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MEDICAL SERIES.

No. 4.

CURIOUS FACTS,
CONCERNING
MAN AND NATURE:

PART SECOND.

Box 8

BY DR. SAMUEL W. FRANCIS,

*Fellow of the New York Academy of Medicine.
Member of the New York Historical Society, &c., &c.*

PUBLISHED BY CHARLES E. HAMMETT, JR.,
NEWPORT, R. I.
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Presented

By Dr. SAMUEL W. FRANCIS,

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Please acknowledge.

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OLD TESTAMENT.

"In the beginning God created the Heaven and Earth."

"The fool hath said in his heart there is no God."

NEW TESTAMENT.

"In the beginning was the Word and the Word was with God and the Word was God."

"Thou believest that there is one God; thou doest well, the devils also believe, and tremble."

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MAN AND NATURE.

PART SECOND.

“ Each shell, each crawling insect holds a rank
Important in the plan of Him, who framed
This scale of beings ; holds a rank, which lost,
Would break the chain and leave behind a gap
Which nature’s self would rue.”

[*Stillingfleet.*

IS THE SUN AN EGG ?

If a fresh hen’s egg be boiled ten minutes, or until it be perfectly hard ; then cut into halves, and a photograph be taken of it, a very fine representation of the sun about mid-day may be seen. Circular radiation, if I may be allowed to use the term, will roll out until the yolk is lost in the white, which seems to be an outside atmosphere. A Danish artist, A. H. Wenzler, studied the sun for thirty years, and finally painted its portrait, free from the aid of clouds. His representation may be considered the most truthful, as to color and anatomy, in existence. From a study of this landscape I find the centre of the sun dark and gradually becoming lighter by rings, until white is lost in ether. Keep the boiled egg, which has been cut in two, exposed to reflected light for seven days, and you will find that the white has hardened, and shrunk up, almost fading away ; and the centre of the yolk is darker ; while in different parts, it has cracked in irregular, serrated holes, strongly resembling the solar spots that may be distinguished on the sun by the aid of a powerful telescope.

If another hard boiled egg has all the white cut off, with the exception of a broad circle around its long diameter, an excellent idea of Saturn, with its golden effulgence, may be seen ; and what puzzled Galileo into saying, in 1610 : "*altissimum planetam tergenimum observavi*" will be made plain to the mind and rejoice the heart of an enthusiast.

Again, if another hard boiled egg be cut transversely the ellipse comes into play ; and conic sections add to the list of peculiar analogies.

A frozen, raw egg that has been dropped on a plate will also reveal new beauties worthy of record and investigation. The source of light, heat, growth, motion, and almost every thing in this world, but the *original* birth, is the sun. How close is its resemblance in many respects to the egg, the earthly source of existence, and consequently motion, in countless instances. How nearly universal might the old saying "*omnia ex ovo*" be applied in the investigations of the naturalist.

The yolk of an egg, boiled hard and kept standing on its broad end, after being pealed of its shell, will sooner or later present itself on one side, as the white hardens there, and becomes a sort of horny transparency ; yielding as it were its atmosphere to the superior yellow, even as the white vanishes and the yolk may be seen in modified form after the chicken is born. The hardened white resembles gum on buds in winter.

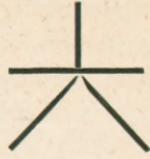
Place a table, on which there is a white cloth, directly under a reflecting, drop gas light burning 3 feet above : then arrange, about one foot from the centre point, a series of different colored finger bowls, $\frac{2}{3}$ full of water, and a beautiful effect will be produced, especially with the red bowl : for the light yellow, blue, &c., will suggest many colors of a singular shade, all, more or less however, casting out on the table-cloth some seven rings of different colors, or tints, very much after the principle of the arctic skies. In the case of the green finger bowl we have 1st, darkness ; 2d, a greyish purple ; 3d, grey green ; 4th, very light green ; 5th, purple about the line of water ; 6th, dark greyish green ; 7th, light green. Now if the table be shaken,

sudden shooting lights will ascend rapidly and disappear very like the northern lights, and suggestive of many theories, if daylight is also employed.

Now if you crack a raw egg and drop it on a plate, you will still find its yolk in the centre of a light, amber colored liquid; while, outside of that, there is a third and thinner atmosphere, very like cloudy water. In this second instance of a raw egg, we have more the resemblance of a rising or setting sun, so fresh and reddish is the yellow. Keep the raw, dropped egg on the same plate, without disturbing it for three days, and *mirabile dictu!* you will find, to your delight and amazement, a full blooded Arctic sun with northern lights shooting up, and a fine, clear aurora borealis made to order, full of suggestiveness and continually asking in beautiful symbols "Is the Earth a huge Ovum?" "Is the Sun an Electrical Egg?"

THE MOON AND GREEN CHEESE.

Set a small pan of fresh milk in some quiet spot, and watch the result. After good cream is formed, a portion of the edges give way; peculiar ridges are formed; certain spots appear, and the same idea of craters may be detected, that is recognized in certain photographs of the moon. Different shades of color meet the eye; a portion has sunk leaving an elevation; and if this is kept on, from day to day, more or less interesting changes, self accumulations, and resemblances may be observed, worthy of note and record, that remind one of the boundary of Mare Serenitatis and give evidence that the same Mind created a law to affect lunar surfaces and a law to control the action of time on milk, and different kinds of cheese. If milk be boiled slowly the various stages it goes through will recall vividly to the mind the appearances of the "milky way." The same rule that applies to measuring the thickness of soap-bubbles by their color, may be employed in this case with scientific benefit.



THE STAR FISH AND MAN.

Some snow flakes look like hexagonal stars, and stars are represented as having five points, equidistant from the centre. Star fish, such as the radiates, palæaster matutina, palæaster niagarenses and echinoderm palasterina have also five points at their extremities when spread out, and strongly resemble the 5 spokes of a wheel,* (the circle,) perhaps due to their original formation in the egg ; so well illustrated by the echinus, without spine. Now take man with his arms and feet spread out, and we have, his head, two hands and two feet, (each also with five fingers or toes,) making five points within an imaginary circle—himself also possessing five senses, the vowels of his nervous system, the limit of physical feeling. Is there not something sublimely beautiful in the fact of the Star of Bethlehem appearing as a forerunner and earthly type of the blessed Saviour's birth? Did not the same Almighty create the star fish with the same points and radiations as those of man : itself a very low order of animal, in honor of and resembling physical man, the highest organization in the world, without the aid of the monkey ; for where are their tails ?

Again, take the head as the centre of intelligence, and drop a perpendicular called for example North. Now describe a semi-circle from N. E. to S. E., just touching the end of the perpendicular or spinal column at its lower extremity : then draw another semi-circle from N. W. to S. W. in the same manner, and

*The wheels on carriages, carts and wagons are now made up of 12—14 and 16 spokes ; I would recommend, that, on this principle, they be made with 10 or 15 spokes instead ; when more endurance could be established, and a greater mechanical power be employed.

it becomes an old fashion \int , with a centre line above as head; the four other points representing hands and feet; and you have another simple and curious suggestion relative to development and growth; which if taken as a function of life would enable the calculus to add to the statistics of shape and perhaps, in some cases, the incipient origin of form. The following legitimate question might arise from this result:—Does the union of two circles or semi-circles produce a spine, or vice versa?

With regard to the growth of cells or miniature eggs, and the increase of size in plants, &c., if water be caused to drop on a pane of glass, where the sun is shining; and a person looks from the inside of a room, on a curtain that casts the shadow of the little, gradually sliding down fluid; he will notice that almost as soon as it reaches the bottom, the dark tree, which it resembles, will grow thinner and thinner along the centre, and present to view on the curtain, the appearance of a tube, giving it an arterial outline. But if the curtain be lifted up nothing of the kind is, at first, seen by the naked eye.

SCANNING IN THERAPEUTICS, OR THE METRICAL TREATMENT OF DISEASE.

Every motion has a time, gait, emphasis, expression, intensity, etc., in the animal kingdom. If the different movements of the body of both man and beast could be tabulated and a metrical scale of general average compiled as regards health and disease, I am convinced that much benefit would be derived from a new method of treatment based on mathematical deductions and scanning certainties. For example, the iambic, short and long principle of expression or emphasis in motion, applies peculiarly well to animals and animal motion; action arising from instinct: and in some instances from involuntary motion, for the heart beats while we are asleep. But as regards man, his mind movements, those controlled or impelled by intelligence are trochaic; that is long and then short, or the opposite of the

short and long, iambus. If then this principle, of course modified by experiments and facts, were ascertained concerning motion, heat, color, music, etc., etc., health and sickness, then the reverse of the known law would at once announce to the simplest observer the startling fact that something was wrong in mechanics, acoustic, color, etc.; and if applied to health, that disease had invaded the body, or mind, or both, and must at once be "looked to." Even as every acid has an alkali, every yes a no, etc., etc., man and animals have two motions, as a rule, to balance each other, as in flexion and extension, &c. The first motion of game must be rapid to get the start and escape; hence it is short and the next longer—witness the bound of the deer and the flight of ducks—the spring of the grasshopper and the jump of the flea; and as the body and surroundings materially affect the mind, we find the notes of warning quicker at first or iambic in their tendency. A few examples will explain this idea:

| <i>Name.</i> | <i>Sound.</i> | <i>Metrical time.</i> |
|--------------|---------------|-----------------------|
| Guinea hen, | Plück plück, | Iambic, short—long. |
| Cat, | Mě ōw, | “ “ |
| Chicken, | Clück clück, | “ “ |
| Cricket, | Chīt chīt, | “ “ |
| Duck, | Qūack qūack, | “ “ |
| Quail, | Bōb white, | “ “ |
| Tiger, | A ōo, | “ “ |
| Dog, | Bōw wōw, | “ “ |
| Donkey, | āhn ēe, | “ “ |
| &c. | &c., &c. | &c. &c. |

I do not say that all animals are confined to the same set of motions as to manner or time; for climate, domestication, civilization, and more or less danger or safety will materially affect the startled action or introduce a new line of conduct, habits, &c. For instance, the dactylic canter of the horse:—

“Quadrupedante putum sonitu quatit ungula campum,”
must have been the playful speed of a tame horse, or taken

from a domesticated animal : for the runaway, closely allied to the wild horse, is either iambic, $\cup -$, or if goaded to continued desperation pyrrhic $\cup \cup$, or two short movements in the gallop.

The canary bird, was evidently in its native element iambic, $\cup -$, but familiarized with man, and forming one of the family, it frequently, instead of hopping short and long, $\cup -$, in the cage or about the library, becomes anapæstic, having two short and a long motion, $\cup \cup -$. If the stride as to distance and emphasis could be ascertained to a practical certainty, we might acquire much that is useful in the footsteps of fossil animals and come nearer to a positive idea of their habits from the old time pedography on clay, &c. Fish scull with a short and long movement $\cup -$, but man in rowing is first long and then short, $- \cup$; his pull is shorter than his push, in order to get his oar in position. To remedy this and follow the true test of nature, he starts in a race with his oars set back, ready for the pull, thereby marking his first motion short after the $\cup -$, iambic principle. In foot racing he stands all ready to spring forward, making his second motion first, for everything depends on the "go"; time requires it. To ensure success in a contest the actors must be prepared for iambic movements, $\cup -$, witness the bull rushing madly with his head *down*. A dog wags his tail according to his feelings. Study the motion until you can scan it, and much will be learned for future guidance. The pitch of a vessel at sea, will indicate the time as regards an angry billow, or the spondaic roll of a ground swell. The puffing of a locomotive is trochaic $- \cup, - \cup, - \cup$, man's mind applied to nature; but when a piston is made to work so that the emphasis is iambic, $\cup -$, there will be inversely as the square of the force exerted, a corresponding increase of speed and saving of fuel.

When an order "Leave me!" is given, in any language, to one who has excited indignation, the emphasis of gesticulation is on the first motion, but if there is forgiveness in the extension, then the iambic indicates less decision. To be more explicit :

in a display of eloquence between two opposing lawyers, from a study of motion, as acted on by the intelligence — ◡ or, merely the result of physical instinct, I would believe more in him who was trochaic in his gesticulation, — ◡, than the other pleader who talked ◡ —. One arrives, the other jumps at a conclusion. A horse is choriambic — ◡◡ — in his walk, dactylic — ◡◡◡ in his canter, but iambic ◡ — in the gallop.

The quick motion of the swallow is short and long ◡ — iambic; the waddle of the goose, the strut of the peacock, the quick jump of the frog or the skip of the robin are all essentially iambic. In some instances, however, this is modified by a dactylic or lazy, spondaic movement, the result of more confidence and the absence of quick caution. Many birds have two distinct flaps; see wild ducks, migrating, a short and long, then a rest, then short and long and rest again: ◡ —, ◡ —, ◡ —, ◡ —, ◡ —, &c.

Two men hammering on a huge spike, singular as it appears, strike the first time shorter than the second one long; forming an iambic sound to the observing mind. There is no change in their labors. As regards diseases of the brain, many useful data might be secured by measuring, in feet, the different mental conditions of the patients under treatment.

Are the movements of an idiot iambic? much animal and little mind. And are those of a maniac trochaic? a mind overstrained and controlling instinct; acting, as it were, on forced muscle?

BOXING.

In boxing the mind directs the blow; the eye gives the signal to the hand; in fact it is a species of reflex action which must necessarily be trochaic, or long and short; for the brain has to direct motion, hence the delay of reflection and caution. Besides, the arm takes time to flex and be drawn back to force the blow. Therefore the left strikes out and must be met by the right hand

of the adversary as its first movement, the long one. Query, what animals are right handed? This being through, the second, short, can meet the opposing force. Boxing is therefore trochaic. Animals are made stooping in some way or another to be ready for a start; hence iambic motion. Man in repose is helpless; he must assume guard, a long (short) motion before he can fight, hence trochaic; for his mind is continually on the strain; but in sawing wood, planing, pumping, he is iambic, for resistance comes in the second act.

Not being made to fight but to suffer, and having degenerated by passions into a contentious being, his hands lie listless by his side. He stands noble, erect and calm, in natural life, holding, like Atlas, his mighty world of brain on his shoulders. We see, at a glance, that his first motion, as to defence or attack, must necessarily be long—for he has to flex the arm. Therefore he cannot catch wild game so readily in a physical way; but his brain comes to his aid and he invents what might be called a catalectic weapon, the gun, which annihilates all iambic, trochaic or any other avoidance.

The deer, so beautifully described by Sir Charles Bell, as gathered up for a spring at all times, can make off instantly, when startled. Though he darts in iambic, \cup —, leaps from road side to hedge; though the timid woodcock whirr to right left in iambic, \cup —, flight; trochaic man pulls the trigger of his gun and, with certainty, by a quick iambic motion, secures his prey, and laughs in a choriambic trimeter catalectus in pyrrhium measure, — — $\dot{\cup}$ \cup $\dot{\cup}$ || $\dot{\cup}$ \cup $\dot{\cup}$ \cup \cup for mind and body are relaxed, and give freedom to the play of time.

With regard to instinctive, physical motion; if, in health, the eyelids shut in iambic time, and on examining the sick, are found to close slowly and open rapidly, — \cup , a trochaic action, there is something abnormal, and the patient must be examined. This is only a simile to explain the idea. There are involuntary motions in the body, such as respiration, the beating of the heart, &c. These are independent of the mind and intelligence of man; for they work on in sleep or when he has lost con-

sciousness ; but, of course, are materially affected by his passions, such as fear, anger, &c. Now, if in the normal condition respiration is long,—as to inspiration and short, \cup , as to expiration as a law of nature ; and disease invades the frame, either by blood poison, cold, &c., &c. ; we are confident that something is materially wrong ; if, combined with, or without other symptoms the inspiration is short and expiration long.

The same rule applies, with equal force, to diseases of the heart, in determining the pitch, intensity and rhythm of its action. I would suggest, moreover, that in the use of the sphygmograph, besides taking note of the wave line, some attention were paid to the angles as recorded, whether acute or obtuse, &c., so well seen when comparing aortic regurgitation, and mitral obstruction or where aneurism affects the aorta. In chill and fever, if a sliding scale, of the duration of chill, followed by fever, were kept ; and the short and long periods were faithfully recorded, certain data might be employed that would place medical scanning on a par with many of the thermometrical tests, so valuable in prognosis. Again in the use of the thermometer, the duration of the high or low temperature of the body and its variableness, if written out after the manner of feet, would be easy of inspection, and form itself into a sort of vital price list.

These remarks of course are open to the ridicule of him who merely looks at the surface of a novelty ; but, if there are such affections as choriambic convulsions, dactyllic spasms, or anapaestic fevers, should there not be iambic doses and trochaic remedies, if suffering is thereby relieved and life prolonged ? The time will come when hospitals will collect evidence as to metrical intensity &c. by a process of scanning, which will result in dividing up disease, symptoms, treatment, &c., into short and long feet ; with mathematical accuracy for the aid of science and the relief of humanity. I do not for one moment claim that all animal, instinctive and involuntary motions are iambic ; neither do I maintain that every mental action, simple or complex, either derived from the mind or displayed through the muscles, is

trochaic. A few examples have only been given in order that the idea might be comprehended by those better qualified to enlarge on its merits; so that the scientist, in the future, could draw his own conclusions, and form a system for the benefit of clinical investigation. For example, if in the three stages of labor a table were drawn up of many cases, statistics would reveal much.

| Case. | First stage. | Second stage. | Third stage. |
|-------|--------------|---------------|--------------|
| 1 | — | ∪ | ∪ |
| 2 | ∪ | — | ∪ |
| 3 | ∪ | ∪ | — |
| 4 | ∪ | ∪ | ∪ |
| 5 | — | — | ∪ |
| 6 | — | ∪ | — |

The above would indicate natural, tedious and dangerous labors, &c.. The same rule could be applied with benefit to the three stages of pneumonia, &c., &c., and when a sufficient number of cases was placed on record their utility would be recognized.

A pulse that is pyrrhic ∪ ∪, might indicate excitement and inflammation, as in peritonitis, or debility in typhus. If in respiration there is a marked spondee — —, two long, we might look for imperfect aeration or great exhaustion. There are certain motions that can be slowly made by patients suffering from pain or feebleness. If, then, certain rules in scanning for healthy exercise, could be printed, the convalescent might practice a little every day, until the normal step could be taken. This might also be done by having a floor, in the hospital, painted with various marks on it, for different stages of the disease, so that the legs could be employed and re-educated. On the walls diagrams, for the exercise of the upper extremities, would assist the sick man to recover more rapidly.

There might be, for example, medical suggestions so exposed

to view, that the attending physician could test the movements of the infirm after the following manner :

| Disease. | 1st Stage of Cure. | 2d. | 3d, &c., &c. |
|-------------|--------------------|------|--------------|
| Rheumatism, | — —, | — ∪, | ∪ —. |
| Gout, | — ∪ ∪ —, | ∪ ∪, | — ∪ ∪, |
| Paralysis, | ∪ ∪ —, | — —, | ∪ —. |

So also in dancing—diagrams of the different steps in the waltz, galop, and polka Redowa, &c., could be inlaid, thereby enabling the pupil, or infirm man, to practice, daily, those easy, graceful, and beautiful curves and sliding motions, that conduce so much to form a healthy constitution. and free the possessor of such knowledge from any of the awkwardnesses of the plebeian.

Meteorological records could be kept in a metrical manner, such as the rise and fall of the barometer, ventometer and thermometer; the duration of rains, storms, heat and atmospheric pressure; sunlight tints and chromatic phenomena. At one season of the year the day is long and the night short, — ∪; at another, the opposite is the case ∪ —. This system admits of an unlimited number of symbols. A storm might be described by a choriambic tetrameter; and various colors be made to represent different subjects; even, as now in the army, the artillery is distinguished from the infantry by a yellow castle, &c., &c. Very many pursuits, especially natural history, could be aided by the judicious employment of this metrical notation of facts; which, if closely investigated, would be found to be one of the strong links in the unity of purpose—the great oneness of the Creator's design.

MUSIC.

In the dying song in Lucia, and throughout the slow-paced movements of Chopin's funeral march, the force of the iambic is deliciously marked in minor tones. It is the gushing despair of hopeless attachment; the passionate outburst of yearnings after the "loved and lost." So also in Beethoven's Seventh Symphony, we see the marked short and long ∪ —, ∪ —, beating of a burdened heart, welling up with suppressed emotion. In the harmony of sounds, could the composer ascertain, definitely, the

precise characteristic feet in scanning and apply them to animal passions, in the one instance, and mental anguish in another; were he able to learn certain rules as to metrical expansion—a totally different affair from the present dictum of so many quavers or minims to a bar—and did he recognize the force of thus inspiring sound with melodious pleadings, how grand would be the result; what language could not the orchestra roll forth?

I believe that, if some of the Odes of Horace, and portions of Terence, Euripides, Aristophanes, Aeschylus, &c., were taken, merely as to their feet, and music were written to suit their emphasis, not only as regards time but feeling, some remarkable productions would be the result, if a judicious use were made of sharps and flats, and the minor key were employed as indicative of certain emotions.

MORE ANALOGIES IN NATURE.

If you follow the trunk of a tree into the ground, you will see that it is so shaped as to act not only as a support but a brace. Make a vertical section of this and you find a strong resemblance, in outline, to a man's boot, which is the shape of his leg and foot. Now man was made to walk as well as to stand, hence he has but one foot on each leg. But the tree is not to move; it is to stand still. It has therefore one foot, all around it and on every side, for the brace must include the entire circumference.

The morning glory, or convolvulus, suggests the wine glass. The centipede is a living vertebra to the eye. A fan and certain shells radiate on the same principle. In Cuba there is a plant that is the image of a duck. In another country the "Santo Spirito" is wonderfully like the "descending dove." If man is the only animal that laughs, there is a small shrub in Eastern Arabia, a "dwarf variety of Oman," three or four feet high, that produces, in the person who swallows its seeds, the most boisterous laughter; acting like a ready-made nitrous oxide. Old corn and old teeth have the same color. The similarity between the play of the surf on the beach, with its marks on the sand, and

the undulating ridges on fungus, has been remarked for some time as singularly uniform. Cold retards growth and decay. Cotton on the plant, and snow on the hedges, are identical to the eye; and yet one is for warmth and the other the result of freezing. There are fish that hibernate like land animals, and there is a "resurrection plant" that comes to life when placed under certain conditions. Ice, glass, and some specimens of quartz, might be brothers as regards appearance. Some vines turn in and others out when burning. This is worthy of observation. The horse chestnut is an excellent likeness of the back part of the throat; and lambrequins are silken palates with the uvula brought into house-keeping. If a glass funnel were placed over some plants their heat would keep the cold air from coming in at the top, and allow them to breathe more easily. I also think that they would grow faster and, in some instances, become healthier and stronger; in other words, vegetables, &c., require ventilation as well as animals. Every flower is a sun-dial if we only knew how to study its record of time. There are many shells that look like petrified birds' heads and bills. It is right to part our hair in the middle, for nature does it in the growth of leaves and feathers. Most of the beautiful embroidery and lace patterns on clothing, dresses, and furniture coverings, are drawn from fruits and the delicate traceries about plants, vines, petals and flower leaves, such as the rose, violet and lily. The Capros Aper, or boar-fish, mentioned by Pliny, has recently been discovered and placed in the Brighton aquarium. How remarkable is the little sea-horse, as he rears his head, while under water. It is curious as well as true that any violation of the laws of God, bearing on thought or action; any self indulgence in temper, passions, cruelty, &c., and the following a pet taste to excess, returns, like the boomerang, back upon him who hurled it out, and demands a ten-fold interest in the form of exhausted desires, and that heaviest of all mental burdens, the ennui of satiety; besides stamping on the countenance the terrible I. O. U. in the shape of a physical *Mene Tekel Upharsin*. Did we possess the power, every man's past could be read in his face.

Yellow turns black in photography, and blue becomes white. Plants look up to the blue vault of Heaven and grow ; their result is green, a rest for man's weary eyes. Apply this principle to treatment, remembering that when it lightens there are sombre colored clouds to form a back ground for the relief of startled vision, and the following suggests itself :—

For inflamed eyes use green glasses ;

For weak eyes use blue glasses :

For nervous affections of the eyes use smoked glasses.

I believe that cats and dogs do not eat grass for any other purpose than that of an emetic. As far as my observation goes, their knowledge does not extend any further than this instinctive cure.

The letters of the alphabet call up to mind so many animals, that a few instances may prove interesting. The inverted cow's horn, ∇ , stands for A, the aleph of old. A squirrel, sitting up and eating a nut, is an excellent G. Man is essentially I, the ego of life ; ipsissimus, autotatos. A monkey is a good J, with hands and feet. A giraffe is a moveable L. The measuring worm walks like a migrating omega — ω —. Many a bird has a P for a head. The royal R, " hail Jupiter!" is the profile of an eagle, R, hence its origin at the heading of every medical prescription. The snake is a wandering S. The face of a long-eared rabbit is strongly like T, and the camel's hump is cut out, with stencil distinctness, in the shape of W, on account of its threefold capacity to hold water, being even more the symbol of the Greek U, as a traveling demonstration of the old motto "ariston mēn hudor."

If the wanderings of the Israelites through the wilderness, were mapped out, and the meanderings of the peritoneum were carefully traced ; if the swimming of a duck in a pond, or the flight of birds, and the zigzag motion of the bat, or the game of tag, which flies seem addicted to, in the air near the ceiling of a room ; and the outline of clouds, could be instantaneously fixed on paper, a curious and wonderful similarity of detail would be found, and a continued reduplication of courses that have doubled on themselves until they have indelibly spelt out, on the face of nature's truth, the meaning words "Hand of God."

If a carrot root be scooped out, suspended by a string and filled with water, it will grow and produce a charming result. But if, after its green shoots reach some one or two inches in height, they be photographed, in a magnified manner, the resemblance to an eastern palm, the castor oil plant and other oriental growths, is so marked that few, who were in the least skeptical, would credit the assertion without ocular demonstration.

Some twenty three years since Doctor Abbot, of Egyptian antiquity fame, presented my father, the late Dr. John W. Francis, with some grains of corn, which he himself had taken out of a mummy. They were planted in our garden in Bond-st., New-York, and well do I remember the deep interest expressed by the many visitors who watched, with anxiety, the growth of grain that had been concealed for 3,000 years! In due course of time an ear appeared and ripened on the stalk. It resembled, in many respects, the Virginia corn of the present day. This being the case, and it having been proved that corn existed in Egypt previous to the discovery of America, there would seem to be more credit due to Bonafous for asserting, years ago, that it had an Eastern origin; De Candolle, with his South American theory, to the contrary notwithstanding. I have since tried to raise some wheat, obtained in the same way, but was unable, on account of the "life" having dried out of it; for the grains were separate. Could it not be that the corn, (maize,) derives some additional powers of endurance from the cob?

Every thing that breathes and is possessed of voluntary motion must have oxygen. It will be found, moreover, that, if a careful estimation is made, the numbers of variety in form, sound and color are identical.

Since the days of Æsop and the time when to be called a "very Midas" was an uncertain compliment, comparative physiognomy has had its votaries. Theophrastos, B. C., in his "Metaphysics," "Characters," and the "History and Causes of Plants," the earliest reliable books ever written on botany, makes use of many interesting and suggestive statements, as do also his preceptors Plato and Aristotle. But one of the most singular productions

regarding similarities of construction with consequent resemblance of character, is a work entitled *DE HUMANA PHYSIOGNOMIA IO BAPTISTÆ PORTÆ NEAPOLITANI, VICI Æquensis, Apud Iossephum Cacchium, M.D.LXXXVI.* It is a quarto, copiously illustrated, with a portrait of man and beast in each picture. At one time he shows the similarity of construction in their eyes; at another the forehead, nose or teeth are exhibited with convincing truthfulness. Now it is the eye of the boar and those of man: again we have the nostrils of the bull, the magna facies of the ox; the facial bones of the monkey, the forehead of the hound, &c., each one side by side with persons whose counterparts you meet in the every day walks of life. Curious are his disquisitions on "Rari dentes; Continuati, longi acuti, fortes, recti, magni firmi, and Spissi dentes:" evidencing thought, observation, analysis and originality. Nor does he neglect the eye, for we find a series of views expressed in deliciously quaint latin, relative to "Valdè nigri oculi," "Flauioculi," "Subrubri oculi," "Calculi pallidi in nigris oculis," &c., &c. Each of the principal features of the visage is treated with a comparative conscientiousness that must have pleased Lavater in his psychological investigations, and no doubt did much to awaken zeal in Swedenborg and Goethe.

EVOLUTION.

We have seen in the records of time, that man has had the tribute of homage paid to him by having his organs and special frame copied in nature by the living creatures of an inferior organization: he himself standing forth as it were a sort of animal and vegetable *E. Pluribus Unum.* On reviewing his structure we find that he possesses every shape to be found in nature, from the round eye and pupil, the straight and curved bones, to the angular motions and revolving pronations: he employs levers of different orders from that which raises the body on the toes, with a power equal to 1,000 pounds to the simple flexion that moves

a finger : the hollow column that sustains his frame by means of his thigh is copied in the cast-iron pillars for the erection of lofty edifices. He has an anvil, hammer and stirrup in his ear ; a Turkish saddle and Blumenbach's bed in the bat shaped sphenoid bone : a pulley rope-muscle that hoists his jaw in eating ; universal motion in his tongue ; solid veneering in the enamel of his teeth ; red arteries, blue veins, yellow fat—the primitive colors—nearly every tint conceivable required to paint his face : soft flesh, hard bone, horned nails ; double reins to guide his eyes, in the optic chiasm ; carbon, lime, chlorides, urates, acids, sulphates, phosphates, water, iron, every thing nearly but *alcohol* in his natural condition. There is chemistry all over him ; mechanics throughout his body ; circles, curves, perpendiculars, angles, arches and key-stones ; ropes in sinews, and cushions in his heels ; small bones in his wrists, to break up the sudden jar of a fall, on the principle of the parallelogram of forces. His constitution has been developed for a purpose. He exercises every muscle in his body on rising, bathing, dressing and praying, for he must speak ; and to do that, if alone, should commune with God on his knees. He is so made, that if perfectly formed, he can touch every part of his body with that wonderful mechanism, I had almost said second mind, his hand. A telegraph runs all over and through him. His eyes can photograph, and his ears take notes in short hand. His touch and taste report to memory exact knowledge, and his brain can stereotype. He has a sounding board in the roof of his mouth ; a bellows in his lungs, those pneumatic marvels of endos and exosmosis, capillary attraction, transpiration, exudation and absorption, extend for miles ; and he digests by the foot. All these actions go on without his supervision. The intricate clock work is perfect without his aid ; yet, like the discontented pendulum, he refuses to fulfill the very little asked of him.—“ Be careful of your structure ; clog not the wheels ; let be ; the body is in order ; take care of the mind.” All that is asked of him is to realize his blessings and “ be thankful !” All this and much more were made, for what ? To sustain thought, and with it responsibility, conscience, a Soul, something that no mechanical philosopher has ever been able to make, with

all his skill and contrivance—for it annihilates time and space. It cannot be seen and requires faith; an imponderable essence that pervades the highest portions of the brain. God alone can create the spirit, and, when death—merely the cessation of physical functions—arrives, the soul *must* leave its earthly tenement and go back to God; pure or stained, which? All these and a thousand more wonders, were called into use to produce what God created after his own image, and was pleased and saw that it was very good. And God “breathed into his nostrils the breath of life; and man became a living” (not dying) “soul”! From that time to all eternity a connecting link was formed between Earth and Heaven; to comfort those, who toil and are weary, by sweet intercourse with Him above, Who though He created the universe is not unmindful of a sparrow as it falleth to the ground.

Singular is it that when man in olden times determined to make an idol, a Golden Calf was reared to worship; and later, when the ancients sought to create out of their imaginations a new being to invest with power, they could only think of a man-horse, the Centaur; an utterly impossible combination. Man was obliged to plagiarize from the Deity’s domain and use another’s thoughts. The Eastern Gods are monstrosities—the night-mares of religion. It is as utterly impossible for man to create as to destroy matter: simply because no created being can be a Creator. Hence God from all time. If, for the sake of argument, a mortal were permitted to make matter and form it into something, there is nothing left to create. Every thing conceivable has been done. Millions of facts in nature have not yet been discovered. Man only invents, that is something *comes into*—it does not come out of his mind. He records it for the benefit of certain classes and adapts certain means to certain ends. But the Almighty placed those very capabilities in nature ready for use when man should call up their latent qualities. We are great and good chiefly by comparison with our inferiors. Intrinsic virtue, excellence and merit are indeed rare. A mountain rises from the valley, which it has made by its own comparison. We ascend from step to step and find a different atmosphere, temperature, pressure, density, humidity and light. Various geological results,

peculiarly formed plants, and more or less hardy animals meet us on our path, yet we are in the same latitude and longitude, but a different *altitude* constitutes the change. We wonder, study and admire, but never believe that one thing comes from the other, or was the result of the other. Why then should a higher race come from a lower one? Why not mark the ascent of separate steps in growth, each distinct, yet one and all so beautifully mosaiced together, that he who runs may read "God in every thing?"

Can any living creatures be more different as to appearance, food, habits, motion, color, etc., than the worm and the butterfly? How many cycles of time and thousands of years would evolution require to show the gradual ascent from the grovelling grub to the winged butterfly? What peculiar geological periods, changes of law and growths of plants, climate and atmospheric phenomena, would the scientist demand for the wonderful transmigration did he not know of the cocoon, or did he not accept on faith the fact of an Omniscient, all powerful God, who doubtless foreseeing such contention in the future, still continues to show that He has only to say "Let there be light and there was light," and "the evening and the morning was the first DAY!" "Be a worm," and a worm was created. "Change to a butterfly," and a butterfly was born. Nothing but a Divine order could have produced this wonderful alteration of structure, though man in all his littleness seems to measure God's strength.

So many men of mark have written on the all important doctrine of Faith, or no Faith: with this difference, that the true followers of the Inspired Book agree, while the doubters often disagree as much among themselves as they do with Christians, that there exists much indecision as to what they do believe. This religio-polemical state of affairs, revolves itself into the following mathematical paradox:

$$\text{Infidelity} \div \frac{\text{Bacon,}}{\text{Voltaire,*}} \times \frac{\text{Hume,*}}{\text{Newton,}} \times \frac{\text{Locke,}}{\text{Bollingbroke,*}} \times \frac{\text{T. Paine,*}}{\text{Paley,}} = \text{Bible.}$$

The * star represents the cancellation of said authors. Bishop D. S. Tuttle, that consistent laborer in the vineyard of the

Lord, is engaged on a valuable work entitled "The Credulity of Infidels." What a field for criticism. How just the rebuke.

How can the Atheist sign his name to any document that is dated? for by so doing he acknowledges that Jesus Christ was born 1875 years ago. It is a curious fact, that as a rule infidels swear. What a singular case of *involution* is this: for what right has a man to say "damn" if he does not believe in hell, or any future punishment? Even the heart's-ease and other flowers proclaim their belief in the unity of star, starfish and man's creation, by their little essays in five leaves—whispering sweet truths in pure love, the perfume of their souls.

Modern scientists are well pleased that they have discovered that the life is in the blood. Had they studied their Bible it would have saved them many weary experiments, for we find in Leviticus, chapter 17, verses 10-14, the following: "For the life of the flesh is in the blood **for it is the blood that maketh atonement for the Soul." This same blood may be found in nine hundred millions of human beings now on the globe, and all of them with distinguishably different expressions, voices and emotional feelings, all subservient to the laws of one God—a Trinity in Unity.

In tracing the growth of free thinking, from its cradle to its grave, the following table will explain itself as a record of the principal steps in the downward progress of Rationalism and its followers:

EVOLUTION IN ATHEISM.

Bible reading morning and evening is dispensed with: Going to church twice every Sunday is entirely unnecessary; for they can stay at home and read something holy. Do they? Then morning and evening prayers are given up. The prosperous man is "*always grateful*;" and the unfortunate says he has not the time. They cannot understand certain passages in the Old Testament, so that is no longer believed in as inspired. Next, having neglected so many duties, Hell is given up, for it produces an uncomfortable sensation. Next the Devil

vanishes. Then the Saviour ; for if there is to be no punishment, what need of an Atonement ? As a consequence the New Testament is also deserted, and science comes in to render everything matter of fact : an impossibility for there is no matter in the soul. Heaven now vanishes from their horizon. They return to the days of Plato and the various atomic theories, and pronounce sentence against creation in general and a Creator in particular. Their inverted minds can no longer comprehend the subtleties of reward ; and “ no future ” follows next in order. This leaves nothing for the mind, but annihilation : and the result of all is NO HAPPINESS ! for the prosperous unbeliever, from the indifference of ease, has adopted some Idiotism ; while the man of cares, rendered desperate, hates God, and his fellow beings, and ere long, becomes an atheist.

The Omniscient Being created this world perfect as to rules and utility for a specific end, too grand for our little selfish minds to grasp ; for we can only look on one side at a time. No man living has ever been able to add one suggestion for the benefit of creation ; not a single mistake has ever been detected in the organization of man or beast. A learned writer once remarked that dirt was matter out of place : and if in our researches we find any thing that appears to us hideous or repulsive, in shape or color, let us believe that it is only color or shape found out of the place where God placed it ; the result of a deviation of some well known law of life. Our earthly vision is shut in by an earthly horizon. Faith, the eye of the soul, is required to reach the abode of bliss and holy happiness. If the earth was made for our bodies, there should be and is a Heaven for our souls. Religion, meditation and prayer, form the tripod on which the oracle may rest. It enabled a Paley to write for God, while in continuous agony ; a Bunyan, in jail, to portray a Christian's struggles ; the martyr at the stake to pardon his persecutors ; and a dying Saviour to exclaim “ Father forgive them for they know not what they do.” If modern Christianity is civilized Heathenism, then modern skepticism is heathenized civilization.

Can it be possible that man, a human form, to whom homage is paid both by animal and vegetable; the focus of ingenuity; the wonderful exposition of cause and effect; the living poem of perfect measure; the mechanical wonder of the world; was born and created to grow; and having done his best to injure or benefit mankind, he, a perfect score in the plan of creation, shall cease to exist when the body sinks; and the soul stained with sin shall meet with no just punishment, when laws against crime govern this world? Or, if he has raised the lowly, forgiven the erring, and relieved the suffering and needy relative, is he to blot out, even as a worm is trodden down, and reap the benefit of no approving conscience? Are three score years and ten of mental anguish, physical self-denial, and abundant trials to lie down, side by side, with the decaying body of a debauchee, who has never resisted one temptation; has talked and thought and acted blasphemy throughout his life? To be brief, are sin and innocence, guilt and virtue, to cease forever when "their time comes?" How *can* there be annihilation! What madness! A sympathy is needed; and the same God, who created and watched you through your struggles, will meet you in the next world; be you a good bad man, or a bad good man! I assert, from physiological conviction and observation, that only the good are happy and happiness is the aim of all, either in this or the next world. Only those who acknowledge the great I AM, are at peace. Excitement is not happiness. It is only for him who communes with his own heart and can dare to be left by himself, with his own conscience, who acknowledges God in all his thoughts. A great un-naturalist of the day stated not long since, that the severest obstacles he had to contend with during his labors, were the religious views of his youth. These required more exertion to smother (he could not kill them,) than all his investigations as to development and the survival of the fittest. Throughout the posthumous papers of another learned iconoclast, may be seen his struggles with christianity. Were a man, on receiving \$10,000 from you, to take half to sue you for presenting him with what he said and tried to prove you never owned, the world would cry out "shame!" Yet man uses his

brain, a direct gift from God, to argue against a creation and Creator. How miserable the conduct of one, who attacks a host under his own roof.

Even Archimedes saw the necessity of another world to use as a fulcrum before he could move this. Do not borrow but make your own brains first, before you seek to move the ancient land marks. Let us shrink back at our own littleness in practical religion, when we read of the self immolation of heathendom to appease a wrathful Deity; while all that is asked of us is, to bow in reverence, believe and love, and show it by our actions.

Did Voltaire die happy? How were the last few years of Tom Paine's life passed? Is the career of J. J. Rousseau a good idea of contentment? A cloudy exit has very often been quoted as the calm end of the stoical atheist; but it is false. So many are now writing against God, that it becomes every professing christian to put on his badge and declare openly his abiding faith in Redeemer, King, Creator. Clergymen are expected to preach; yet I cannot help feeling that the earnest testimony of every layman might be the means of awakening some to the comfort of faith. Many a learned free thinker, who used to lisp prayers at his mother's knee, exclaims, "would that I could believe every word of the Bible." They throw away the Key of Life which has the magic combination, "God and Christ," spelt on it, and try to pick the lock, but in vain.—They accept the most impossible theories as facts, and reject self-evident truths. No living man is at heart an atheist. It is an incompatible condition. It would require a vacuum in the soul, an utter impossibility. If the desire is not filled with God, it *must* take up an "ism;" something to pet, love, admire and study. "To the unknown God" would apply to many in the 19th century, if they would only open their eyes.

How any scientific man can be an infidel is a perfect wonder to me. For the more one studies out the marvels of creation; the more he is permitted to peep into the penetralia and behold the arcana, the hidden treasures of God's works, the more he looks at and never, never finds an error in the plan of the uni-

verse ; the more he beholds the unceasing labors of the world—while half sleep in darkness, the other half are toiling. A Heaven, some shrine beyond the reach of the tangibility of science and analysis is needed for the soul to take the wings of the morning and fly to. There is no limit to unselfish love.

On earth you can test, fathom, measure, weigh. Each year this little world grows smaller, for science causes every thing to shrink, till it can be grasped within the hollow of the hand. Travel is more rapid, and facilities will increase. Formerly it took years, often a life time, to circumnavigate the world. Now it can be done in 80 days ! and messages are sent to every land in a few seconds. To-day's events in Europe will appear in to-morrow's journal. The world in many senses is growing smaller every year. But the soul is never cramped ; it is permitted to grow in grace, during a well spent life ; for the goal is Infinite ! The body may, at times be surfeited, but the soul has always room for more love, more sympathy, more heroism.

Everything in nature has an equivalent. If the mind has memory to look back on the soul, the essence of the mind, must have a future to look forward to. Watch the sun as it shines through that stained glass window, on which is painted the image of a man. See how it throws the patterns of many forms, and colors on the floor. It is the same Sun, God for all. The windows are our bodies, and the patterns on the floor (the earth,) are shaped not by the sun (predestination,) but by our own deeds ; the colors being our thoughts and passions. Now destroy the window, and the shadow, color, and shape on the floor (this earth,) are gone. The glass, our bodies, may be destroyed ; but not that ray of light,—the soul—it still remains pure, and in direct communication with God. How dare any one vivisect the Trinity !

One of the most beautiful thoughts in science is the idea of all light coming from the Sun. That the wood fire is only its rays absorbed by the living tree ; for, after lying buried for years, the moment it is called into action it yields a genial flame, and throws out heat and light again.

Little did the great author, realize that, in suggesting this grand thought, he was, in reality, explaining, in forcible and glorious analogy, the mysteries of the resurrection of the body and the life everlasting.

If the increase of knowledge is to be estimated in proportion to the deficiency of belief; and to be learned one must doubt; if the merest assertions of the "scientific philosopher," are to be treated with commendation, and the avowed declarations of the inspired Bible are to be scoffed at; if as man, the self appointed searcher after truth, grows in wisdom, the Creator and His attributes are to be deemed of less and less value; I would rather be ridiculed on earth as an "ignorant Christian," than find myself left out of the Book of Life, and pointed at, in the Day of Judgment, by the Lord God Almighty, as a learned (sic) infidel.

