in the solar stars the lines occurring in the electric arc spectra are the pre-

dominant feature. Thus differences in spectra are explained without supposing new elements.

Thus far we have followed the writer; but it is easy to show that the contrary hypothesis might be as well sustained from the facts he sets forth, as also even from some of his arguments, which cut both ways. The theory of the evolution supposed to be undergone by the matter on the planets seems to be a good argument in favor of there being on other planets elements different from those on earth. The writer himself says:

The nebulae may be in so primitive a state that they contain little more than the germs from which the chemical elements themselves are subsequently evolved by polymerizations during the process of condensation into stars.

This argument is given as a possible explanation of the fact that nebulae have a very simple spectrum of bright lines, among which only those belonging to hydrogen and helium have been certainly identified. But it admits a good deal that would be equally favorable to the other side of the case. Another explanation for the same fact is that the spectra of the nebulae arise only from the gases between the meteoric stones, and that the stones themselves, not being incandescent, may therefore fail to register on the spectroscopie. It is needless to say that the opposition might claim this unrecorded testimony for their side of the case. To quote the writer again:

Another important consideration must not be lost sight of. The dark lines of the solar spectrum can only show the chemical nature of the gases and vapor which lie above the brightly luminous photospheric surface. What lies below the photosphere we have at present no means of learning, but it is not difficult to believe that some of the heavier metals, which fail to give spectroscopic indications of their existence, may enter into its composition.

No, it is not difficult to believe — especially when one wants to. And even admitting that such elements do enter into the composition of the matter below the photosphere, still there may be plenty of room for other elements; at least “it is not difficult to believe” so.

The writer says it is probable that binary stars have originated as single masses which have split into two, and that therefore the two halves must have the same composition; yet that there are many binary stars in which the spectra of the two members are of different types. All sorts of inference might be drawn from this, according to the nature of the other premisses entering into the argument. We might argue that the two stars could not have proceeded from a single

mass. We might suppose that the elements on each half have undergone different kinds of evolution. Again we might infer a general unreliability on the part of spectroscopic evidence in the case of stars. But the author's conclusion is that —

This fact greatly strengthens the view that stars having different spectra do not necessarily differ in composition.

But does it not equally well strengthen the view that stars having the *same* spectra do not necessarily have the same composition? If we may set aside the evidence of the spectroscope when it suits us, and cite it when it suits us — why, so may the opposite party.

Again, we find that de Gramont

has recently shown that in the case of tellurium, phosphorus, arsenic, antimony, and boron, the most sensitive lines are situated in the ultra-violet, in that part of the solar spectrum which is cut off by the absorption of our own atmosphere; and that the same “applies to gold and possibly other metals which do not disclose their presence by Fraunhofer lines.” Which is more proof that the testimony of the spectroscope has to be accepted with caution.

The weakest point in the whole case is the paucity of our knowledge of what goes on between the distant star and the spectroscope — what happens to the light during its transit. The spectroscope interprets for us the light as that light is received on earth; inferences as to the nature of its source must depend on the assumption that it is unaltered, or altered in a known manner, during its transit. Therefore our inferences may or may not be correct, but at any rate a loophole is left open and a too positive attitude must be deprecated. It is admitted above that our atmosphere cuts off part of the solar spectrum; also that the spectroscopic evidence in the case of some double stars may be unreliable; also that the sun's absorption spectrum tells us nothing of what may be below the photosphere. If the nebulae are composed of clusters of meteoric stones, as Lockyer thinks, then their spectra are those of the incandescent gases produced by mutual collisions, and the stones themselves fail to register. Again what are the “germs from which the chemical elements themselves are subsequently evolved by polymerizations”? and why may not combinations and evolution-products differing from those on earth be produced?

The hints given by the author of *The Secret Doctrine* having so



often proved to be reliable, the following may now be quoted with reference to the matter in hand:

“*The essence of cometary matter and of that which composes the stars is totally different from any of the chemical or physical characteristics with which Western Science is now acquainted. While the spectroscope has shown the probable similarity (owing to the chemical action of terrestrial light upon the intercepted rays) of earthly and sidereal substance, the chemical actions, peculiar to the variously progressed orbs of space, have not been detected, nor proven to be identical with those observed on our own planet*” — say the Teachers. (I, 597)

And not only is the essence of cometary matter different, but it forms different combinations on other celestial bodies from what it forms on earth, says the author of *The Secret Doctrine* elsewhere. The teaching is that there is a primordial matter which undergoes growth and evolution; and this idea finds favor with many men of science. But even if science should discover this “protyle,” still it will not have explained how the protyle is formed into worlds.

It is easy for an astronomer, if endowed with an imaginative faculty, to build a theory of the emergence of the universe out of chaos, by simply applying to it the principles of mechanics. But such a universe will always prove, with respect to its scientific human creator, a Frankenstein's monster; it will lead him into endless perplexities. The application of the mechanical laws only can never carry the speculator beyond the objective world; nor will it unveil to men the origin and final destiny of Kosmos. — *Op. cit.*, p. 594

And this passage is preceded by the following:

To become complete and comprehensible, a cosmogonical theory has to start with a primordial Substance diffused throughout boundless Space, *of an intellectual and divine Nature*. That substance must be the Soul and Spirit, the Synthesis and *Seventh Principle* of the manifested Kosmos. And to serve as a spiritual *Upādhi* [vehicle] to this, there must be the sixth, its vehicle . . . though its nature must escape forever our limited *normal* senses.

## MYSTERIES OF SOUND: by a Teacher of Physics



HERE are certain difficulties in the physical theory of sound which need further elucidation; for though the physicists and mathematicians may have satisfactory explanations of them, the notions that exist in the mind of the average person are very unsatisfactory. A writer has recently been contributing to *The English Mechanic* some articles on the part of the subject relating to tuning-forks and sound-waves; and he brings

forward some facts, which, whatever may be the rights of the case, do show that the theory of sound as explained in Tyndall's celebrated lectures is deficient in many important respects; as also that succeeding writers have followed Tyndall without due examination. The difficulties raised are mainly as follows.

A tuning-fork will continue to give forth its note for a considerable time, during which the vibrations of its prongs rapidly diminish until they are no longer perceptible, yet the sound is still audible. If we now calculate the velocity of the motion of the prongs (taking, say, a fork whose frequency is 256), we find that it traverses some exceedingly small distance in  $1/512$  of a second. The writer gives figures which assign to the prongs a velocity of only a few feet a year. Even if we suppose the amplitude of vibration to be as much as one-thousandth of an inch, we get a velocity of about half-an-inch a second, or 150 feet an hour. But the writer shows, from the fact that the fork will continue sounding for a minute or more, that the amplitude of the vibrations of its prongs towards the close of that time must be much less than this; so that its velocity is greatly less than that of the hour hand of a watch. This being so, the question is, How does it start air-waves?

Now there may be a satisfactory explanation of this problem, but it seems certain that Tyndall has not given such an explanation. In his lectures it is stated that the vibrating prongs of the fork set up waves consisting of alternate phases of condensation and rarefaction in the air; and Tyndall goes on to maintain that a body vibrating as slowly as the pendulum of a clock cannot produce such air-waves. Yet this tuning-fork moves much slower than the pendulum. True, the tuning-fork has the greater frequency; but if this be the explanation of the difference between it and the pendulum, that circumstance is not indicated by Tyndall.

With regard to the communication of vibration from one fork to another of similar pitch, Tyndall — and after him other writers and teachers — state that if a vibrating fork be held *very near but not touching* another which is not vibrating, and with the prongs of both forks parallel, the second fork will be set vibrating. But the writer shows that it is not necessary to have the forks either parallel or near to each other. He succeeded in making one fork start another at a distance of the length of two large rooms with a closed door between. Here again there may be a satisfactory explanation, but

Tyndall's is not the one; and Tyndall, in premising that the forks must be near together and parallel to each other, seems to have adapted his experiments to suit his theory. That at least is the writer's contention, and he makes out a plausible case for it.

We cannot follow this suggestive writer through all his remarks, of which the above are but a sample; but it is clear that he has put his finger on some weaknesses in the ordinary explanation of acoustical phenomena. It has indeed often aroused wonder in the minds of thinkers to reflect that a body with so small a mass as air should be able to set in motion a body so heavy as iron. And in the writer's experiment of making one fork start another across two rooms and a closed door, the laws of dynamics seem considerably taxed.

It is evident that the explanation about the vibrating prongs is ruled out of court by the fact that the sound is transmitted in all directions from the prongs, and not merely in the line of their motion. This suggests that the effective vibration is molecular and not molar. But in that case the amplitude of said vibration should be smaller than ever, and the velocity of the vibrating particles would consequently be absurdly small. Yet this minute velocity — and correspondingly minute momentum — is said to set the air in motion so as to produce a wave traveling at 1100 feet per second; and further the air is supposed to be able to start another heavy steel fork vibrating. There may be a satisfactory explanation, but what is it? Not the one in the books, evidently.

The writer recounts that he and some friends once approached Tyndall himself by letter with these difficulties, and received the curt reply that they need not worry as the wave-theory of sound was all right. Further inquiries and entreaties for an explanation brought only silence; and the same results were obtained from another eminent authority who was approached. The writer concludes that the air-wave theory is not correct and that *sound is a definite force*, in the sense that light and electricity are forces, which is transmitted from body to body. His conclusion harmonizes with Theosophical teaching.

There has been much confusing of the physical effects which accompany sound with the cause itself. All the experiments given in the books ought to be carefully tried under all possible conditions, with a view to seeing just how much of them is true, and especially how much *more* is true; and particular attention should be given to those which are hard to reconcile with the theory. The workings of the

telephone and phonograph are far from being really understood. The theory explains the results *in a general sort of way*, but more information as to details would be desirable. It is very difficult to understand how the marvelous complexity of sounds which these instruments will transmit or record can be expressed by combinations of to-and-fro vibrations, which, as it would seem, would considerably overload the capacities of the material used in the construction. Indeed, letting alone these instruments, if we consider that (according to the theory) the loose light air itself has to accommodate all these vibrations, such as might proceed from an orchestra or from a babel of voices crossing each other in every direction — we shall see that the mechanical theory of sound offers some difficulties. We need a soniferous ether or an emission theory. But the case of sound is only one of several in which the mechanical theories are being found inadequate. The Theosophical teaching on the origin and the phenomena of sound will eventually be recognized as the correct one.

J. W. Keely said, “The sounds from vibratory forks, set so as to produce etheric chords, while disseminating their tones (compound), permeate all substances that come under the range of their atomic bombardment. The clapping of a bell *in vacuo* liberates these atoms with the same velocity and volume as one in the open air; and were the agitation of the bell kept up continuously for a few millions of centuries it would return to its primitive element; and, if the chamber were hermetically sealed, and strong enough, the vacuous volume surrounding the bell would be brought to a pressure of many thousands of pounds to the square inch, by the tenuous substance evolved. In my estimation, sound truly defined is the disturbance of atomic equilibrium.”

### IS MODERN MACHINERY A SINCERE ART- EXPRESSION? by T. Henry



THE beauty of modern machinery and steel construction forms the subject of an article in a scientific contemporary, the writer of which makes out a good case and illustrates it with cuts. He points to the reason when he says that these structures are organisms which have grown according to the laws which produce symmetry. In our machinery and our steel bridges we have not been striving directly after beauty. Yet

we have achieved it, because our motives, though different, were sincere. On the construction of these things we have brought to bear the same qualities that we admire in the old Greek sculptors — untiring industry and skill accumulated through generations, with the goal of perfection ever before our eyes. Consequently we have achieved an art-form, a type of expression of the spirit of the age, an expression that is sincere though it may not be lofty.

In the early days of machinery there was ugliness because the builders copied old models not apposite to their purpose, using for shafts Doric columns of steel. Moreover the earlier steam engines were much more like an assemblage of separate parts than an organic whole whose parts bear such intimate relation to each other that they form a unity. Our steam engines, our electric machinery, etc., have by long practice reached a state of symmetry and proportion that now gives them beauty. But there lurks a danger in the writer's plea for a continuance of this beauty in our engineering works. That danger is the introduction of a self-conscious motive that would take away the frankness and spontaneity and tend to produce meretriciousness. Let us refrain from all attempts to *adorn* our machinery.

In other constructions we still copy from old models and the result is an assemblage of incongruous elements; for we are not expressing the spirit of our own age, except in so far as artificiality itself may be said to constitute that spirit. This, however, is a familiar subject in art-discussions, and may be summed up in the expression that sincerity yields a greater beauty than affectation, even though the goal achieved by the former is inferior to that aimed at by the latter. Let us apply the principle to the great art of life, wherein it will be found to hold as true as in the lesser and component arts.

How much of our character is affectation! What is it that makes the beauty of a child, even of a plain-featured child? What is it that makes that beauty wane when the self-consciousness and affectation of age supervene? Are we not ourselves, ugly as we may be, beautiful in moments of temporary self-forgetfulness when an impersonal enthusiasm makes us for the moment natural? There is a perpetual struggle in us between the expansive spirit within and the systematizing tendency of the mind, and we often find ourselves rebelling against conventions of all kinds. Such rebellion is pronounced at the present time; but though the aspiration may be right, the attempts to give it expression are often very misguided. Freedom is not irresponsibility.

bility. Man, having once attained that knowledge which makes him human, cannot again become irresponsible like the animals — not unless he part with his sanity and become an idiot in an asylum. So the attempt to achieve spontaneity and naturalness by throwing oneself back on the animal nature and its desires must be doomed to failure if attempted by man; because it is impossible for him to carry into those desires the innocence of the animal. This kind of naturalness would be affectation similar to that by which we make such inharmonious structures in our vain attempts to achieve architectural beauty by insincere methods. In short we have to beware lest our attempts to be natural should be more unnatural than ever.

It is said in books that teach the art of life that we must “regain the child-state we have lost.” But not by trying to go backwards; we must go forwards out of the state of cramped artificiality to a higher state of purity beyond. It is thus seen that the quest for beauty, if rightly understood, is the same great quest as is also defined as the quest for the good and the true. The ugly element in our character, which yields ugly effects, is the artificiality, the personality, the self-consciousness, the egotism. It is this that has to be overcome by the true artist. Here again, therefore, we find ourselves face to face with the eternal truth that personality is but a temporary stage through which man must pass in his pilgrimage to the state which is his destiny.

If the purpose of life is merely to get on in the world, then the arts which teach us to develop our powers of self-aggrandizement may perhaps be pursued. But as this is not the actual purpose of life, our efforts are sure to be frustrated. Those that make some impersonal enthusiasm the inspiration of their lives achieve greater happiness and make more true progress than those who make happiness and progress a direct aim. We should never lose sight of the importance of the artistic ideal — the desire to do some thing well, for the sake of art alone and not to achieve glory or fame; yea, even though it be but the forking of hay. Ruskin, Carlyle, and many other writers have sought to bring home this lesson to us; but there needs a better background of philosophy than that afforded by old-fashioned doctrines or the speculations of materialistic science. These writers were hampered by the want of this; the old forms limited them. How could they fit such teachings into a belief which sees no further than the period of a single earth-life?

How the knowledge of Reincarnation clears away the difficulties!

## THE EMMET HARVESTERS OF POINT LOMA:

by Percy Leonard

Go to the ant thou sluggard; consider her ways and be wise: which having no chief, overseer, or ruler, provideth her bread in the summer, and gathereth her food in the harvest. — *Proverbs*, vi, 6 (Revised Version)



HERE at Point Loma we have several kinds of harvesting ants. The illustration represents a section of earth cut from the nest-entrance of one of the commonest species, the red and brown harvester, *Messor andrei Mayr*. This ant belongs to the same genus as the one described by the author of *The Proverbs of Solomon*, *Messor barbarus*. Classical literature abounds with references to the ants' habit of storing grain, and the brief nature note in *Proverbs* was accepted as accurate until the close of the eighteenth century. Then arose an English clergyman named Gould who had been making a close study of native ants, and being familiar with their carnivorous habits he raised a doubt and suggested that the perishable nature of their diet rendered storage impossible. With great courage, but with a singular want of logic, he suggested that the passage which heads this article was based on inaccurate observation and raised a feeling of uneasy suspicion that the "Infallible Word of God" was in error regarding ants. The French Latreille, the Swiss Huber, and even the orthodox English clergyman, Kirby, followed this view. It was not until 1880, when McCook published his book upon the agricultural ants of Texas, that it was realized that the ants of warm countries might differ in their diet from those of northern Europe.

Although there is no apparent connexion between an entomological mistake in *Proverbs* and the credibility of the "Book of Revelation," there is no doubt that many wavering Christians had their faith in the red dragon with ten horns, and the locusts with faces like men, greatly strengthened because the accuracy of the unknown naturalist of *Proverbs* had been vindicated. *Proverbs* and *Revelation* being bound in the same cover it was felt that their credibility was mutually dependent.

The ancient writer was also perfectly correct as regards the absence of authority in ant communities. Each ant enjoys unfettered liberty of action; but as all desire to use their time and strength to promote the general prosperity and have no private interests to subserve, the daily labor of the nest proceeds in perfect harmony.

Many people still believe that ants are ruled by queens; but it is now firmly established that the queens exercise no regal functions whatever, but are simply humble drudges who are solely occupied in turning the foodstuffs provided them into fertile eggs, with the patient regularity of a machine.

As evening shadows lengthen on the hillsides, the harvesters pour out from the large entrance of the nest. They follow well-defined pathways which lead to grasses or other plants where seeds are ripening, and very soon the busy porters are seen returning, each with a single seed clasped tightly in her mandibles. Often these seeds are enveloped in a bulky husk, or as in the case of the alfilaria, with a most embarrassing corkscrew-like appendage which greatly impedes transportation; but the ants plod homeward with their burdens and disappear underground. Soon a stream of ants is seen emerging, each bearing a husk which it deposits among similar rubbish lying in heaps around the nest. Several pints of such chaff may be collected near populous nests. The human observer is apt to chafe against the apparent waste of emmet labor in carrying a husk which should have been discarded *before* the journey commenced and not at its close; but the ants know their business. The workers' mandibles are much too feeble to tear off the covering. That is the special function of the warrior caste whose members stay at home and there decorticate the seeds as they arrive.

One sunny day in spring after a heavy rain, the writer visited a nest of harvesters which had for many months evinced no sign of life. A few workers were struggling out with pellets of soil which they left near the entrance. Presently two energetic ants appeared each carrying a very lethargic comrade whose bright surface was spotted with mud. It seemed as though the recent rains had flooded the nest and that those who had suffered from the wet were being carried out to be revived by the warm sunshine. As soon as the invalids were able to stagger about they retired below.

One may study ants for a long while before realizing that every working ant is a female; and one constantly finds oneself referring to them as "industrious little fellows," forgetting that they are not "fellows" at all, but most industrious, and hard-working females.



## CARRIER-PIGEONS AND MAGNETIC CURRENTS:

by Observer



WE learn from a note in *Knowledge* (London) that M. A. Thauziès, a French specialist in carrier-pigeons, has given some interesting information about their perception of terrestrial-magnetic currents. On July 22, 1906, and Aug. 18, 1907, the results of numerous flights by carrier-pigeons were very bad; and pigeon-fanciers and meteorologists, who were consulted, could give no explanation. But a specialist in electromagnetic research found that on these two days an exceptional electric tension of the atmosphere manifested itself in magnetic storms. Such observations, continues the writer, accord with the fact, discovered by pigeon-fanciers, that with the increase of wireless telegraphy much less reliance can be placed on carrier-pigeons.

That magnetism and electricity, together with more newly investigated physical forces, play a most important part in meteorological phenomena, is being more fully recognized every day. We still find, however, that text-books of meteorology go on explaining weather by the convection currents set up by solar heat and modified by the configuration of the earth's surface and the rotation of the earth; practically ignoring magnetic storms, and treating atmospheric electricity as a result and minor accompaniment of storms. It may be asked: If these old explanations were found sufficient to account for the phenomena, where is room left for the magnetic and radioactive forces to come in? But the interrelations of insulation, convection, rotation of the earth, etc., constitute a very complicated problem, which has never been solved in detail but only in general. The science of weather prediction has never been exact. The probable course of cyclones and anticyclones, and the probable weather was all that could be foretold. So there has always been plenty of room for the introduction of other factors into the problem. It is now generally admitted that sunspots cause magnetic storms, which in turn influence the weather.

In the above note still another question is opened. That birds should be able to perceive magnetic currents and should follow them sounds heretical. This implies in the birds the existence of a sensory power able to perceive these currents. And if the birds may have this power, how many other powers may they not have — or may not other animals have? And what shall be said of man? What one does not see, however, is how the magnetic currents help the bird to

find its way home. Does the writer mean that the carrier-pigeon is a pilot? As to the connexion between carrier-pigeons and wireless telegraphy, imaginative minds may see in it an example of cosmic justice; the birds, thus doubly ousted, being no longer necessary.

But that gap in the reasoning remains to be bridged. One would have expected, from the theory, that the birds would have followed the meridian, and that now they would follow the Hertzian waves.

### AN HONORED SWEDISH THEOSOPHIST: by A.

**A**T the 1910 Congress in Brussels a marble bust of Dr. Gustav Zander was erected in the Medico-Mechanical Institute there. It was the work of the Belgian sculptor Mosselot and its cost was met by the International Association of Physician-Mechanotheraputists.

Subsequently the editor of the *Archives of Orthopedics*, Mechanotherapy, Prof. Riedinger of Würzburg, decided with the co-operation of his colleagues to issue a special "Zander number." In the tenth volume of the journal this plan is carried out. On the title page, which is illustrated with a picture of the bust, it is announced that the issue is in celebration of Dr. Zander's 75th birthday. It contains twenty-four articles, describing from various points of view the Zander gymnasium method of treatment. One of these articles tells us that there are now no less than 111 special Institutes, scattered throughout the civilized world, devoted to the employment of this method, the oldest of them dating back to 1865. The Doctor had of course, like other innovators and benefactors, to face much opposition. But he lived it down without being embittered by it, and his unassuming modesty has not been impaired by his ever growing fame. Dr. Zander has been a devoted Theosophist for many years. He is also the Director of the Universal Brotherhood and Theosophical Society in Sweden. THE THEOSOPHICAL PATH wishes him many years of work and happiness.

## COCKNEY DIALECT AND SPELLING REFORM:

by a Student



**T**HAT a reform in the spelling of English is desirable may be conceded without committing oneself to the advocacy of any particular scheme or movement. The very trenchant arguments which spelling reformers bring forward in support of their case may be indorsed without necessarily indorsing the proposals of the people who bring them forward. It has been shown conclusively by proficient students of the history of the English language that many of our most cherished spellings are mere corruptions, abortions, conceived in an ignorance that ought to shock our refinement. And the same is true of our pronunciations. The local dialects which we affect to despise represent often the correct English of a few centuries ago. A writer in the *London Morning Leader* recently spoke in this strain in defense of the Cockney dialect.

Instead of being a foundling of the slums, he says, it is the tongue of the first written English, of the first English church, of the first English scholars. *Thet* for *that* is good Kentish, the word being so spelled in Kent as long ago as 825 A. D. He traces *keb* for *cab* and *benk* for *bank* to the same origin. *Pale* was pronounced *pile* from Trent to Thames in Elizabeth's time. John Stow (1525-1605) gives us *byliffe* for *bailiff*. The cockney pronunciation of *a* as *au*, as in *telegrauf*, is a perfectly legitimate development which occurs in early Southern texts.

*Kep* for *kept* and *slep* for *slept* are uncorrupted words, the *t* being an intrusion.

Cases like this afford remarkable evidence of the persistency of old pronunciations, even in face of education. With regard to spelling reform, we need first a representative, competent, and trusted body of people to undertake it; and this body would have to be a self-perpetuating academy. Its aim would be to blend in the right proportions consistency and flexibility, so as to avoid rigidity on the one hand and laxity on the other. As the human body preserves its shape, but yet grows; so the standard English pronunciation would prevent the language from degenerating, but yet permit growth and local adaptation. It is conceivable that a standard of correct pronunciation might exist and be generally respected, without any attempt to make everybody speak it in daily life. Finally, the various sounds, with all their minute shades, could be standardized and indelibly registered by a sound-recording machine. To a certain extent, this has already been began.

## SCIENTIFIC ODDMENTS : by the Busy Bee

A "FOOLPROOF" gas-burner has been invented, which closes itself when the gas is blown out. So it is now the "fool's" turn to devise some way of circumventing this contrivance, and (probably) he may be relied on to do so.

AN electric fan installation has been invented for use in top hats during the summer months. The apparatus is mounted on a horizontal shelf within the hat and worked by a push-button on the brim. A battery runs it and can be inexpensively renewed from time to time. The inside of a top hat might be used for quite a number of purposes and fitted up in a variety of ways. A set of artificial brains might be useful to some wearers.

MORE attention will have to be given to plant hygiene, for plants are subject to fungoid diseases of a character similar to the epidemics against which we guard so carefully in the human kingdom. A recent lecturer has pointed out to the "British Gardeners" Association" the immense loss sustained by farmers and horticulturists by negligence in this matter. For years plant pests of all kinds had been permitted to flourish in Sutton Park, and were now not only ruining the beauty of a natural park of some 2400 acres, but causing loss and annoyance to private individuals in the neighborhood. Neither private bodies nor authorities took steps to remedy this state of affairs. This is one more instance of the interlocking of our interests and of the impossibility of enjoying the benefits, and yet neglecting the duties, of corporate existence.

WITH reference to the oblateness of the earth's figure, which is generally said to be due to the effect of rotation while the earth was in a molten condition, a writer suggests that this affords no evidence that the earth ever was molten, since the same centrifugal force would act on the hydrosphere, and hence on the "horizontal" level towards which the agencies of denudation and deposition tend. It is probable, however, that the oblateness, small though it is relatively to the size of the earth, is too large to be accounted for by such superficial fluidity of the crust. But the centrifugal hypothesis itself is open to grave question, owing to the somewhat important fact that the figures given in the astronomy books for the amount of polar compression of the several planets do not at all agree with those which the theory would lead us to calculate from the data of the planets' speeds of

rotation, equatorial diameters, and densities; and this in spite of the fact that these same awkward figures are actually quoted as supporting the theory (!) This disagreement is mentioned by H. P. Blavatsky in *The Secret Doctrine* (Vol. I, p. 593) as one of a number of proofs that the mechanical theories of the universe do not explain *all* the facts; but the student can readily verify it for himself. It is true that the polar compression of Jupiter (as given) is greater than that of Mercury; but the theory requires not that it should be greater, but that it should be greater in a certain ratio, which ratio is very different from the one given. H. P. Blavatsky also asks why the Sun has no polar compression. It is pertinent to point out that since these theories were first propounded science has been equipped with a number of new possibilities for explanation — chiefly magnetic — which compete with the old mechanical ideas.

A WRITER in the *Manchester Guardian* discusses the engineering problems associated with what is sometimes called “the fatigue of metals.” Experience has long shown that an extra margin of strength must be allowed in structures which are to be subjected to a *variable* stress; but detailed experiments have from time to time been carried out to ascertain the exact effects of a variable stress on the observed strength of the material and also on its minute structure. Wöhler found that the stress necessary to produce fracture in a bar depended upon the number of times it was applied; no doubt Wöhler knew this before — and, if not, we could have told him — but there is nothing like making sure of a thing. The term “breaking stress” acquires a new and untrammelled meaning in view of this fact, for the delicate fingers of a lady may apply a breaking stress to quite a thick piece of wire, if she be allowed to bend it back and forth a sufficient number of times. But a limit was found, beyond which the metal might be stressed innumerable times without breaking, as the following details show. In one set of experiments the static breaking load was about 25 tons to the square inch; the same material withstood 25,000 repetitions of 20 tons stress, 150,000 of 15 tons stress, and an indefinite number of repetitions of 10 tons stress. In practice, however, it is found that engine parts break, apparently from fatigue, after having endured several hundred million applications of stress. Hence it seems evident that the endurance of the metal increases at a very rapid rate with the diminution of the stress; in which case there is no limiting stress and metal is always liable to ultimate break-

down under repeated stress, however small the stress — unless recuperation takes place in the meantime. Another important point is whether the rapidity with which the repetitions of stress succeed each other influences the endurance of the metal; and as to this point two sets of experiments are quoted giving contradictory results, so that the matter awaits further investigation.

Microscopic examination of the structure of metal subjected to alternations of a bending stress show that each bending produced small slidings of contiguous parts of the structure over one another; and these slidings being repeated caused a grinding up of the material, this loosening its structure and generating small cracks which eventually grew into larger ones. This would seem to prevent the possibility of a recuperative process, thus making the term "fatigue" inapplicable. Altogether these experiments do not seem to have accomplished much more than a reduction of familiar facts to scientific and systematic terms. There are cases where metals do recover from fatigue, as with razors for instance; and doubtless these cases could be attributed to strains within the elastic limits. It should be borne in mind that a study of the laws of elasticity, cohesion, etc., does not by any means amount to an explanation of the essential nature of these forces. Mineral substances have wonderful structures and are endowed with inexplicable forces and properties. Everything is to a certain extent amenable to a mechanical explanation, but such explanations are little more than a systematizing of the effects, and behind mechanism lie unfathomed mysteries.

THE marvelous properties of the Soya bean, though well known in China, Japan, and other parts of the East, are but little known in the West at present. But its virtues are now being extolled in several quarters, and trading vessels are importing considerable quantities as a return cargo after exporting Western goods to the East. It is a legume somewhat like the kidney bean and possesses the nutritive qualities of the legumes in a high degree. It is cheap, easily grown, and free from any known fungoid disease. Among its products are enumerated *bean curd*, a nutritious jelly, which has been used by all classes in China for 2000 years; *bean milk*, an emulsion of the dried beans, containing a vegetable casein; *bean cheese*, made from the milk; *bean flour*; *bean oil*, *cake*, *sauce*, and "*coffee*," the last made by toasting and grinding the beans. It also makes a straw

fodder more nutritive than wheat straw or hay, and enriches the land on which it is grown. Whether by reckless and profligate methods we can succeed in spoiling this admirable plant remains to be seen. We could make better use than we do of many which we already have; as we are sadly deficient in the art of cooking vegetables and economizing the products of the soil.

At the London Institution Dr. H. C. Bastian recently lectured on the Origin of Life, and said (according to a report) that it was generally admitted by scientific men that, by reason of certain chemical and physical processes, living matter came into existence, and that from these first beginnings the various plants and animals had been produced by successive changes. But there was a difference of opinion as to whether the first process took place at a remote time in the past or whether it was occurring all the while and even now. He, the lecturer, claimed to have proved by his experiments that living matter was being so produced even now. He had either produced living matter or else succeeded in reviving it when everybody else said it was dead. Taking certain inorganic fluids, he heated them to temperatures of from 125° to 145° Centigrade, 55° being the death-point of bacteria. In six or seven months there seemed to be no change; but when some sediment was picked out by a sterilized instrument and submitted to a microscope, living organisms were found, which multiplied under suitable conditions.

All this shows that so-called inorganic matter is more wonderful and complex than has been supposed, and that what are called physical and chemical processes are very potent and capable processes. But whether the above point is demonstrated or not, we are as far as ever from knowing by such methods the origin of life; we have merely traced out another step in what is a most lengthy and intricate process.