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ELECTRICAL THEORY OF ANIMAL HEAT.

We have shown in the preceding article, that the blood is the conducting medium for electricity, between the lungs and the nervous system. To show that the blood is a suitable conductor, we have only to add, that chemical analysis has demonstrated the blood to contain charcoal and iron, which are both perfect conductors of electricity. Oxygen is the only simple substance which naturally combines with negative electricity, while nitrogen, carbon, &c., are naturally combined with positive electricity. The union of the negative, with the positive electricity, forms caloric. It is upon this principle we shall seek a solution of the problem:

"What causes animal heat?"

The union of these two electricities takes place, when two substances form a chemical combination, in which instance their opposite electricities are disengaged. In the act of respiration, the negative electricity contained in the oxygen, which is inspired, unites with the positive electricity contained by the blood, and produces the evolution of heat, which takes place in the lungs, and from this point conducted through the system. In proof of this fact, we find in all cases of disease, that heat is unequally distributed through the body—the most excited part of the system accumulating the greatest amount of heat. "Like causes, like effects." Let us see if analogy will support our theory. It is known, that if the opposite poles of an electrical machine be brought together, so that positive and negative electricity are united, that this combination evolves heat, and that, the heat will be in proportion to the amount of electricity present. For instance, take a galvanic battery, and bring the opposite poles sufficiently close together to be connected by a piece of charcoal, and it will immediately ignite—the densest met-

als—even the diamond may by this means be reduced to its original element. Hence, we find that the union of positive and negative electricity evolves heat, which may be sufficiently concentrated to produce combustion.

To carry out our views still further, and strengthen our position, we will further state that a piece of iron may be heated until it is of a white heat, then by throwing a current of cold air upon it by a bellows, there will be sufficient heat evolved to reduce the iron to a liquid form. This effect is, undoubtedly, produced by the negative electricity contained by the air, combining with the highly charged state of the iron. Respiration itself is a partial combustion, and the atmosphere is the fuel which feeds the flame, and keeps up the heat. Combustion takes place in consequence of the highly excited condition of the opposite principles in action, producing a high degree of friction, attended by the disengagement of heat. Heat is produced by the union of the opposite electricities, which are set at liberty, in consequence of the oxygen combining with the combustible body. Hence, we see how animal heat may be produced.

But again, in respiration, a certain portion of oxygen combines with the carbon of the blood, and converts it into carbonic acid gas. Every chemical union produces an evolution of heat, owing to the union of positive and negative electricity. Hence, again, heat is evolved when the oxygen of the atmosphere combines with the carbon of the blood. If this heat was obtained merely from the heat contained in the air, as has been supposed by some, the temperature of the body would not be so uniform, and the respiration would necessarily be effected during the night. This important function is undoubtedly carried on by means less variable and uncertain; and it is very plausible to suppose that animal heat is produced principally, if not entirely, by the chemical process which we have described. Though we may feel chilled by the inspiration of the night air, the temperature of the blood remains about the same, and respiration is as free and as regular at night, and in the winter, as in day time or in summer, provided the lungs are in a healthy condition.

This, however, is not the case, when the air has lost its elasticity, which depends upon the quantity of electricity it contains. The breathing then becomes oppressive, and many unpleasant nervous sensations are the result of a negative state of atmosphere. This state of the atmosphere soon produces disease, and if it should continue too long, death

would ensue. There is a material difference in our feelings, in a damp cloudy day, and a clear dry day. In the first, the atmosphere is negative, and in the latter it is in a positive state of electricity. The union of negative and positive electricity, causing an evolution of caloric, undoubtedly takes place in all the organs in which chemical changes are carried on. Bichot asserts that "heat is produced in the general capillary system, as well as in the lungs." Hence, heat may be generated in other organs as well as the lungs, and thus diffused throughout the system.

The evolution of heat which takes place in the *stomach* during digestion, is no doubt caused by the union of the nervous fluid, (which is a modification of electricity,) with the opposite electricity of the aliment. We cannot doubt the nervous influence in digestion; for should the eighth part of nerves which go to the stomach be tied off or severed, digestion would cease. This experiment is very conclusive proof of the nervous influence. Digestion then, may be produced by attaching the wires of a galvanic battery to the nerves, which lead to the stomach. It is also possible then, that electricity acts an important part in the chemical changes, which takes place in digestion, as well as in all the organs of secretion; for the *chemical combination* of different substances is partly effected by the union of positive and negative electricity. These facts would go very far in proving the identity of electricity, galvanism, magnetism and the nervous fluid. There can be but lit tle doubt, that electricity is the primary or elementary principle, and tha galvanism, magnetism and the nervous fluid, are but modifications of this *universal* principle. Hence, we find that the properties of electricity are calculated for the performances of all the principal functions of the animal body—chemical change, muscular motion, animal heat, etc., etc. Hence, too, we develope the sublime fact, that the animal body is an exquisitely organized *galvanic battery*, by means of which, heat is constantly evolved, vitally supported, sensation excited, and locomotion produced, and the whole maintained as long as the machine is kept in proper order.

We are now prepared to show in few words, how the body and mind, too, are replenished and invigorated.

ELECTRICITY.

[*Continued.*]

Two Theories of Electricity.

In a very early stage of electrical inquiry, it was observed that there was a remarkable difference of effect manifested by different substances when excited. *Ex.*—Charge two insulated pith balls by holding near them an excited glass tube, the balls will separate from each other; the same is the effect when both are charged by holding to them an excited stick of sealing wax, yet when one is electrified by the glass and the other by the wax, they are mutually attracted.

This circumstance gave rise to the opinion that two different species of the electric fluid existed, a theory first promulgated to the world by M. DuFay, who called the two fluids by names accordant to the substances which produced them; that produced by the friction of glass he called vitreous, and that caused by exciting sealing wax, the resinous.

This opinion of Du Fay was eagerly adopted by the electricians of Europe, who by it were enabled to account for all the appearances their experiments elicited, but when it became known that the same substance sometimes showed the vitreous and sometimes the resinous, the names given to the two fluids became inapplicable, and when the Leyden phial was discovered, they were at a loss to explain its action by this hypothesis. Dr. Franklin, with his usual sagacity, founded the other theory; not indeed a perfect system, but one which rapidly ran over Europe and America, for it was the only one which could explain the action of the Leyden jar, which at that time engaged the whole attention of the learned. He imagined that there was but one fluid, and that all bodies whatever contained a certain quantity of that fluid; which quantity we may increase or decrease at our pleasure. When increased he styles it *plus*, or *positive* electricity, and when a diminution takes place, he calls it *minus*, or *negatively* electrified, which terms positive and negative are now universally applied when speaking of electrified bodies. Not being able to explain the action of the Leyden jar was not the only reason for doubting the truth of M. Du Fay's theory, for it was soon discovered that the same body showed sometimes the resinous, sometimes the vitreous effect; how could this be accounted for? On the other hand, by Franklin's hypothesis nothing is more easy. The different effect is produced by the state of the rubber, as it is found that when two substan-

ces are rubbed together, so as to exhibit electrical appearances, that one of them is always positive and the other negative. The following list of substances is so arranged, that when either is rubbed with any of the bodies placed above it, it becomes negative, and rubbed with any standing below, it shows signs of positive electricity.

Back of a cat.
Smooth glass.
Woolen cloth.
Feathers.
Wood.
Paper.
Silk.
Gum lac.
Roughened glass.

Thus if a tube of smooth glass be rubbed with a woolen cloth, or a silk handkerchief, it becomes electrified *positively*, as these bodies stand under it in the table, but if glass be rubbed with cat's fur, it becomes *negative;* in the former case, it absorbs the fluids from the materials rubbed against it, and therefore becomes overcharged; in the latter case it shows a negative property, in consequence of parting with a portion of its natural share, to the cat's skin—thus, as Franklin would have said, it has a superfluity in one case, in the other a deficiency.

Nothing can possibly be more easy to understand than this, and in every case in which the theory can be applied, equal facility can be offered, or at any rate there is no fact which cannot be explained by this hypothesis, except indeed such as are equally unintelligibly by the other also.

But in giving an opinion on any disputed point of philosophy, it is right to state the arguments for and against any particular view, and to institute a fair comparison, by explaining the foregoing experiment by means of Du Fay's theory. Those of his school believe that there are two electrical fluids, antagonistic to each other, and that when one of these is by any means disturbed, the other is equally so—thus it supposes two causes for a single effect, certainly an anomaly in physics. In the rubbing of the glass tube with a woolen cloth, and thereby producing an electrical action, two fluids then are disturbed, which two, nevertheless, exist in each body; and when the glass and cloth are separated, still the fluids do not coalesce, though both are present in every portion of the glass, and also of the woolen. Why this is, nobody can tell, nor is an attempt at explanation given at all. It has been said, that

there are many circumstances to invalidate the Franklinian hypothesis—the strongest of which is, that when a shock is passed through a card there are often two holes made in it, therefore, there must necessarily be two fluids passing—each of which has its appointed channel. Nothing can be more easy than to explain the reason of these various perforations. Is it not, also, the fact, that if the water of a river meets with an obstacle, it divides into two streams, though it still passes on in its general course? And thus it is with the electric fluid. The card is the obstacle, being a bad conductor, which occasions the fluid to break into two streams—there are seldom more than two, because the fluid requires no more channels; sometimes, and, indeed, most frequently, but one, and then one hole only is apparent. The same experiment affords a second objection to the one-fluid theory. If a shock be passed through a damp card, a burr, or rough edge, will be found on each side of it, which some persons believe to be an incontestible proof of two fluids, one passing in each direction. The experiment really proves no such thing, and may be imitated many ways—by the passage of one body only through another: thus, when a leaden ball is fired from a a musket against a sheet of copper, with sufficient force to pass through it, a double burr will be very plainly distinguishable; so also enlarge a hole that has been made in an iron hoop, with a semi-circular tapering bit, such as is used for metals, and a very strong burr will be found on each side of the hole. In these instances it is certain that but one body is in motion—why then should a similar appearance in the card prove that there are two fluids in motion? There is truly no appearance of a double stream in any electrical experiment whatever. Pass a shock over the surface of a card covered with vermillion, a single black mark will appear. In lightning there is but a flash in one direction, no counter flash meets it in its course. When a shock is sent along an exhausted glass tube, so as to imitate a falling star, or when a falling star is seen in the heavens, no other stream of fire is apparent; and also the circumstance of the luminous star visible on the negative side of the apparatus, and the brush on the positive side, is wholly inexplicable by the system of Du Fay, though nothing is easer by the more simple and more philosophical hypothesis of Franklin.

[To be continued.]

DE OBFUSCATIONIBUS.

[*Continued.*]

"This, sir, says Glanville, was the first account of the Healer, I had from that reverend person, which with me signifies more than the attestations of multitudes of ordinary reporters; and no doubt but it will do so likewise, with all that know that excellent man's singular integrity and judgment. But besides this, upon my inquiry into some other particulars about this matter, I received these further informations."

"As for Mr. G. what opinion he hath of his own Gift, and how he came to know it? I answer, he hath a different apprehension of it from yours and mine, and certainly believing it to be an immediate gift from heaven; and 'tis no wonder, for he is no Philosopher; and you will wonder less, when you hear how he came to know it, as I have often received it from his own mouth. About three or four years ago he had a strong impulse upon his spirit, that continually pursued him whatever he was about, at his business, or devotion, alone, or in company, that spake to him by this inward suggestion, (*I have given thee the gift of curing the evil.*) This suggestion was so importunate, that he complained to his wife, that he thought he was haunted; she apprehended it as an extravagancy of Fancy, but he told her he believed there was more in it, and was resolved to try. He did not long want opportunity. There was a neighbor of his grievously afflicted with the King's Evil. He moved his hands up and down over her,* and the effect succeeded. And for about a twelvemonth together he pretended to cure no other distemper. But then the Ague being very rife in the neighborhood, the same impulse, after the same manner, spoke within him, (*I have given thee the gift of curing the Ague,*) and meeting with persons in their fits, and *taking them by the hand, or laying his hand upon their breasts*, the ague left them. About half a year afterwards the accustomed impulse became more general, and suggested to him (*I have given thee the gift of healing,*) and then he attempted all diseases indifferently. And though he saw strange effects, yet he doubted whether the cause were any virtue that came from him, or the people's fancy: To convince him of his incredulity, as he lay one night in bed, one of his hands was struck dead, and the usual impulse suggested to him to make trial of his virtue upon himself, which he did,

* See II Kings, v. 11, marginal variation of *strike*.

stroking it with his other hand, and then it immediately returned to its former liveliness. This was repeated two or three nights (or mornings) together.

"This is his relation, and I believe there is so much sincerity in the person, that he tells no more than what he believes to be true. To say that the impulse was a result of his temper, and that it was but like Dreams, that are usually according to men's constitutions, doth not seem a probable account of the phenomenon. Perhaps some may think it more likely, that some Genius who understood the sanative virtue of his complexion, and the readiness of his mind, and ability of his body, to put it in execution, might have given him notice of that which otherwise might have been for ever unknown to him, and so the Gift of God had been to no purpose."

"This, sir, continues Glanville, is my learned and reverend friend's relation, and I judge his reflections as ingenious, as his report is sincere. I shall say no more about it but this, that many of those *Matters of Fact, have been since critically inspected and examined by several sagacious and deep searchers of the Royal Society*, whom we may suppose as unlikely to be deceived by a contrived imposture, as any persons extant.

The case of Greatrak (or Greatrax) is in possession of the advocates of Mesmerism, and some slight reference to him may be seen in the Magnet, published in New York. But Glanville's account is more circumstantial, rational and credible, than any now in circulation. There is another account of him by Henry More (doubtless the Dr. M. referred to in the first letter above) in the 58th sec. of a work entitled Enthusiasm Triumphatus, which can only be had I presume in old or extensive libraries.

According to your wish, I will add some other evidences of Animal Magnetism, some of which I think you will hardly see in the publications of the day.

There may be reasonably more weight attached to an argument resting on alleged facts, not originally set forth to establish the point in question. The objection to most recent experiments in favor of Mesmerism is, that they have been made and are urged for the purpose of supporting a theory. If similar experiments or facts can be authenticated as having occurred "of old time which was before us," they are much less questionable and carry with them much greater weight. Even mere intimations and vague allusions, besides assertions and opinions,

are useful in critical hands to establish important results, as all know who are familiar with Niebuhr, De Wette, and Strauss. But each one must make his own inferences.

The 7th question discussed in the 5th Book of Plutarch's Symposiacks is, "concerning those that are said to be-"witch," and from the fact that the question was discussed at all, it must be allowed to have been regarded as of some importance. One of the Collocutors says, "we know that some men by looking upon young children hurt them very much, their weak and soft temperature being wrought upon and perverted;" and it is added,—"But perhaps this is not so much to be wondered at, for in *touching* and *handling* there is some apparent principle and cause of the effect * * * * * so there is no reason to the contrary, but that one man's *touch* may be good and advantageous, and another's hurtful and destructive. But that some, by being barely looked upon are extremely prejudiced *is certain*, though the stories are disbelieved, *because the reason is hard to be given.* * * * But methinks there is some small track to the cause of this effect, if you come to the *effluviums* of bodies."

In the "Natural Questions" Plutarch cites Empedocles for the opinion that "Effluvia proceed from all things whatever—not only animals, plants, the earth and sea, but stones and even brass and iron do continually send out many *effluvia*. Drawing along or falling occasions *effluvia:* some suppose embraces, others blows, some impulses, others circuitions." This is according to the translation of 1694—that by Holland of 1603 is no better.

Again in the Essay to explain "Why the Oracles cease to give answers," Plutarch introduces some one who says, appealing to Hesiod, "that the same difference that there is between one man who acts in a tragedy and another who acts in comedy, is also to be found in this life in souls that are clothed with bodies. So that there is nothing in this which is strange or contrary to reason: If souls meeting with other souls do imprint on them visions and apprehensions of future things; just as we show several things already done and come to pass, and prognosticate of those which have not yet happened, not only by the help of speech, but also by *letters* and *writings*, or by a *bare touch* or a single look * * * For the soul, whilst 'tis fastened to the body, has the power of discerning future things, were it not blinded by the relation it hath to the earthiness of the body. For as the sun does not then properly become bright, when it has escaped out of a cloud (for he is

always bright, though to our eyes, being clouded, he seems obscure and dark) so the soul acquires not then the faculty of divining, when freed from the body as from a cloud, but having the same before, is blinded by the commixture and confusion which she has with the mortal body." * * "Our souls then having this inbred power, though weak, obscure and hardly able to express their apprehensions; yet sometimes they spread forth and recover themselves, either in dreams, or in the time of sacrifice or of religious worship." * * "Now this faculty, like blank paper, is void of any reason (cause) or determination of itself, but is susceptible of fantasies and pre-sensations (pre-visions?) and without ratiocination or discourse of reason, touches on that which is to come, when it is farthest off from the *present, out of which it departs, by means of a certain disposition of body*, which we call Inspiration or Enthusiasm. *Now the body is sometimes endued naturally with this disposition;* but most times the earth casts forth to men the causes of several other powers and faculties (than they ordinarily have,) some of which carry men beside themselves into ecstacy and prhenzy, and produce maladies and mortalities; others again are sometimes good, gentle and profitable, as appears by those who have had experience of them."

There are many more opinions similar to these in Plutarch, but here are enough to satisfy not a few that shadows like these have been in the world a very long time, and some may think it not impossible to discover the reality by which they are cast. It is an old maxim, that where there is much smoke there is some fire; and although Dr. Dendy, in his playful work on the Philosophy of Mystery, may laugh at Cardan and others who have claimed the extraordinary endowment of being able to throw themselves into ecstacies, as putting forth groundless pretensions, it may nevertheless be possible that some men should have that power; and while in the possession of it they may now and then fancy it the evidence of divine favor, and regard their visions as truth supernaturally communicated, although others may see in most cases merely a disturbed imagination: It is not very difficult to believe that, in occasionally a single case, a remarkable coincidence of favorable causes may bring forth declarations of such seeming truth and power that, as Carlyle says in the case of Mahomet, a hundred and fifty millions of people may live upon them for more than twelve hundred years.

"After his *fits* or *trances*, says Sir Wm. Temple, Mahomet wrote the many several parts or chapters of his Koran, as newly inspired and

dictated from Heaven, and left in them that which to us, and in its translations, looks like a wild fantastic rhapsody of his visions and dreams, or rather of his fantastical imaginations and inventions, but has ever appeared among all his followers as a book sacred and divine; which shows the strange difference of conceptions among men."

[To be continued.]

SWEDENBORG'S ANIMAL KINGDOM.

[*Continued.*]

Series is the form under which the co-ordination and subordination of things, according to order and degrees, ultimately present themselves. The whole body is a series, which may be looked at either generally, from above to below, as comprising the head, the chest, and the abdomen; or universally, from within to without, as divisible into the three spheres already alluded to. All the organs of each region are a series; each organ in itself is a series; and every part in each organ likewise. In short, every thing is a series and in a series. There are both successive and simultaneous series, but the latter always arise from the former. Essences, attributes, accidents, and qualities follow their substances in their series. Every series has its own first substance, which is more or less universal according as the series is more or less general. This first substance is its simple, unity, or least form, governing in the entire series, and by its gradual composition forming the whole. Each series has its limits, and ranges only from its minimum to its maximum. Whatever transcends those limits at either end, becomes part of another series. The compounds of all series represent their simples, and shew their form, nature, and mode of action. The Doctrine of Series and Society teaches that contiguity and continuity of structure, and indicative of relationship of function, and that what goes on in one part of a series, goes on also, with a determinable variety, in all the other parts: wherefore each organ is to be judged of, and analysed, by all the others that are above and around it. In this manner, the whole series is the means of shewing the function of each part of itself, and indeed of analysing that function into a series similar to that of the whole; for the least in every series must represent an idea of its universe. Under the operation of this law, the point becomes a world analogous to the great world, but infinitely more perfect, potent, and universal.

Such is a very brief illustration of the Doctrines of Order and Degrees, Series and Society, from which it will be evident how closely connected these Doctrines are, and that they can hardly be stated without our seeming to repeat of one what has already been predicated of the others. Degrees appear to involve the distinct progressions of creation from above to below, or from within to without: order, to appertain to the law of succession observed in degrees, whereby rank and height are given to excellence, priority, universality, and perfection; series, to involve the complex of the whole and the parts when created and coexisting; and society, to be the law of contiguity and relationship existing between different series, and between the parts of any single series. Perhaps it would not be far wrong to state in generals, that order and degrees involve the creating and successive, series and society, the created and simultaneous. But as we have said before, Swedenborg never stated these doctrines as promised in the "Animal Kingdom," but contented himself with using them as analytic instruments in the exploration of the body; and therefore the reader will learn them best in the way of example and illustration in the Work itself.

The Doctrine of Influx involves the manner in which the lower substances, forms and forces of the body subsist, as they at first existed, from the higher and the highest; and in which the body itself subsists from the soul, as it at first existed; and the natural world from the spiritual. But there is not only an influx from within, but also from without, and by virtue of both, the body, which otherwise would be a mere power, is raised into an active force. *

The Doctrine of Correspondence and Representation teaches that the natural sphere is the counterpart of the spiritual, and presents it as in a mirror; consequently that the forms and processes of the body are images of the forms and activities of the soul, and when seen in the right order, bring them forth and declare them. It shows that nature is the type of which the spiritual world is the ante-type, and therefore is the first school for instruction in the realities of that which is living and eternal.

The Doctrine of Modification teaches the laws of motion and change of state in the several auras or atmospheres of the world, and in their spiritual correspondents. †

What was stated of the Doctrines of Order, Degrees, Series and So-

* See "Animal Kingdom," vol. II, p. 559.

† See Animal Kingdom, vol. II, p. 49.

ciety, as mutually supposing, or as it were interpenetrating each other, may be repeated generally of the whole of these doctrines, and this, because they are all but so many varied aspects of the one principle of divine truth or order. Like nature itself they are a series, each link of which involves all the others.

The Doctrine of Series and Degrees in conjunction with that of Correspondence and Representation, teaches that there is a universal analogy between all the spheres of creation, material, mental, and spiritual: and also between nature and all things in human society. The circulation of uses in the body perfectly represents the free intercourse of man with man, and the free interchange of commodities between nation and nation. The operations that go on in the body, analogically involve all the departments of human industry; nay, and infinitely more, both in subdivision, unity, and perfection. There is not an art or trade, whether high or low, so long as it be of good use, but the Creator himself has adopted and professed it in the human system. Nay, in the richness of his pervading love, the very prerogatives of the mind are representatively applicable to the body. End, cause, and effect, as existing in Himself, are represented in the latter as well as in the former. Liberty and rationality, the universal principles of humanity, are transplanted by analogy from the mind into the body. It presents an analogon of liberty, in that every organ, part, and particle, can successfully exercise an attraction for those fluids that are adapted to its life and uses; of rationality, in that it acts as though it took cognizance of the adaptability, and operates upon the materials demanded and supplied, in such a manner as will best secure the well being of itself and of the whole system.

This may account to the reader for the extremely figurative character of Swedenborg's style, and shew that it proceeded from the reason and not from the imagination. It is because each thing is a centre to the life of all things, that each may freely use the exponent terms of all. Analagous uses in the body and the soul furnish the point of contact between the two, and the possibility and the means of intercourse. Had Swedenborg confined himself to the dry straitness of what is now called science, he must have forfeited the end he had in view; for matter, as matter, has no communion with spirit, nor death with life. It was absolutely necessary that the body should be tinctured with life in all possible ways, when it was to be the medium of instruction respecting the soul.

But it is time to instance a few of the results to which the above doctrines lead when wisely applied to the living body. It will, however, be impossible to give anything beyond the merest sketch of Swedenborg's physiology, or to look at it from more than a single point of view. He himself has regarded it from all sides, or from each organ and sphere of the body, and given what may be called a combined proof of its correctness.

The alimentary canal and the whole of the viscera of the abdomen form one grand series subservient to the creation of the blood. This again is divided into three inferior series, whereof one primarily respects the chyle, another the serum, and a third the blood already formed. There are then three series of digestions: 1, The alimentary canal commencing at the tongue and terminating with the rectum, performs as many distinct digestions of the food, and eliminates from it as many distinct products, as the canal itself has distinct divisions, and articulations. Thus there is the chyle of the tongue and mouth, the chyle of the stomach, the chyle of the small intestines, and the chyle of the large intestines, and all these chyles subserve the blood in a successive series, coincide in its formation, and ultimately coexist within it in a simultaneous series. When the chyle has been inaugurated into the blood, and is once in the arteries and veins, it is no longer called chyle, but serum. 2. The serum is the object of the second digestion. The finer parts of it therefore are secreted, and the worthless parts are excreted and thrown out, just as was before the case with the food. The former operation is performed by the pancreas, the latter by the kidneys. 3. The blood itself is the object of the third digestion. This process, termed by Swedenborg the lustration of the blood, takes place in the capillaries and glandular elements all over the system, but specifically in the spleen, the pancreas, and the liver. As in the first series there are various menstrua or media between the chyle and the blood namely, in the mouth, the Saliva; in the stomach, the gastric juice, which is the saliva potentialized by the peculiar action of the stomach; * in the small intestines the pancreatic juice, and the hepatic and cystic biles; and in the large intestines the liquid distilled from the vermiform appendage of the cœcum; so in each of the other series corresponding menstrua are required and applied. The blood of the pancreas, and the blood of the spleen deprived of its serum by the pancreas, serve in the liver as a menstruum for refining the chyle and lustrating the blood.

* See "Animal Kingdom," vol. I, p. 122, note (a) p. 133, note (y.)

The lymph is a kind of ultimate saliva which digests the chyle as the common saliva digests the food. The lymph of the spleen, for instance, digests the chyle in the mesentery, as its blood digests the chyle and blood in the liver. In short, as all the abdominal viscera form one series of uses, so the lowest and largest form of that series may be taken as an exponent of the whole; and it will then be found that all these organs are high evolution of the alimentary tube, digesting finer and finer aliments, (for the blood itself is the essential aliment of the body,) and throwing out subtler and subtler excrements or impurities. Thus the liver is the stomach of the chyle and blood; and the ductus hepaticus and the gall-bladder and ductus cysticus are respectively analogous in their proper series to the small and the large intestines.

The viscera of the thorax also minister to the blood. The heart is a chemical organ for preparing liquids to enter into its composition, at the same time that it is the beginning of the circulation. It separates the blood into two parts, a purer and a grosser; the purer it sends away through the lucinæ underneath the columns on its inner surface, by a series of ducts into the coronary vessels, which are the true veins of the heart, † the grosser into the lungs. Thus it also is an organ of blood-digestion or sanguification. The lungs have three general functions: 1. They lustrate all the blood of the body, especially in regard to its chyle or serum; their office in this respect being analogous to that of the kidneys in the abdomen. 2. They feed the blood with ærial and ethereal chyle, as the viscera of the abdomen with terrestrial chyle. 3. They call forth the powers of all the organs of the body by respiration. With respect to the last-named of these offices of the lungs, namely, that they supply the body and all its parts with motion, it is one of the most important discoveries in the "Animal Kingdom," and not less wonderful in its consequences than in its simplicity and obvious truth.

MEDICAL CASES.

CLAIRVOYANT Examination of Mr. ———, by C. Eaker:

"This patient's system is very much deranged—there is much general debility, and considerable of low internal fever. The lining mem-

† On this subject examine Swedenborg's "Economy of the Animal Kingdom," tr. i., n. 399—459.

brane of the lungs are very much irritated, and also of the stomach. The liver is quite torpid, and the digestive organs are weak.

The principal cause of these derangements, is loading the stomach with too great quantities of food; and especially with too great a variety of dishes at the same meal, which over exercises the digestive organs, and consequently weakens and debilitates them. It also produces too great a fomentation in the stomach, which creates inflamation, and fever is the result. From long standing, and a continuation of the same cause, the disease has spread from one organ to another, until the whole system has become equally involved in the general derangement."

Remedies.—"1-4 lb. Cherry Bark; 2 oz. Dandelion Root; 1 1-2 oz. Lady Slipper; 1 oz. Blood Root; 2 1-2 oz Elecampane; 2 oz. Solomon Seal; 1 1-2 oz. Mandrake; 2 oz. Liver Wort—make into half a gallon of syrup, and add one pint of best brandy. Let the patient take half a wine glass full three times per day."

2dly. "Take one drachm of ex. Dandelion; 1 oz. Sulphate of Iron; 1 oz. Carbonate of Potash; 1 oz. Gum Myrrh—Make into five grain pills—dose, one three times per day."

"The Magneto-Electrical Machine should be applied once per day for two weeks. The negative pole should be placed over the region of the liver and stomach, and the positive passed along the whole length of the spinal column."

"The patient should spunge his system all over about every third evening with tepid water made caustic with salsoda, and every morning with cold saline water.

The alkaline bath will tend to remove the gummy matter, which settles on the surface, and the saline bath will strengthen the capillory system, and enable it to perform its functions properly."

If the patient will rigidly adhere to this course of treatment, and at the same time be very careful to eat but little at a meal, he will soon recover his health. He may eat whatever his appetite craves; but he must recollect to eat but little at a time of any one dish, and the simpler his meals the better."

"The patient should spend several weeks in the country, and take considerable exercise on horseback—should quit studying, and attend to the developing of his physical powers. These have been very much impaired by over mental exercise."

This patient followed the prescription, and long since recovered his health. When this examination was made, he was a mere skeleton, and

fairly staggered as he walked with weakness. His appetite was voracious, and he had indulged it until he was nearly past recovery. He had exhausted the skill of the Old School without receiving any benefit, and applied to us as a last resort.

We have used Clairvoyance a long time in our practice, and have always found it more successful than our most sanguine expectations could have anticipated. It is truly strange, that it is not more generally resorted to by the Medical Faculty—especially the thousands who have become acquainted with its wonderful power in developing disease. It is a matter of no small importance to a physician, to know correctly the internal condition of his patients.

Physicians may judge pretty correctly by external symptoms, we admit; but in how many instances are they completely mistaken, and never discover their error until it is quite too late! Thousands have thus died, ah! more!—have been killed, who might have been saved, had the physician correctly understood their disease. We boldly challenge the world for success in practice, and not in a dogmatical presumptive spirit, as many will undoubtedly suppose; but the facts will prove that it is modestly true.

We are bound to no narrow, nor even to that much lauded middle course, in our practice; but our system of practice is as broad as our perception, and as deep as our judgment, and as sure and as safe as the union of the whole of nature's remedial agents, which are known to us, could possibly render medical science, in the hands of fallible man. The mineral and the vegetable; the Hydropathic and the Duodynamic, or Magnetopathic, are all used as necessity requires.

The vegetable kingdom is based upon the mineral, and the animal upon the vegetable. The vegetable kingdom modifies and prepares the mineral kingdom for the support of the animal—hence, we choose the principle of our medicines from the vegetable kingdom. But the animal is intimately connected with the mineral, and man combines within himself particularly the principles of the whole—hence, again the justice, and great probability, that all are subservient to him in disease, as well as in health.

We feel conscientious in the course which we pursue, and the result of our practice warrants us in its continuance. Although patients fall thick and fast around us; yet we have raised every patient by these means, who has fallen in our hands since last February. (1) Not for the reason either, that few have fallen in our hands, nor for the want of se-

vere cases to test the correctness of our practice. We have had as much practice as we could attend to, and much of it were of the most aggravated cases, having been given up by other physicians, and may truly be said to have fallen into our hands at the eleventh hour. We are very positive, however, that without the aid of Clairvoyance, we should make many failures.

(1) NOTE.—The case rdeferre to here is reported in the first number of the second volume of this work.

OSKALOOKA, IOWA, July 28th, 1846.

To the Editor of the St. Louis Magnet:

DEAR SIR—How melancholy it is to see the want of a more general information among the Medical Faculty. They seem to think that they are already in possession of all the knowledge, collectable upon the sublime and intricate science of their profession. We hope to see the time arrive, when they will expand the caliber of their minds, and lay aside their dogmatical prejudices, and investigate for truth, and not for a particular theory; which is so distructive to the gaining of general information, and progressive improvement in medical science.

My object is to call your attention to a case, in our neighborhood, which has completely baffled the skill of our regular physicians. They do not know what to make of it. My opinion is, Mesmerism will explain the phenomena, and remove the disease.

The case is this, a child about seven years old, the daughter of a Mr. Sprague, has for some time been laboring under some singular derangement of her nervous system. She goes into spasms, in which the muscles contract and relax in rapid successions, throwing her body in every possible position. She remains in this condition for a few minutes, when she either returns to her natural state or appears to rest in profound sleep. When the latter is the case, she will talk to you as rational as when in her natural state; and will even tell of occurrences about which she knows nothing when in her proper mind. She has from seven to eight of these spasms within the course of a week; they frequently last from seven to eight hours. When talking about her strange disease in her presence, she will go into spasms. It not unfrequently requires the strength of two men to hold her in bed, while under the influence of this nervous derangement.

When she comes out of these spasms, and returns to her natural condition, her health is as good apparently, as it previously had been. She is of a bilio-nervous temperament, very lively, conversant, and fond of play—more so than most children of her age. What is still more strange in respect to her disease is, that she recollects nothing that occurs while thus affected. She awakes up from these long and strange sleeps, as if aroused from a mesmeric slumber, and immediately recovers her natural tone and energy. She has been affected in this manner for some twelve months.

She has been under a mild course of mercury, and freely blistered for the purpose of allaying any irritation that might be present in the medulla-spinalis. These I believe are the principal facts in the case with which I am acquainted, which I cheerfully submit for your consideration.

Your advice in this case would be greatfully received.

Your sincere friend,

J. H. CHITWOOD.

In this case we would advise the use of Mesmerism, or the Magneto-Machine. We have entire confidence, that either one of these remedial agents properly applied, or both of them as necessity may require would produce a radical cure. Should this course fail, we would advise the aid of clairvoyance. This is a strange case, and in the days of Glanville, who reported the facts which are embodied in the articles De Obfuscationibus, she would have been considered bewitched. But Science, the savior of the world, has nearly disarmed the people of two most powerful weapons—ignorance and superstition. All effects are now referred to natural causes, which, if properly understood, may be modified, if not removed.

[From the Water Cure Advocate.]

MODES OF USING THE WATER CURE.

The following modes of using water as a curative agent, are extracted from the "Philosophy of the Water-Cure," written by Balbirnie. The work from which we copy is published in cheap form, (five copies for one dollar,) by Wilson & Company, New York. It should be read by every one who cares for his own health, or the health of others.

THE RUBBING WET SHEET.

This is an intermediate process between ablutions and immersion in the cold bath, whether of the half or of the whole of the body; and is therefore another of the preparatory measures of treatment. A large coarse linen sheet adapted at once to imbibe water and to excite friction, wrung out of cold water or allowed to be dripping, is dexterously thrown as an envelope round the body: the patient at the same moment commences friction on the fore part of his person, while an assistant plies the same process on all the posterior parts. This rubbing may be continued from two to five minutes, when the skin becomes much reddened, and a comfortable glow is felt. A dry sheet is then used in the same way, and a very exhilarating reaction ensues.

This kind of bath is a more invigorating agent than mere ablution; because its momentary shock is more decided; evaporation from the surface is prevented; and a greater amount of friction is permitted. The temperature of the water, as well as the quality and quantity of friction, must be apportioned to the delicacy of the patient and the nature of the case. This is the cheapest, the readiest, and the best of all portable baths. It is a convenient application at home, and no incumbrance on a journey; realizing the advantages of the shower and plunge baths, without their occasional disadvantages, and always at hand.—"Delectat domi, non impedit foris, pernoctat nobliscum peregrinatur, rusticator."

THE SHALLOW, OR HALF BATH.

This is the common oblong bath used in our bed-rooms but containing only from three inches to one foot depth of water, of various temperatures as the case may require. This bath is used in two opposite modes, and with two very distinct intentions. It serves, in one class of cases, as a preparation for the full bath; and it answers admirably in another class of cases, where a prolonged continuance in the bath is wanted to produce a derivative effect.

1. With the first object it is frequently used morning and evening, and commonly after "unpacking from the wet sheet. The patient remains in it from three to ten minutes, being well rubbed by an assistant, and himself joining, if possible, in the operation: a few basins or buckets of cold water are generally thrown over him, before he rises from the bath. Exercise is advisable to be taken after this, as after all the other baths.

2. The second object for which the shallow-bath is employed, consti-

tutes it the 'decus et tutamen' of Priessnitz; demonstrating at once the resources of his system, and achieving some of the highest triumphs of his genius. In persons suddenly stricken down by violent maladies—in inflammatory attacks—in congestions of the nobler organs—or when collapse of the vital and voluntary powers exact the alternative of obtaining speedy reaction or incurring sudden death—in such cases, prompt and powerful measures directed by soundest judgment can alone save the patient: this means, or without its ally before-mentioned, is the single resource and the sole warranty of hope. The temperature the bath for this purpose must be lowered, and its duration prolonged from one to four or six hours, with continued friction, until reaction consecutive fever, or derivation to the extremities, is decidedly established.

THE FULL BATH OR GENERAL COLD BATHING.

This is of immemorial usage, whether in sea, river, or lake, both as a curative agent in disease, and a preservative in health. Its genial action depends on the degree of shock received, and the amount of reaction ensuing. Much fallacy prevails as well among the learned as the illiterate as to the supposed danger of cold bathing, when the body is bedewed with perspiration. The practice of Priessnitz, and of ancient and modern nations, shews with how little risk, and how much benefit, the body covered with sweat, may be plunged into cold water, or rolled in the snow. But the same holds true with the body freely perspiring from active exercise; provided there be no material structural alteration of the heart, lungs or great vessels; and the system is not in a state of decided fatigue or exhaustion. It is a customary thing for school-boys in the summer season, in the brief mid-day interval of their classes, to run to the bathing spots of rivers or canals, and plunge into the water in profuse perspiration. This the writer has done and hundreds of his school-fellows, hundreds of times, not only without any bad effects but with great advantage. Animals when pursuing their prey, or escaping from their pursuers, invariably take through all opposing waters, and emerge from the bath not only unharmed but invigorated. This aquatic hardihood may, with a very little preparation, be safely tested throughout the severest weather of winter, if a smart walk be taken after, as well as before it. But this is counsel only to the strong in limb and valiant in heart. Those with whom it agrees will not soon regret the recommendation or decline the practice.

In the water cure treatment, before taking the cold bath, the temperature of the body is duly raised, the circulation equalized, and visceral irritation soothed by the wet sheet fomentation; much more rarely now, and very properly so, by the sweating blanket. The shock is thus more general and the reaction more complete. The strength, spirits and appetite are all simultaneously increased. The early morning is the best time for this bath: but it may be repeated with great benefit more than once during the day, if the immersion be but momentary, and the system possessed of tolerable vigor. The patient must never remain in the bath until he feels chilly except under febrile excitement. The more active exercise while in the bath, as by swimming, the better. Under severe crisis, as well as in the bodily conditions formerly mentioned, cold bathing for its stimulant effect, is obviously improper.

THE HIP BATH.

Had Priessnitz done nothing else than develope the manifold and manifest advantages of this energetic remedy, he would still have done enough to entitle him to the lasting gratitude of posterity. Its powerful aid is had recourse too, to accomplish two opposite intentions.

I. As a tonic, stimulant, solvent, anti-spasmodic, and anodyne, in obstruction, engorgements, chronic irritation, and acute inflammations of the digestive apparatus, and of the pelvic viscera.

II. As a powerful derivative in acute and chronic affections of the heart, lungs, and brain.

According as either of these intentions is to be accomplished, so is the temperature, duration, and frequency of the bath to be varied. The person is covered while in the bath, all except the parts immersed. The water usually reaches the height of the navel, and the tub is only large enough to admit of free motion of the hands and arms for rubbing. The temperatures varies from 40 deg. to 60 deg. Fahrenheit, and the duration in it from a quarter of an hour to a full hour or longer. While in the bath, the patient to employ himself in thoroughly rubbing the belly, sides and loins, first with one hand and then with the other. Very soon the first chill of the bath subsides, and the heat of the water by degrees equalizes itself to nearly that of the body. If the stay in it therefore be prolonged, it is necessary to change the water once or oftener.

To fulfil the first intention specified, the temperature must approach the higher range given, that is near 60 deg., and its duration need not

exceed 20 min.; but the bath should be repeated several times a day; on quitting it, reaction is further promoted with a hard friction with a coarse dry towel. Two of such baths per diem is a usual dose; in special cases, and for a short time, five or six a day may be taken as in severe constipation, chronic diarrhœa, dysentery, passive uterine hœmorrhage, uterine and vesical catarrh of a profuse character.

To fulfill the second indication, the water must be colder, the duration in it more prolonged, and the friction more severe. To aid its derivative effect, it is sometimes necessary to apply evaporating bandages to the head or chest, according to the existing disease to be combatted.

The best time for the administration of hip baths is between meal hours, when the stomach is not loaded; and the indispensable exercise can be made both to precede and to succeed the bath. The muscularity of hip there prolonged use induces, is very striking.

THE HEAD BATH.

This is a highly energetic remedy used in determinations of blood to the head, the delirium of fever (the patient being in the wet sheet,) headaches, convulsions, epilepsy, rheumatism of the scalp neuralgia, ophthalmic diseases, deafness, loss of smell and taste.

The patient lies on a rug or matress, and the back of the head is placed in a shallow basin containing from two to four inches depth of cold water. Each side of the head is also placed in the water in succession. The duration of the bath may be from five minutes to half an hour. At the conclusion the head is to be well dried and rubbed with a towel. This friction, however, is only allowable where there is no inflammatory action to combat.

The frequent and prolonged effusion of cold water upon the head, even to the production of intense pain from the chill, is one of the most powerful tonics of the nervous centres; and has been long our main anchor of hope, when combating with the old weapons, Hypocondriasis and other nervous affections. This constitutes a very essential element of the treatment of these complaints by a reverend practitioner in London of some celebrity.

THE FOOT BATH.

Unless in sprains and local injuries, this is chiefly, if not entirely, used as a derivative bath in affections of the head, chest, stomach, intestines and uterus. For this purpose the water should be from two to

six inches deep, and the whole foot, sole, ancles and legs are to be thoroughly rubbed with firm hands, from ten minutes to half an hour; changing the water as it gets hot. The feet must be warmed by exercise both before and after the bath. This is the remedy, par excellence for habitual cold feet. It is an effectual controller of uterine hœmorrhage. If the determination of blood to higher organs still continues, wet compresses to them (uncovered by dry bandages) will be occasionally necessary.

PARTIAL BATHS.

The application of partial baths, adapted to different members of the body, has been considered as a proof of Priessnitz's admirable tact and knowledge of derivation. If the bandages in question are heating bandages, i. e. wet compresses covered by dry ones, so as to prevent evaporation, then the proof is valid, and the praise deserved. For the nature and object of such a bandage is to determine a molimen of the fluids to the part whereon it is applied; of course diverting them—deriving them from neighboring localities, and at their expense. This is at least the received theory of derivation or counter-irritation. But if, as we take it, Priessnitz's practice is to place a higher part of an affected member—as an elbow or a knee in the case of an injury in the hand or foot—in a constant cold bath, or to cover it with compresses constantly renewed before they evaporate or get warm; his object then is, Sedation—to lessen the molimen hœmorrhagicum to the part in another way, and shews his conceptions of the varied operation of water, and his strong inductive powers in turning them to practical account—a tact and discrimination greater than in the other case at least; as using the better means to attain the same end. The leg-bath, or arm-bath, when ulcers, fixed pains, skin diseases, nodes, &c., affect any of the extremities, are highly useful applications: according to the duration of the both and the temperature of the water, a sedative, stimulant, revulsive or anodyne effect is produced. The ear-bath and finger-bath, belong to the same category.
