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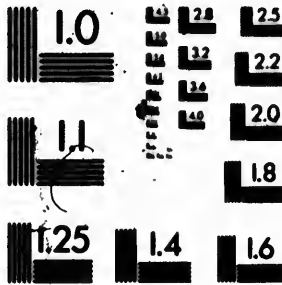
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the full light of the attention, while at the same time it is latently conscious of many other things that are transpiring or standing around it, or which have been stored away in the memory, which things thus, in the twilight or shadow of consciousness so to speak, exercise an insensible influence on the attention. This spirit action of the conscious part of the soul, in both degrees, going on simultaneously together, never ceases while we are awake; but while we may be latently conscious of many things at a time, we can be actively conscious of only one. Observe, latent consciousness is quite a different thing from unconsciousness. We can never be actively conscious of things in the unconscious sphere, because they are at all times beyond the reach of the attention; but we may be actively conscious at any time of things in the latently conscious sphere by turning the full light of the attention to them. Both the active and the latent consciousness are acts of the conscious part of the soul, and occupy the same sphere; and the moment the full light of the attention falls on anything of which we are latently conscious, the consciousness passes from the latent to the active degree. (See "Mental and Moral Philosophy.")

3. All the evidences of mental science, or rather we may say of consciousness itself, reveal to us the fact that the conscious part of the soul is an indivisible unity—that it is not divisible into parts having various functions, but that all its functions are performed by one whole, indivisible, conscious soul. It is the same one indivisible conscious soul, or Ego, that thinks, feels, or wills—not having one part or organ for thinking, another for feeling, and a third and fourth for willing and remembering, or a special organ for thinking, etc., about one thing, and a special organ for doing the same about another thing; the same one whole conscious soul does all. Then as the one whole soul, or Ego, performs all the functions of consciousness, every part of the whole is adapted to do all these functions; and therefore there is no division of the whole, caused by the adaptation of different parts or organs for different purposes, as is the case in the organization of the human body.

4. The unconscious part of the soul or "psyche" (life), is that part of the soul which is not capable of thinking, feeling, willing, or of being conscious, but which is nevertheless necessary as a complement of the conscious part, conditioning it to existence and to all its surroundings, and doing the unconscious and automatic work necessary to the existence, preservation, wants or behests of the conscious part. The "psyche," though thus devoid of the power of consciousness, is nevertheless endowed with such sympathetic and automatic powers, and is in such close union with the "pneuma," that it acts as its harmonious, necessary and fundamental complement.

5. But though this twofold division of conscious and unconscious parts is observable in the constitution and functions of the human soul; yet both of these parts are in their own essence pure spirit, totally different from matter in its nature and in its manner of action; and both of these parts act as spirit and together constitute but one substance.



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Groundwork of the Only Possible Plan of Union.

Suppose then, for the reasons given in last chapter, that the Creator sees it necessary to create the soul of man in union with a body, what would be the necessary groundwork of the best and only possible plan of such a union?

1. As matter is to be man's habitation, and lie between his soul and all other matter and spirit, there must be such a union between the essence of his soul and the matter of his body, (1) as that his soul can organise, build up, and preserve the matter of his body, quietly controlled by it in so doing; and (2) as that his soul can carry out its volitions or desires by the matter of the body, through the body on other matter, or receive impressions or knowledge by the matter of the body, through the body from other matter or spirit; in other words, there must be such a union, as that spirit can act on matter and matter can act on spirit; for it is evident that it must be by spirit and matter acting on or influencing one another, that any of the aforesaid things necessary to a union is possible.
2. But the only possible way in which spirit and matter can act on or influence one another, or in other words do any of the aforesaid things, is by the power of spirit action to produce material action, and material action to produce spirit action.
3. But material action is but another name for molecular action.
4. Therefore there must be such a union between the essence of the soul and the matter of the body, as that spirit action can produce molecular action and molecular action produce spirit action.†

† If matter and spirit were not thus made capable of producing action in one another, each would be without any power of control over the other, and the soul would be shut up in the body as in a tomb, incapable of all communication to or from the outside world. The varying actions of the soul can never be made manifest through the body unless by producing varying action in the body; nor could the spirit know the varying action of the body or the outside world, unless by the body's producing varying action in the spirit itself. The key then to the possibility of union between spirit and matter is the conversion of the action of the one into action of the other.

† Thus, for instance, with regard to the conscious part of the soul, the attention or consciousness can be reached from the body, only by molecular action having power to excite spirit action in the conscious soul itself; so also the body can be reached from the consciousness, only by the will or spirit action having the power of producing molecular action. It is thus also with regard to the unconscious part of the soul. Had not spirit action the power to produce or originate molecular action, the molecules, being subject to external action alone, could never organise into a body suitable for the soul, or the heart and the pulse be made to throb; and it is by molecular action, having the same power with regard to spirit action, that the various functions of the unconscious soul, having the same power exhausted or depressed by either liquor or food, or by the unconscious soul are affected.

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all times to produce or stimulate some kind of molecular action.
 Therefore this union between soul and body, to be perfect or all that is required, must be of a character so close and constant, that every kind of action in the one must at all times produce some kind of action in the other.
 Let us add here, in connection with the preceding proposition, that the bridge between conscious thought and the material body must be composed of two halves which meet in the centre of the arch; one half is spirit action, the other half is molecular action; and the one half must no sooner tremble with the tread of a thought spiritually, than the other must tremble molecularly; or if the one half tremble molecularly, so must the other spiritually. And as this must be the bridge between the body and the conscious part of the soul, so also must it be the bridge between the body and the unconscious part of the soul; the same bridge for both, and action of the one kind must never take place in the one half of the bridge without

* This basis of union, once understood and appreciated, removes all great difficulties in the way of understanding the union in all its minor details; and shows that though spirit action and molecular action seem strangely mixed up together in the body, they are yet perfectly distinct—that all spirit action is confined to the soul and all molecular action confined to the body, the one never intruding into the province of the other,—that molecular action is never felt in the consciousness, but only the spirit action produced by it at the point of union,—that neither is it spirit action that works in the body, but only molecular action originated from some place of union by spirit action,—and lastly, that there is never action in the one without action in the other. Hence it is, that molecular waste or waste of tissue, which is a necessary result of molecular action, is always found to accompany thought of every kind, whether the thought relates to the body or not, and that, too, not because molecular action is necessary to enable us to think, but because thought must be tied to it in order to supply a proper basis of union with a material body.

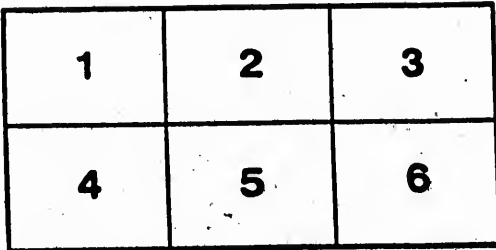
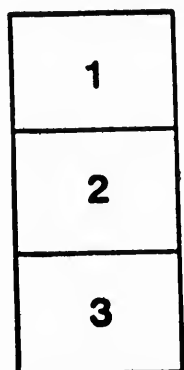
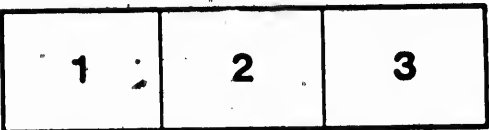
It is thus then that spiritual and molecular action intimate, control, or regulate one another. Illustrating this subject still further, we may say, that as the soul is an independent and separate thing from the body, it can do all its work without the least assistance from the body; but as a material body becomes necessary as a proper medium for the soul in its present sphere of duty, therefore it must be united to a body; and in order to be properly united, the union must be of a nature so close and constant, as that every kind of action in the one must at all times produce some kind of action in the other.

Man's body is thus the telegraph line between his soul and the world; and is such, that everything that is transpiring at the one end is instantly and constantly made known at the other. The connection between them must be close, broad, and constant. Soul action and molecular action do not traverse the same line, but the two meet, and the one just produces that action in the other which is representative of itself at the other end.

This interaction for the foregoing reasons requires, therefore, to be close and constant; but even were it not wanted for these reasons it would be required for others. Thus, were the interaction not constant, the soul would have to be disjoined from matter each time it concerned itself with a thought that did not involve the function of matter. This would be momentary unconsciousness or death of the one to the other. Then also the same thought, often, would be lost.

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the one end,—and for conveying and producing this molecular action in the muscles or parts of the body at the other end; and in the other kind, there must be that adaptation which fits it for receiving its own molecular action from the material or molecular action of the parts or extremes of the body, as, for instance, the pricking of a needle,—and for conveying such molecular action as will suitably produce spirit action at the centres of union with the soul at the other end.

Physiological science, then, without a single discordance shows most distinctly that the human body is fully provided with these two specially adapted nerve lines of connection between all parts of the body and its centres of union with the soul,—and that each kind is fully fitted for the work which it has to perform both in conveying its own kind of molecular action, and also in giving and receiving its own proper stimulus of action to or from molecular or spirit action at either end.

The nerve lines, then, which transmit impressions or molecular action from the various parts of the body to the centres, are called by the later physiologists the Afferent or Sensory Nerves: some also call them the Excitor Nerves, because they excite action at the centres from the outside.

And those nerve lines which transmit motor or molecular action from the centres to the muscles and various parts of the body, are called by physiologists the Efferent or Motor Nerves.

* All physiologists agree in the brain being the seat of consciousness. Carpenter and Longet, however, think it is located in the Mesencephale or basal ganglia; but Ferrier, Flourens, Vulpian, etc., by a vast amount of irrefragable evidence, have clearly proved it to be located in the cerebral hemispheres.

In regard to the centres of unconscious interaction, physiological testimony is generally quite harmonious.

† See on this subject, Ferrier's "Functions of the Brain," Carpenter's "Human Physiology," or any other late first-class work on the human nervous system.

WITH THE FALLACIES OF MATERIALISM EXPOSED.

BY A CANADIAN CLERGYMAN.

TORONTO:

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1882.

... that makes it act so under that stimulus. Were the ball feathers instead of lead, it would act differently. The gunpowder is a different thing, and acts according to its own laws, so far as it goes; but it communicates nothing to the ball but its stimulus. If there is anything in the action of the ball under that particular stimulus peculiar or different from its action under any other, the peculiarity or difference arises from its own inherent and ordinary laws operating under that peculiar or different stimulus. The action of matter under spiritual stimulus is different from that under material stimulus, simply because the stimulus is different—just as the action of a ball struck by the hand is different from that of a ball struck by electricity. And just as the stimulus of a blow on a ball may seem to suspend or contravene the action of the common law of gravitation; so also the stimulus of spirit action may seem to suspend or contravene, for the time, some of the chemical laws of matter in the body.

Again, as furnishing an illustration of the same sort, a spark may set on fire a train of gunpowder. The stimulus here is the spark, but the gunpowder acts purely according to its own laws in communication with that spark which explodes it. If it had been a composition of a different sort, it would not have exploded at all. The spark also acts entirely according to its own laws till it communicates the stimulus.

It is just in this manner, then, that spirit and matter act in the twofold nature of man. All action in the soul is pure spirit action operating according to its own laws up to the point where it touches matter at the centres of union with the soul; and all action in the body, including the material centres themselves which touch the soul, their various nerve lines to the ordinary laws of matter. Thus, every action of the brain, spinal cord or other ganglia, and nerves, as well as the muscles and every other part of the body, is purely physical or molecular,—just as every action of the parts of the soul is purely spiritual. The molecular action or the sense impression produced by touch, from the tip of the finger up to the point where it directly touches soul at the brain centre and communicates stimulus, is purely physical. Its stimulus produces spirit action, and I consciously feel the affect produced in the soul by the stimulus of the physical action; but I am not conscious of the physical or molecular action itself, because that is outside of the soul.

So also in the act of volition by which I may move my hand; it is pure spirit action till the instant that it touches the brain; from that instant it is molecular action.

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doubtlessly would be the case were there any such special reservoirs. The organs that are exercised all waste in time alike; this is clearly proved by facts, and when the tissues are exhausted they refuse to act. When a spark is communicated at one end to a train of gunpowder which connects with a blast in a quarry, the reservoir of force in this case is the gunpowder itself all along the line, including both the train and the blast, and the stimulus is the spark. If all the gunpowder is exploded at one shot, the reservoir is exhausted, leaving only a residuum of dust; but if it were possible that the same gunpowder could be exploded several times in succession ere all its particles were exhausted of explosive power, or that but a fraction of it could be exploded at each time, leaving a reserve for future use, we might perhaps have a something remotely analogous to the reservoirs of physical force in the human body.

It is now a generally admitted fact, that all physical action is carried out by the oxidation of the tissues of the body; in other words, by the burning of the tissue. So far then as the body is concerned, the tissues all over the active parts of it is the reservoir. So much of it is oxidised or burnt in each molecular act; the ashes, so to speak, is the molecular waste, and when the supply of suitable tissue is exhausted, the reservoir is exhausted.

The oxidising process is set in motion in each act at the centre, by the stimulus of spirit action—that is, spirit action is the spark. When molecular action in the sensory nerves originates at the extremities of the body, it does so simply from the stimulus of other molecular action.

Physiological facts show that there is a waste of tissue from this cause in all the parts that are in action; and there is no such waste in any particular part as would lead us to infer that any part or parts constitute special reservoirs of physical force for all the rest.

3. The true reservoir of force in the human body is the soul, which gives the spirit stimulus. And spirit stimulus acts on the matter at the centres as molecular stimulus acts on the soul. This spirit stimulus does not project itself through the centres and nerves into the body like a subtle fluid or gas, but impinging itself, so to speak, against the centres, produces molecular or physical action, which travels along the nerves to the muscles and parts which require to be affected. It is not spirit that is injected into the centres, nerves, etc., but merely an effect from it; just as a stone falling into one side of a pond does not travel over all the pond, but produces a ripple which travels over it all. In like manner, molecular stimulus does not project itself into the soul, but simply communicates its effects to the soul at the centres of union.

4. The discoveries of chemistry show that all action in the physical world is the result of physical forces seeking their equilibrium; and that it is just in the passage of force from non-balance to balance that force to apply can be obtained. In the same way we can learn that the strength of the force is just the strength of the pressure from non-balance to balance; that it is only by the addition, or withdrawal, or waste, of something at one of the sides, that this balance can be restored; and that anything that disturbs this balance is a producer or promoter of physical action.

5. The discoveries of chemistry also show that all the physical organisation of human as well as animal nature is constituted on the principle that the oxidation of matter and molecular waste shall go on in the matter of the body just as in the matter outside of it; and that in order to make up for the waste caused by this oxidation (for all physical action can be accomplished only by oxidation of matter), fresh material is being constantly brought into the body. Oxidation is a general law in matter elsewhere: so it is in the body. Thus it is then that life, so to speak, shall go on the crest of

THE RELATIONS
BETWEEN
THE SOUL AND THE BODY.

...suspended, but their action neutralized or suspended. Can it then be denied that the stimulus of spirit action is incapable of doing the same thing, namely, of modifying, neutralizing, or seemingly contravening of, many of the ordinary laws of matter, physical laws of the matter on which it acts? This does not in the least interfere with the rule, that the action of the matter under the spirit stimulus is purely physical, and that the action of spirit from molecular stimulus is purely spiritual. Each of them works according to its own laws under a foreign stimulus. An icicle in contact with a spark will melt, while a pellet of gunpowder will explode. The spark here is the stimulus; and the action of both the icicle and the gunpowder is just action according to their own laws under that stimulus. What we call the laws of matter is just its manner of action on receiving stimulus. When it receives stimulus of a common kind from other matter around it, it acts in a common way, and its laws are common; but when it receives stimulus from spirit, it acts in a peculiar way, and its laws are peculiar; and yet both sets of laws are the laws of matter, each set appearing on matter receiving its appropriate stimulus; and one set may appear under one kind of stimulus that disappears under another kind.

We again repeat concerning matter and spirit, that all that the one receives from the other is simply the impulse or impingement, and all that belongs to the manner in which each of them acts under that impulse or impingement, belongs respectively to each.

As to the exact manner in which the impulse or impingement is communicated, whether it resembles that of electric, chemical, or any other kind of action, the determination of this may wisely be left to future discovery.

By spirit action acting on molecular action in the matter of the body, not only are the volitions of the mind, etc., carried out, but the various parts of the body itself are built up and maintained in co-operation with, but also in seeming contravention of, many of the ordinary laws of matter.

7. It is often amusing to observe the curious contradictions in which physicists of materialistic leanings, such as Carpenter, Barker, Wallace, etc., involve themselves, in their jealous fear of admitting the presence of spirit action in the human system. In order to explain undeniable facts for which physical force furnishes no solution, most of these physicists feel compelled to admit that there is present in the matter of the body a something extraneous to it which they call a "directive principle," or an "architectonic principle;" but they at the same time seem unwilling to admit that there is any other stimulus or force employed in the body than what is purely molecular or physical. Now, of what use would a "directive or architectonic principle" be in the matter of the body without power to direct or build? It would be impossible that a "directive or an architectonic principle" could control blind matter unless by its stimulus or action. It could only helplessly stand by without power to modify or change a single molecule. This absurd inconsistency is at once got rid of by calling this "directive or architectonic principle" by its true name, the soul, and admitting the presence of spirit action in the body as well as of molecular.

8. All spirit action of the conscious part of the soul is of the nature of consciousness and of intelligence, viz., conception, feeling, will, etc. Spirit action of the unconscious part of the soul, though not in its nature conscious or intelligent, acts nevertheless in sympathetic harmony with consciousness and intelligence; in other words, it acts in blind instinctive or sympathetic harmony with the conscious and intelligent part of the soul,—thus the prick of a pin, ~~the~~

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This proposition also fully accords with all the facts of physiological experience. Molecular waste is a constant result of molecular action, and we all know that the degree of molecular waste of the brain, etc., is always in accordance with the degree of spirit action, whether it be the action of the unconscious part of the soul in carrying on the functions of life, or of the conscious part of the soul in thinking, feeling, or willing about things within itself that do not necessarily involve the functions of the body at all. Much waste of the brain always attends much thought of any kind.

8. The work done by the one (that is, the soul or body) can never be the work done by the other. The one may do work for the other, but the one can never do the work of the other; else by nature and constitution they would require to be the same; and if in nature and constitution the same, the union caused by the necessity of the one helping the other would not at all be required.

Thus, for example, the matter of the brain centre never does the work of the mind or spirit in thinking, feeling, willing, etc.; but it does work for the mind or spirit by giving out influences to the body, or receiving influences from it, which the mind or spirit cannot do for itself, but which is necessary to it. The brain may tremble with the soul action of a thought, because tied to the soul that thinks; and it may thus give an expression to the face, or a volition to the hands; but thinking, feeling, or willing, are functions for which it is absolutely unfitted.

So neither can the soul do the work of the brain, any more than the telegraphist can do the work of his instrument that transmits messages either to or from himself. The experiments of Ferrié, Flourens, and many others, all decisively show that if thought were located in the brain substance at all, it would be in the grey matter; but it can be proved that thought can go on without the grey matter; besides, the grey matter of the brain is of the same kind as the grey matter of the unconscious centres; therefore the brain is not the organ of thought, but simply the medium or channel between the organ of thought and the body.

There is no need for multiplying examples to show that the principle maintained in this proposition holds true of the whole soul (conscious and unconscious), and the correlated matter of the body. All experience confirms it. The work done by the unconscious soul in imparting vital stimulus, is a very different thing from the work done by the matter of the body on receipt of that stimulus; and it is just because there is a very different kind of action being done at the centres of union, that the action of matter in the body is different from that of the soul.

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perform in union with the body; and therefore all its connections with the body must be such as will allow it to perform this work. It must have free communication through the body, be controlled by the body, and also have control over it; so that it can discharge by it, its duties in the outside world, or perform even for the body itself what cannot be efficiently done for it by the unconscious part of the soul. All the action of the conscious part of the soul will partake of the nature of consciousness, active or latent. Action produced in it by action from the body will be of the nature of sense; and all action in it acting on, or producing action in the body, will be either voluntary or involuntary—in other words, volitional or automatic; thus, for example, the involuntary action of the conscious part of the soul in expressing its emotions, joy, fear, anger, etc., is not volitional at all, but purely automatic. This power of the conscious part of the soul to do automatically certain things thus associated with consciousness, is required, in order to leave the attention free to attend to its own proper duty.

2. The unconscious part of the soul, or the "psyche," which has also been already described in Chapter I., is just that part of our spiritual nature which is best fitted to build up, preserve, and take care of the body as a suitable habitation and medium of the conscious part of the soul; and thus by taking upon itself the chief care and management of the house, so to speak, the conscious soul, the other occupant, is allowed to devote his attention mainly to what is his own proper work.

It follows, of course, that the unconscious part of the soul must do automatically, or of its own accord, all this work that can be so done, initiating and controlling all its own movements; but of course whenever a work is required in any part of the body that cannot be done automatically by the unconscious soul, because it would require the use of consciousness and its senses to guide its movements or to initiate others, the conscious part of the soul, being in communication with every part of the body and knowing what is going on in it, must take up this work itself and do it, or at least lend what assistance is required in addition to the powers of the unconscious soul. The unconscious soul must always keep the house in the best state of readiness and suitability for all the wants of the conscious occupant.

As such is the work for which the unconscious part of the soul is properly fitted, such will be the work which it will be required to perform in union with the body; and therefore all its connections with the body must be such as will allow it to perform this work.

The unconscious soul is just that part of our nature which is fitted by the Creator to do what transcends our conscious powers.

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centre definitely in one particular part of the brain, it is better at once to locate this particular part of the brain, then, which late physiological discovery shows to be the centre of union with the conscious soul, is the grey matter of the cortical substance of the cerebrum ; for that this grey matter or cortical substance of the cerebrum is the immediate seat of consciousness, may now be regarded as fully established by the researches and experiments of Ferrier, Flourens, Vulpian, etc."

The cerebrum, then, is the centre of union with the conscious part of the soul. Of the special structure of the whole brain, we may speak more hereafter ; it is enough at present to invite earnest attention to the fact, so well supported by physiological science, that that part of it called the cerebrum is the centre of union with the conscious part of the soul, and that its position, as a part of the brain, at the top of the spinal cord, and with little mass of body between it and the exterior world,—so that short nerve lines, little in the way of other complicated nerve lines, may serve to give it communication with the outer world in seeing, hearing, etc.,—pre-eminently qualifies it as a suitable centre of union with the conscious part of the soul.

Then from this cerebral centre to all parts of the body and through it, all those nerve lines are known to radiate, which are of that character which suits the conscious part of the soul,—both those that transmit afferent sensory impressions from the body or the exterior world to the soul, and those that transmit efferent motions, voluntary or involuntary, from the conscious soul to the body.

The cerebral centre, or, in other words, the cerebral hemispheres in which the grey matter and these nerves meet, are in the form of a hollow shell, and hang over the basal or subcranial ganglia and the top of the spinal cord. The grey matter occupies the outside of this shell ; and the sensory and motor nerves, originating in the grey matter, come out at all points of the inner side of this hollow shell, and converging downwards in the form of a hollow cone, the afferent sensory nerves catch on to the optic thalami, and the efferent motor on to the corpora striata ; whence both kinds of nerves pass the other ganglia and downwards through the spinal cord, when they separate from this tract, and spread themselves in pairs (one of each kind in a pair) all over the body. It will thus be seen, that the course of sensory molecular action will be upward along the afferent sensory nerves, which thus rising from the optic thalami spread and enter the inner side of the hollow shell, where they touch the grey matter,—and

tion in this matter, is most surprisingly complete. Indeed, we feel assured, that if the readers of this little work are as much benefited by its perusal as we have been in its study and preparation, they will by no means grudge a little time spent in giving it a studious and careful reading. In fact, we confess that, in commencing this study, we were hardly aware that an honest interrogation of the latest and best established facts of science, aided by common sense and a vigorous use of the reasoning powers, could furnish evidence so powerfully confirmatory of what Scripture teaches respecting the complex union of soul and body.

We believe, with Joseph Cook, that science has reached an era in which the man that will question the existence of the soul on scientific grounds, will only show a defective education and his ignorance of that very science from which he quotes.

Yea more, we think, we verge closely on the time when our boys in our secular schools may learn, from the distinct testimony of mental and physiological science, those same fundamental facts respecting the union of soul and body, that they learn in yet clearer and simpler terms in the Sabbath school from the grand and blessed old Book of God. If materialism will live in the future—as probably it will—it must feed on the barren and uncultivated wastes of ignorance, not in the rich and well-cultivated domains of science.

We never had any fear of Scripture evidence being overthrown by that of the sciences ; nevertheless, we confess to having always some satisfaction in hearing one after another, of these handmaids of religion adding its testimony in confirmation of a grander science, given by inspiration, and less likely to be misunderstood.

In the study of any subject whatever, the tendency of the human mind, after having obtained a knowledge of the facts involved, is to form a theory. The mind never seems to rest contented outside of a theory. In fact, whenever we begin to compare and put facts together, we are obliged to form a theory. The facts put together make the theory ; and to despise theory is to despise knowledge. We confess, therefore, to having formed a theory, on scientific lines, as to the mode of union between the soul and the body ; and we submit to the careful readers of this work to judge whether or not our theory, in general and in details, is not fully borne out by the facts of science and of Scripture, and is not also the only one which is fairly in harmony with what all of these sources of knowledge teach in regard to the subject whereof we treat.

11. Keeping still in view the principles stated in the first proposition, let us next show that a like suitability of bodily organization is found in connection with the "psyche," or unconscious part of the soul. Physiological facts show very clearly that the unconscious soul has its own special centres of interactive union with the body, with attached nerve lines of connection in or through the body, specially and suitably adapted to the work which, according to Chapter VIII., is to be performed by it in connection with the body.

There is in reality but one centre of the unconscious soul, if the cerebrum or cerebral hemispheres may be regarded as one. This was shown, as the very nature of consciousness would imply one definite location for the will. The centres of union with the unconscious soul, however, requiring less limitations, are, as might also have been expected, more than one. They may be briefly described as follows:—

(1) The bioplastic cells which are all over the body are just those centres from which the unconscious soul, or "psyche," builds up or organizes and keeps in repair all the organs or parts of the body. In other words, it is from these cells or centres that the unconscious soul prepares and keeps in order all the organic machinery which constitutes the body a proper medium, and upon which machinery the soul operates from other centres.

Like the builder or architect, the unconscious soul from these bioplastic centres erects all its own scaffolding, builds and finishes the house, requiring the aid of no preceding artificer either to prepare its materials or furnish it with lines of connection. These bioplastic cells are all over the body, and need no other lines of connection than themselves. From these cells the unconscious soul gives both structure and form to the body.

(2) The next centre that we shall speak of is the spinal cord, which, in the words of Carpenter, "consists of a tract of ganglionic matter" (made up of grey cellular matter) "enclosed within strands of longitudinal fibres, and gives off successive pairs of nerves which are connected at their roots with both of these components."

(3) The next centre or centres of the unconscious soul are the subcranial ganglia which intervene between the top of the spinal cord and the cerebrum. This ganglionic mass is divisible into different parts, with different kinds of work to perform for the unconscious soul. These parts (or centres), taken in their order upwards to the cerebrum or conscious centre, are as follows:—the Medulla Oblongata (which may be regarded as a continuation of the spinal cord), the Mesencephalon, the Cerebellum, and the Optic Thalami and Corpora Striata.

the conscious soul, while it may have some powers in common with those of the unconscious, is endowed also with that of consciousness.

In conclusion, we trust this little work will be of some use in confronting Materialists on ground which they seem to claim specially as their own, namely, that of science—which they profess to know, and yet do not know. We have learned long ago to have profound faith in our Bible, and also in all truly and thoroughly established science. We do not forget, what the history of scientific discovery has shown us, that in fields overlapped alike by revelation and science, the point just immediately under some specific and properly interpreted Biblical statement, is the right place to search for the corresponding fact in science. True science and the Bible may have seeming, but no real, contradictions.

As to the style of the work—the nature of the subject and the object we have had in view do not favour great literary polish and rhetorical embellishment. By plainness and clearness, even to the verge of prolixity, we have striven to make the minds of our readers perfectly familiar with the important truths involved in the complex union of body and soul. If we have succeeded in making these truths clear, we have done all that, in a small work of this kind, we would wish to accomplish.

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But this principle can only apply to cases where the unconscious centre lies conveniently in the line of connection with the cerebrum, and where the action dependent on that unconscious centre requires, from its character, to be always under the immediate oversight of consciousness and the control of conscious action from the cerebrum. In cases, however, where unconscious centres do not lie conveniently in the line of connection, or where the action requires to be separate and independent of all conscious oversight and control of conscious action from the cerebrum, then each centre must have separate and independent afferent and efferent nerve lines throughout.

This general method of nerve distribution appears, then, in the light of physiological science, to be the one adopted in the human body; and while there are afferent and efferent lines which the different centres have respectively and independently for their own use, there are also not a few afferent and efferent lines which, passing unconscious centres on their way from the cerebrum, are made by the above means, through a part of their course, to do work for both parts of the soul. There can be no obstacle in the way of the unconscious centre using in such cases the same tracks as the cerebrum; because, though the molecular action used by both should be even the same in kind, the action from the unconscious soul in its

* The only other principle that possibly could be adopted in such cases as this, is that of each centre having its own independent sets of nerve lines throughout; thus, instead of the same nerve lines doing the work of both kinds of centres by fibres switched on to them as they pass the unconscious centres, the unconscious centres could have their own independent sets of nerve lines, which falling in (for economy of space) with the tract of the cerebral lines as they pass by, could proceed onward in company with them, and so neither add nor locate themselves alongside of the cerebral lines in the muscles and extremities of the body. The adoption of either the latter or of the former principle does not affect in any way our general theory or principles maintained in this book. The latter only adds some sets of nerves which the former dispenses with. The adoption of either the one principle or the other, therefore, would be to our general theory a matter of little moment. But as physiological discovery has revealed no such independent nerve lines in the above connection, and as their introduction would seem to add complication and to take up space for which we see no positive ground of necessity; and moreover as science has discovered the fact that nerve fibres do not

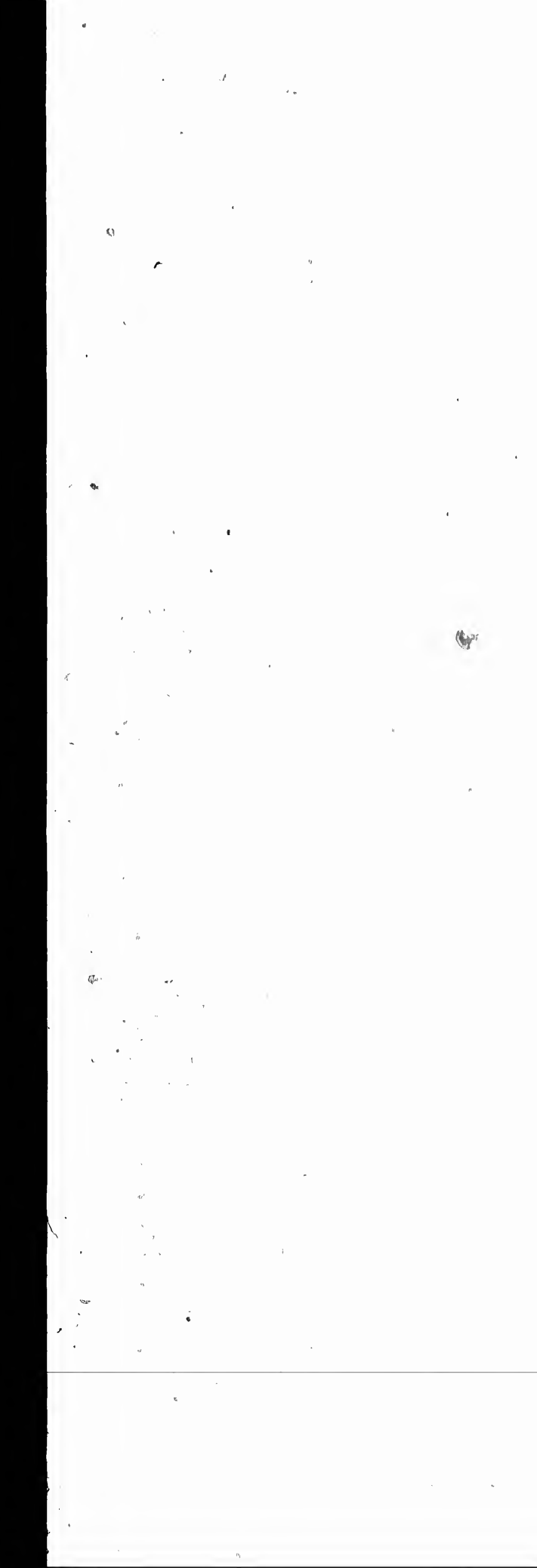
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(3) Those efferent automatic motor nerve lines that, connecting alone with their own unconscious centres, are separate from, and independent of, the cerebral motor lines. This class are also numerous. From the great sympathetic ganglia and most other unconscious centres many independent nerve lines branch out into the respiratory organs, heart, and many other organs of the body, conveying action purely automatic, and altogether outside of the knowledge and control of consciousness.

III. As many of the functions of the body would be of such a nature that they would require to be performed by the unconscious soul, and also to be subject to the guidance or control of the conscious soul while so operating; and as the same bodily organs might often be required to do work for both the conscious and the unconscious soul, acting either at different times or simultaneously; it follows, that in a suitable organisation many organs or parts of the body would require to be connected by sets of nerve lines with the centres of both parts of the soul; that is, these organs would require to be connected by afferent sensory and efferent volitional motor nerves with the cerebrum, as well as by afferent excitator and efferent automatic motor nerves with centres of the unconscious soul.

This is found to be the case; for while not a few organs of the body, which do not require to be controlled by the consciousness, are connected with centres of only one kind, there are very many others which, performing functions under both parts of the soul, acting either simultaneously or at different times, are connected by a double set of nerve lines with both the cerebrum and the unconscious centres. Thus, as already shown, all those organs which send sensory and volitional motor nerve lines to the cerebrum with branching excitator and automatic motor nerve fibres at the intervening unconscious centres, have this twofold connection with both kinds of centres. Then also many organs, such as the respiratory, etc., that cannot either properly or conveniently connect with both centres by accessory fibres to the main line, have separate and independent double lines leading to both the cerebrum and the unconscious centres.

Still further, as illustrating the manner in which the various organs of the body thus connected with both parts of the soul operate, it is found that when the lower part of the spinal cord is severed from the upper part, the prick of a pin applied to the foot will excite responsive action at the spinal cord and cause the foot to be withdrawn,—the conscious soul at the cerebrum meanwhile having no knowledge of what is being done below the point of severance in the spinal cord. Then, taking the other centres of the unconscious soul, viz., the medulla oblongata, mesencephale, cerebellum, and the optic thalami and corpora striata, in their order upward from the spinal cord to the cerebrum, it has been found by Dr. Ferrier and others, that while the responsive action of the unconscious soul at each ascending centre employs and co-ordinates the action of more organs of the body than it does at the centre beneath it, yet all of its actions, when initiated, go on automatically by a blind sympathetic

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And the unconscious soul, or "psyche," has also its suitable centres, with the classes of nerve lines which it requires to preserve, take care of,—in short, do its own proper work in union with the body, viz., the afferent excitator nerves and the efferent motor nerves which convey automatic or involuntary motion; while also all those organs of the body that require to be affected from both parts of the soul are, as we have seen, connected with both kinds of centres by suitable nerve lines.

The experimental researches of Dr. Ferrier and other scientists all fully harmonise with this theory; The unconscious soul performs all its work automatically, and also the conscious soul gives expression to its emotions, etc., in the countenance or in the gesture, and does so much of its work automatically or involuntarily as can be done; thus leaving the attention

* As illustrative of the manner in which the conscious soul will respond automatically, at its centres, to stimulus coming through the afferent excitator nerves, it is well known that a frog, fish, fowl, dog, or any other animal, with its cerebral brain abstracted, or the nerve lines of sensation and volition connecting with it destroyed, will leap, swim, fly, balance its body, or act variously otherwise, according to the kind of stimulation applied to the outer ends of the afferent excitator nerves—even while the creature may be absolutely unconscious of its own movements. The stimulation coming from the outside by the afferent excitator nerves to the centres of union with the unconscious soul produces spirit action, which in turn acts on the efferent motor nerves, and makes the members of the body act appropriately, perhaps partly from habit, and partly from unconscious sympathy or instinct.

Were the actions produced by outward stimulation precisely uniform in all cases, we might perhaps conclude that spirit action did not intervene at all between the first stimulation and the movements of the body. But the movements are not uniform but variable, and yet are always in harmony with a kind of unconscious instinct and sympathy with the plan and well-being of the whole, thereby clearly showing the intervention of spirit. The unconscious soul thus takes charge of all those movements of the body that would unnecessarily encumber and distract the attention of the conscious soul in the discharge of its own proper duty; the unconscious doing its own proper work, also carrying on the movements initiated by the conscious, and requiring, in such cases, from the latter, no more than the slightest surveillance.

It may then be affirmed generally of the action of all organs of the body which connect by nerve lines with the centres of the unconscious soul alone, or that are isolated from the consciousness by the severance of the cerebral nerve lines, that the balancing, the variety, and the fitness of movements in the organ initiated by the stimulation of the outer ends of the afferent excitator nerves, prove the intervention between the stimulation and the movements of a spiritual something, which, though unconscious (that is, out of reach of the individual's consciousness), has nevertheless a general instinctive sympathy with the present condition and with the general well-being of the whole man, and regulates the movements accordingly; that spiritual something is the unconscious soul.

Therefore, at these centres of the unconscious soul, all impressions coming from the outside produce spirit action, which in turn produces molecular action, or movement in the members of the body.

There may be cases, however, in which molecular action, initiated elsewhere, passing through or by these centres, may merely be regulated in its passage by spirit action at these centres; for as spirit action can produce molecular action, it can of course easily regulate it; and the movement of a muscle in this case would simply be the result of the first stimulation, modified more or less by spirit action in its passage through the unconscious centre.

The reader is here referred to the latest and best physiological works on the nervous system.

while we may be latently conscious of many things at a time, we can be actively conscious of only one. Observe, latent consciousness is quite a different thing from unconsciousness. We can never be actively conscious of things in the unconscious sphere, because they are at all times beyond the reach of the attention; but we may be actively conscious at any time of things in the latently conscious sphere by turning the full light of the attention to them. Both the active and the latent consciousness are acts of the conscious part of the soul, and occupy the same sphere; and the moment the full light of the attention falls on anything of which we are latently conscious, the consciousness passes from the latent to the active degree. (See "Mental and Moral Philosophy.")

3. All the evidences of mental science, or rather we may say of consciousness itself, reveal to us the fact that the conscious part of the soul is an indivisible unity—that it is not divisible into parts having various functions, but that all its functions are performed by one whole, indivisible, conscious soul. It is the same one indivisible conscious soul, or Ego, that thinks, feels, or wills—not having one part or organ for thinking, another for feeling, and a third and fourth for willing and remembering, or a special organ for thinking, etc., about one thing, and a special organ for doing the same about another thing; the same one whole conscious soul does all. Then as the one whole soul, or Ego, performs all the functions of consciousness, every part of the whole is adapted to do all these functions; and therefore there is no division of the whole, caused by the adaptation of different parts or organs for different purposes, as is the case in the organization of the human body.

4. The unconscious part of the soul or "psyche" (life), is that part of the soul which is not capable of thinking, feeling, willing, or of being conscious, but which is nevertheless necessary as a complement of the conscious part, conditioning it to existence and to all its surroundings, and doing the unconscious and automatic work necessary to the existence, preservation, wants or interests of the conscious part. The "psyche," though thus devoid of the power of consciousness, is nevertheless endowed with such sympathetic and automatic powers, and is in such close union with the "pneuma," that it acts as its harmonious, necessary and fundamental complement.

5. But though this twofold division of conscious and unconscious parts is observable in the constitution and functions of the human soul; yet both of these parts are in their own essence pure spirit, totally different from matter in its nature and in its manner of action; and both of these parts act as spirit, and together constitute but one whole soul or spirit. Spirit nature and spirit action are totally different things from material nature and material action.

centrality in the body to its extremity in the centre; the nerves at the exterior, or body end, would require to be all spread out so as to leave no part of the body without necessary connection; then, to involve as little space or intricacy in the body as possible, they would require to come together and pass through the body in a bundle or sheath to the centres of union with the soul (which are composed of grey cellular matter), where they again would require to separate or spread out and put themselves in relations to one another corresponding to the relations which they sustain to one another at the other end; so that the soul can be able to receive or give out a distinct impression or motion from or to each point reached by a nerve fibre at the other end, and also be able to perceive the various relations between these points or parts at the other end. Thus, for example, in looking at a man, my optic nerve, in one impression, would require to convey from the retina of the eye to the cerebrum every point in the man's image, nose, mouth, eyes, hands, feet, etc.; and at the same time every one of these points or objects must preserve the same relations to one another, as seen at the cerebrum, that they sustain at the retina of the eye, otherwise his hands might appear where his mouth should be, etc.

That each nerve line would require to be organized in the above manner will be evident from the following considerations:

1. If each nerve line were not a bundle of fine fibres, which stretch continuously from the outward points of the body which they touch, down the stem of the bundle with which they unite, through to the centre where they touch the soul (in the grey cellular matter of which every centre, conscious or unconscious, is composed), it would be impossible for the soul, in any one use of the nerve line, to keep the impressions belonging to the different points of the body distinct from one another, whether in receiving sensory impressions inward, or in sending motor impressions outward.

2. These fibres of which the nerve line is made up, require to be very fine in order to take up little space and to give impressions to and from fine points; and if their outer ends were not separated and spread over all necessary parts of the skin or organs of the body, it would be impossible to transmit necessary impressions to or from these organs or parts. So also to save space and risk of harm in their passage through the body to the centres, these fine fibres require to come together like the branches of a tree to its stem, pass along the stem and spread themselves in the cerebrum or other centres. They differ from a tree in each fibre maintaining its own identity from branch to root through the stem or trunk; for if, like a branch of a tree, it should lose its identity and continuity on reaching the trunk, then the impression transmitted in each fibre would become utterly mixed up and confused with the impressions coming into the stem from the other threads.

* This principle applies to the fibres of every line, not omitting those even which switch on from unconscious centres to passing cerebral lines. These switching fibres, which are well known to be numerous, find continuity in the lower part of the cerebral fibres.

create the soul of man in union with a body, what would be the necessary groundwork of the best and only possible plan of such a union?

1. As matter is to be man's habitation, and lie between his soul and all other matter and spirit, there must be such a union between the essence of his soul and the matter of his body, (1) as that his soul can organize, build up, and preserve the matter of his body, and be adequately controlled by it in so doing; and (2) as that his soul can carry out its volitions or desires by the matter of the body, through the body on other matter, or receive impressions or knowledge by the matter of the body, through the body from other matter or spirit; in other words, there must be such a union as that spirit can act on matter and matter can act on spirit; for it is evident that it must be by spirit and matter acting on or influencing one another, that any of the aforesaid things necessary to a union is possible.

2. But the only possible way in which spirit and matter can act on or influence one another, or in other words do any of the aforesaid things, is by the power of spirit action to produce material action, and material action to produce spirit action.

3. But material action is but another name for molecular action.

4. Therefore there must be such a union between the essence of the soul and the matter of the body, as that spirit action can produce molecular action and molecular action produce spirit action.

* If matter and spirit were not thus made capable of producing action in one another, each would be without any power of control over the other, and the soul would be shut up in the body as in a tomb, incapable of all communication to or from the outside world. The varying actions of the soul can never be made manifest through the body unless by producing varying action in the body; nor could the spirit know the varying action of the body or the outside world, unless by the body's producing varying action in the spirit itself. The key then to the possibility of union between spirit and matter, is the conversion of the action of the one into action of the other.

* That, for instance, with regard to the conscious part of the soul, the attention or consciousness can be reached from the body, only by molecular action having power to excite spirit action in the conscious soul itself; so also the body can be reached from the consciousness, only by the will or spirit action having the power of producing molecular action. It is thus also with regard to the unconscious part of the soul. Had not spirit action the power to produce or originate molecular action, the molecular action, being confined to chemical action alone, could never organize into a body suitable for the soul, or, being such, the guide be made to it; and it is by molecular action having the same power with regard to spirit action, that the various functions of the unconscious soul are affected—for instance, or that even death itself takes place.

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and involuntary motions from them They apply to the nerves of both parts of the soul (conscious and unconscious), but in a special manner to those of the conscious connecting with the cerebrum. As the unconscious soul acts by an unconscious instinct, and the motions are perhaps simpler; the nerve ends may therefore be fewer in number, and arranged in relations less corresponding to their ends at the exterior, than are required at the cerebrum, where they are acted on by consciousness.

It is also important to notice, that the nerve connections of the unconscious centres, which are passed by cerebral lines, and attached thereto by short connecting fibres, are no exception to the rule. These connecting fibres must have continuity through the cerebral lines to the exterior, and be also spread in sufficient numbers at these centres to represent properly the parts at the exterior.

It is evident that as it would not do to have impressions coming from different points of the body, confused and mixed up together at the centres; so neither would it do to have different volitional or involuntary motions coming from the centres, mixed up together, confused, or failing to reach the particular parts of the body which are intended. If I wish to move my forefinger, I must move only the nerve fibre of the bundle which connects with it.

The degree of nerve complication, the number of fibres, and the correspondence of relation in the fibre ends at the centres, will necessarily vary according to the kind of work performed by each set of nerves, and that kind of soul centre with which they are connected.

We have now to show that the foregoing theory of this chapter with respect to nerve lines is in harmony with physiological facts, and hardly assumes a principle that has not already been discovered to exist. That the nerve lines are made up of bundles of very fine fibres (most of which are so very fine as to be indistinguishable to the naked eye), and that these fibres spread in the muscles or extremities, and, coming together, pass through the body in bundles or in sheaths, are facts now so well known that the quotation of physiological testimony in proof thereof is altogether superfluous. Respecting the continuity of every individual fibre of these nerve lines, from its point of location in the muscles or extremities of the body to its termination in a centre, Dr. Carpenter says: "Each fibre appears to maintain its continuity uninteruptedly from its origin to its termination without any union with other fibres, though bound up closely with them in the same nerve trunk; and there is strong reason to believe, that the white substance of Schwann serves as an insulator, whereby the axes or cylinders of the contiguous nerve fibres are kept apart from one another, just as are the numerous wires, each having its own origin and termination, which are bound up together in the aerial cable of the district telegraph." It is found that if even one fine fibre connecting with a nerve line be severed in any part of its course, the soul immediately loses all power of sensation or of motion over that point of the body with which it connects; this fact shows that the soul must have had distinct communication through that particular fibre.

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Let us add here, in connection with the preceding proposition, that the bridge between the conscious thought and the material body must be composed of two halves which meet in the centre of the arch; one half is spirit action, the other half is molecular action; and the one half must no sooner tremble with the tread of a thought spiritually, than the other must tremble molecularly; or if the one half tremble molecularly, so must the other spiritually. And as this must be the bridge between the body and the conscious part of the soul, so also must it be the bridge between the body and the unconscious part of the soul; the same bridge for both, and action of the one kind must never take place in the one half of the bridge without

This basis of union, once understood and appreciated, removes all great difficulties in the way of understanding the union in all its minor details; and shows that though spirit action and molecular action seem strangely mixed up together in the body, they are yet perfectly distinct—that all spirit action is confined to the soul and all molecular action confined to the body, the one never invading into the province of the other,—that molecular action is never felt in the consciousness, but only the spirit action produced by it at the point of union,—that neither is it spirit action that works in the body, but only molecular action originated from some place of union by spirit action,—and lastly, that there is never action in the one without action in the other. Hence it is, that molecular waste or waste of time, which is a necessary result of molecular action, is always found to accompany thought of every kind, whether the thought relates to the body or not, and that, too, not because molecular action is necessary to enable us to think, but because thought must be tied to it in order to supply a proper basis of union with a material body.

It is thus seen that spiritual and molecular action initiate, control, or regulate one another. Illustrating this subject still further, we may say, that as the soul is an independent and separate thing from the body, it can do all its work without the least assistance from the body; but as a material body becomes necessary as a proper medium for the soul in its present sphere of duty, therefore it must be united to a body; and in order to be properly united, the union must be of a nature so close and constant; as that every kind of action in the one must at all times produce some kind of action in the other.

Man's body is thus the telegraph line between his soul and the world; and is such, that every-thing that is transmitted at the one end is instantly and constantly made known at the other. The connection between them must be close, broad, and constant. Soul action and molecular action do not traverse the same line, but the two meet, and the one just produces that action in the other which is representative of itself at the other end.

This interaction for the foregoing reasons requires, therefore, to be close and constant; but even were it not wanted for these reasons it would be required for others. Thus, were the interaction not constant, the soul would have to be disjoined from matter each time it concerned itself with a thought that did not involve the function of matter. This would be momentary unconsciousness or death of the one to the other. Then also the same thought often involves the action of the purely spiritual and the function of the purely material. In such a case, the junctions and disjunctions of the soul and body would have to be tangled together, just as were the thoughts of the spiritual or physical which produced them—a thing absurd and impossible.

passing cerebral nerve lines, are no exception to these general rules, as each is found to be supplied with a number of fine fibres.

II. Let us next add, that in a suitable organization, in order that space may be economized in the body and unnecessary complicity avoided, all the afferent sensory or excitator nerves which bring in impressions from, in other words, exercise surveillance over, a particular organ or part of the body, should come together and unite in their passage to the centres, with the bundle or sheath of efferent volitional or involuntary nerves which give motions to that organ or part of the body. Stating this principle in other language, those nerves giving motions and those nerves exercising surveillance over the same motions, which terminate in the same localities at their outward extremities and which come to the same centres, may properly come together and unite in the same bundle or sheath in their passage through the body. This principle leaves the communication through each distinct, and properly economizes room.

Physiological science shows that this principle is verified in the construction of the nerve lines. Thus, in every pair of nerves leaving the spinal cord, we find a motor line having its root in the anterior of the cord, and a sensory line having its root in the posterior of the cord, both coming together, and in the same sheath traversing through the body to the organ at their extremities with which they connect. The same principle in a general way holds true of nerve lines terminating in the cerebrum and other centres, and having to deal with the same organs at the exterior.

III. Let us also observe, that in a suitable organization the afferent sensory or excitator nerves and the efferent motor nerves which terminate in the same locality of the exterior organ or part of the body, need not necessarily terminate in the same locality of the centre to which they come. Each set of nerves, to keep their own impressions or work distinct, would necessarily require a different place. There is no need that the centres should be a typical or *fac simile* representation of the exterior parts of the body.

The principle stated in this proposition is fully illustrated by physiological fact. Dr. Ferriar's experimental researches show that the areas in the cerebrum occupied by the nerves of sense, are different areas from those occupied by the nerves of volition. The same fact holds true of the sub-cranial and other unconscious centres.

or this chapter, is the one which all the known facts of both mental and physiological science (including those already referred to) show to have been the basis adopted by the Creator in the union of the spiritual and physical nature of man.

CHAPTER IV.

Special Centres of Union between Soul and Body, with Lines of Connection required.

1. As any kind of union between the body and the soul would not be of a nature so close and constant, that every kind of action in the one would at all times produce some kind of action in the other; it is necessary, then, that there should be some special organization and adaptation in the body, so as to admit of a union sufficiently intimate for this purpose. For, unless the body be suitably furnished with some such special organization, it would necessarily follow that since spirit is in its essence totally different from that of the matter of the body, it might dwell in and pass through it without being able to affect one particle of matter or be affected by it. Thus, we find this principle to be also verified by fact, for whenever this special organization is destroyed by death, body and soul cease to affect one another, and the soul passes through the body into another sphere of existence. The spirits of the dead have never been known to affect matter, or to be affected by it in any way.
2. In order then to have the body suitably organized, it would be necessary to have certain points in the body specially organized and adapted as centres of union with the soul, and such as all parts of the body might suitably affect or be affected therefrom; because as the different parts of the body are required to perform functions, such as the legs walking or the lungs breathing, and each part must have an adaptation to its function,—and as the adaptation that fits a part for one function unfits it for any other,—it is therefore necessary that certain points or parts of the body be selected and specially organized and adapted as suitable centres of union with the soul, and reserved for this purpose alone.
3. Therefore the body to be properly united with the soul must be so organized as to be suitable in whole and in part for all the purposes intended by it; and as essentially necessary to this, it must have in its organization certain specially organized and adapted centres of

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secondary, which was already shown in the preceding chapters, may now be made still clearer. Of course we do not mean to say that the discoveries of physiology have as yet thrown the clearest light on everything which may be involved in this theory; but we have assumed no important physiological principle which can really be said to be in advance of discovered fact.

The physiology of the centres of the body which unite with the soul then shows us that each centre is composed of two substances, viz., grey cellular matter and nerve ends; the first substance is of a grey colour, semi-transparent, pulpy, and consisting of cells or vesicles filled with granular matter; the second substance, white, opaque, and dense, which forms the larger portion of the centres, is composed wholly of the finest nerve fibres, which spread about everywhere and terminate their ends in the grey cells. Dr. Carpenter thinks that each fibre terminates in a grey cell. These fibres are so fine as to be invisible to the naked eye, though perceptible to the microscope. It is also agreed that all nerve movements (outward or inward) originate or terminate in the grey cellular substance, and that the seat of consciousness at the centre where it is located must be somewhere at the point where the nerve movements originate and terminate.

The researches of Dr. Ferrier and others now also show, almost beyond a doubt, that the centre at which consciousness is located is the cerebrum, and that all the other centres are simply the seats of unconscious or automatic action; in other words, these researches prove that the cerebrum is the centre of union with the conscious part of the soul, and that all the other centres are centres of union with the unconscious part of the soul. (See Ferrier's "Functions of the Brain.")

Here, then, we have, physiologically, the fundamental facts essential to our theory. The grey cellular substance is that wherein, in a special sense, the soul dwells—in other words, inheres or unites with; and the white dense mass of nerve fibres which makes up the rest of the centre, and which touches the soul in every corner of the grey cellular substance, is the great keyboard of all the nerve lines outward and inward, whereby the soul, as operator, keeps up communication with all parts of the body and with the outside world.

This grey cellular substance is common to all the centres; and all conscious or vital activity unquestionably emanates from it and its nerve ends.*

That the soul may use the substance of the grey cells for other purposes also than that of strict habitation, or only as a seat on which to face and touch the keyboard of nerves, is not at all improbable. Soul inhering in this matter, present in every part of the matter, and in the matter touching every fine fibre end in the keyboard, may find the grey cellular matter

* It may indeed seem remarkable that the soul should always choose its special points of union with the body of this cellular structure; yet it is invariably from cells that the soul operates, whether in building up the body at first from the bioplasts, or in regulating its functions afterwards from the brain or ganglia.

the one end,—and for conveying and producing this molecular action in the muscles or parts of the body at the other end; and in the other kind, there must be that adaptation which fits it for receiving its own molecular action from the material or molecular action of the parts or extremes of the body, as, for instance, the pricking of a needle,—and for conveying such molecular action as will suitably produce spirit action at the centres of union with the soul at the other end.

Physiological science, then, without a single discordance shows most distinctly that the human body is fully provided with these two specially adapted nerve lines of connection between all parts of the body and its centres of union with the soul,—and that each kind is fully fitted for the work which it has to perform both in conveying its own kind of molecular action, and also in giving and receiving its own proper stimulus of action to or from molecular or spirit action at either end.

The nerve lines, then, which transmit impressions or molecular action from the various parts of the body to the centres, are called by the later physiologists the Afferent or Sensory Nerves: some also call them the Excitor Nerves, because they excite action at the centres from the outside.

And those nerve lines which transmit motor or molecular action from the centres to the muscles and various parts of the body, are called by physiologists the Efferent or Motor Nerves.

* All physiologists agree in the brain being the seat of consciousness. Carpenter and Longet, however, think it is located in the Mesencephale or third ganglia; but Ferrier, Flourens, Vulpian, etc., by a vast amount of irrefragable evidence, have clearly proved it to be located in the cerebral hemispheres.

† In regard to the centres of unconscious interaction, physiological testimony is generally quite harmonious.

‡ See on this subject, Ferrier's "Functions of the Brain," Carpenter's "Human Physiology," or any other late first-class work on the human nervous system.

correspondence in the nerve ends at the centres of union and their other ends at the extremities of the body, is in full harmony with discovered physiological facts. We shall now add a few others, which tend still further to confirm it. This peculiar constitution of the centres, which applies in a greater or less degree to all the centres of union with the soul, is, no doubt most distinctly observable in the cerebrum.

There is nothing new in the fact that after the amputation of a leg, for instance, the consciousness continues to refer the pain, caused by the cutting of the nerves, to the toes and various parts of the foot, just as before the removal of the limb; this fact shows that the nerve ends in the cerebrum sustain a certain definite and corresponding relation to those in the toes and foot; nor is it found that this relation ever changes to the consciousness on any subsequent irritation of the nerve ends. The same principle applies in the case of all the other members of the body and their various parts. Every toe, finger, etc., must therefore have its corresponding nerve ends in the cerebrum in definite and just relations before the consciousness.

The responsive automatic action of the unconscious centres in cases of amputation parallel to the foregoing, shows that the same principle of correspondent nerve relation also applies to a certain extent in these centres. (See also Ferrier's experiments on animals divested of the cerebrum—"Functions of the Brain.")

Again, it is well known that the nerve fibres of both kinds—sensory and motor—radiate in immense numbers from the optic thalami and corpora striata, and entering the hollow side of the cerebrum, spread themselves in all directions in contact with the grey cellular matter which composes the outer side of it. Dr. Ferrier (see "Functions of the Brain") has been able to map out a large portion of the cerebrum or skull (in a manner resembling a phrenological chart), and to show very definitely a large number of the areas pertaining to the nerves of the different senses and the different parts of the body. In like manner he has established a large number of the areas pertaining to the volitional nerves. Each class of sensory nerves and each class of volitional nerves has its own special location. The right hemisphere of the cerebrum pertains to the left side of the body, and the left hemisphere to the right.

But what is at present specially important to notice in the discoveries of Ferrier are the facts, that the extent of area occupied by each class of nerves is very considerable, that different points in each area relate to different parts of the body, and that the scattered ends of the nerves do sustain relations corresponding to those of their exterior to all the extent which we claim to be necessary. (Ferrier's "Functions of the Brain.")

The experiments of Ferrier, Carville, Duret, etc., on the sub-occipital and other unconscious centres, also show that the same general principles which we have been referring to

within itself that makes it act so under that stimulus. Were the ball feathers instead of lead, it would act differently. The gunpowder is a different thing, and acts according to its own laws, so far as it goes; but it communicates nothing to the ball but its stimulus. If there is anything in the action of the ball under that particular stimulus peculiar or different from its action under any other, the peculiarity or difference arises from its own inherent and ordinary laws operating under that peculiar or different stimulus. The action of matter under spiritual stimulus is different from that under material stimulus, simply because the stimulus is different—just as the action of a ball struck by the hand is different from that of a ball struck by electricity. And just as the stimulus of a blow on a ball may seem to suspend or contravene the action of the common law of gravitation; so also the stimulus of spirit action may seem to suspend or contravene, for the time, some of the chemical laws of matter in the body.

Again, as furnishing an illustration of the same sort, a spark may set on fire a train of gunpowder. The stimulus here is the spark, but the gunpowder acts purely according to its own laws in communication with that spark which explodes it. If it had been a composition of a different sort, it would not have exploded at all. The spark also acts entirely according to its own laws till it communicates the stimulus.

It is just in this manner, then, that spirit and matter act in the twofold nature of man. All action in the soul is pure spirit action operating according to its own laws up to the point where it touches matter at the centres of union with the soul; and all action in the body, including the material centres themselves which touch the soul, their various nerve lines of connection, and all the other parts of the body, is pure molecular action acting according to the ordinary laws of matter. Thus, every action of the brain, spinal cord or other ganglia, and nerves, as well as the muscles and every other part of the body, is purely physical or molecular,—just as every action of the parts of the soul is purely spiritual. The molecular action or the sense impression produced by touch, from the tip of the finger up to the point where it directly touches soul at the brain centre and communicates stimulus, is purely physical. Its stimulus produces spirit action, and I consciously feel the effect produced in the soul by the stimulus of the physical action; but I am not conscious of the physical or molecular action itself, because that is outside of the soul.

So also in the act of volition by which I may move my hand; it is pure spirit action up till the instant that it touches the brain; from that instant it becomes pure physical or molecular action. I am conscious of my volition up till the moment my soul communicates

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higher degree by the active consciousness, and in a lower by the latent. So also is the spirit action of the conscious soul in both degrees affected by molecular action in the cerebrum. There may be a kind of molecular action and communication going on in the cerebrum that affects the consciousness only to a latent degree; but a communication of unusual nature or interest no sooner comes to the latent consciousness from the cerebrum than the full flood light of active consciousness or attention flashes up to it; and the communication, borne to the soul centre on the wings of molecular action, at once becomes the subject of active thought, feeling, and volition. Thus the conscious soul, dwelling in his palace of grey cells, with its keyboard of nerve fibres all around and everywhere touching him, is ever fully informed of all that transpires in his kingdom, and executes his every wish in its remotest corners without stirring from its seat. In conclusion, let us repeat here what has in various ways been stated before, that the soul dwells in every other part of the body as well as at these centres. The soul in a general sense dwells in all the body; but the parts of it that in a special sense are in union with the body dwell at these centres. The soul is one whole, dwelling throughout the body; but the soul has certain places of interactive union with the body, and they are these centres. When the bonds of interactive union at these centres are ruptured, death ensues and the whole soul leaves.

CHAPTER XI.

Relations of the Centres to their Parts of the Soul.

1. According to the foregoing theory of a suitable organisation, it would evidently then be an error to suppose that because the different parts of the cerebrum have different offices and work, and connect with the conscious soul at different points in the cerebrum, that therefore the conscious soul is divided correspondingly into different parts, with offices and work corresponding to those parts of the cerebrum with which they connect.

The conscious soul is one whole, performing all its functions as one undivided whole; and any part of it is capable of doing what may be done by the whole (see "Description of the Conscious Soul," at the commencement of this work); and therefore the parts of the cerebrum are organized with a view to their convenience to the parts of the body, and not with a view to their convenience to the parts of the conscious soul at all. The cerebral keyboard requires

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doubtedly would be the case were there any such special reservoirs. The organs that are exercised all waste in tissue alike; this is clearly proved by facts, and when the tissues are exhausted they refuse to act. When a spark is communicated at one end to a train of gunpowder which connects with a blast in a quarry, the reservoir of force in this case is the gunpowder itself all along the line, including both in the train and the blast, and the stimulus is the spark. If all the gunpowder is exploded at one shot, the reservoir is exhausted, leaving only a residuum of dust; but if it were possible that the same shot, the reservoir could be exploded several times in succession ere all its particles were exhausted of explosive power, or that but a fraction of it could be exploded at each time, leaving a reserve for future use, we might perhaps have a something remotely analogous to the reservoirs of physical force in the human body.

It is now a generally admitted fact, that all physical action is carried out by the oxidation of the tissues of the body; in other words, by the burning of the tissue. So far then as the body is concerned, the tissue all over the active parts of it is the reservoir. So much of it is oxidized or burnt in each molecular act; the ashes, so to speak, is the molecular waste, and when the supply of suitable tissue is exhausted, the reservoir is exhausted.

The oxidizing process is set in motion in each act at the centres, by the stimulus of spirit action—that is, spirit action is the spark. When molecular action in the sensory nerves originates at the extremities of the body, it does so simply from the stimulus of other molecular action.

Physiological facts show that there is a waste of tissue from this cause in all the parts that are in action; and there is no such waste in any particular part as would lead us to infer that any part or parts constitute special reservoirs of physical force for all the rest.

2. The true reservoir of force in the human body is the soul, which gives the spirit stimulus. And spirit stimulus does not project itself through the centres and nerves into the body like a subtle fluid or gas, but impinging itself, so to speak, against the centres, produces molecular or physical action, which travels along the nerves to the muscles and parts which require to be affected. It is not spirit that is injected into the centres, nerves, etc., but merely an effect from it; just as a stone falling into one side of a pond does not travel over all the pond, but produces a ripple which travels over it all. In like manner, molecular stimulus does not project itself into the soul, but simply communicates its effects to the soul at the centres of union.

3. The discoveries of chemistry show that all action in the physical world is the result of physical forces seeking their equilibrium; and that it is just in the passage of force from non-balance to balance that force to apply can be obtained. In the same way we can learn that the strength of the force is just the strength of the pressure from non-balance to balance; that it is only by the addition, or withdrawal, or waste, of something at one of the sides, that this balance can be restored; and that anything that disturbs this balance is a producer or promoter of physical action.

4. The discoveries of chemistry also show that all the physical organisation of human as well as animal nature is constituted on the principle that the oxidation of matter and molecular waste shall go on in the matter of the body just as in the matter outside of it; and that in order to make up for the waste caused by this oxidation (for all physical action can be accomplished only by oxidation of matter), fresh material is being constantly brought into the body. Oxidation is a general law in matter elsewhere; so it is in the body. Thus it is then that life, so to speak, shall go on the crest of the wave which is continually changing its particles as it moves along. "It is an error," says an eminent chemist, "to suppose that decay and decomposition begin only after death. They proceed during every moment of life, from the first kindling of the vital spark till its extinction in death,



some phrenologists, come directly in the teeth of our ablest physiologists, who frankly confess, that though they can find at these centres an organization and parts suitable for the transmission of sensory or extitor impressions inward, and the transmission of motor impressions outward, they are unable to detect in the cerebrum or other centres any material organization corresponding to a single function of the mind or soul. Here Carpenter, Ferrier, Loomis, etc., might all be quoted.

5. Lastly, according to this theory, then, the office or the work performed by the cerebrum and the other centres is quite different and distinct from the office or the work performed by the soul; and so at the cerebrum and these centres, where all organization of matter ends, matter and its work ends, and soul and its work begins. This is the teaching of common sense, and it is also plainly the teaching of physiology.

We find the work of the cerebrum and the other centres, each of which consists simply of a soul seat and a keyboard, to be purely and simply that of communication between the soul and the body. They have no other parts and they have no other work. The cerebrum is thus the medium of communication between the conscious soul and the body, whereby the conscious soul gives out or receives impressions from the body and does nothing else, just as a telegraph apparatus is the medium of communication between the operator and the outside world. This is its work, and its whole work. It has nothing in common with the soul, and it does nothing in common with the soul. It has nothing to do with thought, feeling, or resolution; these things belong to the soul. Hence any assertions of phrenologists or naturalists that would imply anything contrary to these principles are utterly spurious; and every attempt to trace in the cerebrum (or in any part of the brain) an organization corresponding to that of thought, feeling, conscience, etc., will prove absolutely abortive. It is the candid acknowledgment of all physiologists that no such organization can be found. Here all mental and physiological science, and common sense, take the same side. Physiological facts show that the dense mass of white fibres and the grey cellular matter are both organized for simple material functions; and just as we lose all material organization among the grey cells, soul and its work begins. Of the organization or work of the soul, physiology reveals nothing.

... which keeps the particles together, or heat, as also in the case of pressure and the law that the stimulus of spirit action is incapable of being neutralized or suspended. Can it then be denied neutralizing, or seemingly suspending in many cases for the time the action of the ordinary physical laws of the matter on which it acts? This does not in the least interfere with the rule that the action of the matter under the spirit stimulus is purely physical, and that the action of spirit from molecular stimulus is purely spiritual. Each of them works according to its own laws under a foreign stimulus. An iodide in contact with a spark will melt, while a pellet of gunpowder just action according to their own laws under that stimulus. What we call the laws of matter is its manner of action on receiving stimulus. When it receives stimulus of a common kind from other matter around it, it acts in a common way, and its laws are common; but when it receives stimulus from spirit, it acts in a peculiar way, and its laws are peculiar; and yet both sets of laws are the laws under one kind of stimulus that disappears under another kind.

We again repeat concerning matter and spirit, that all that the one receives from the other is simply the impulse or impingement, and all that belongs to the manner in which each of them acts under that impulse or impingement, belongs respectively to each.

As to the exact manner in which the impulse or impingement is communicated, whether it resembles that of electric, chemical, or any other kind of action, the determination of this may wisely be left to future discovery.

By spirit action acting on molecular action in the matter of the body, not only are the volitions of the mind, etc., carried out, but the various parts of the body itself are built up and maintained in co-operation with, but also in seeming contravention of, many of the ordinary laws of matter.

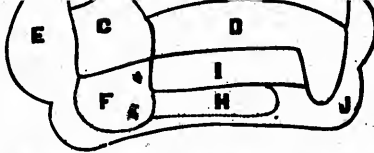
7. It is often amusing to observe the curious contradictions in which phrenologists of materialistic leaning, such as Carpenter, Barber, Wallace, etc., involve themselves, in their jealous fear of admitting the presence of spirit action in the human system. In order to explain undeniable facts, for which physical force furnishes no solution, most of these phrenologists feel compelled to admit that there is present in the matter of the body a something extraneous to it which they call a "directive principle," or an "architectonic principle," but they at the same time seem unwilling to admit that there is any other stimulus or force employed in the body than what is purely molecular or physical. Now, of what use would a "directive or architectonic principle" be in the matter of the body without power to direct or build? It would be impossible that a "directive or an architectonic principle" could control blind matter unless by its stimulating or action. It could only helplessly stand by without power to modify or change a single molecule. This absurd inconsistency is at once got rid of by calling this spirit action in the body as well as of molecular.

8. All spirit action of the conscious part of the soul is of the nature of consciousness and of intelligence, viz., conception, feeling, will, etc. Spirit action of the unconscious part of the soul, though not in its nature conscious or intelligent, acts nevertheless in sympathetic harmony with consciousness and intelligence; in other words, it acts in blind instinctive or sympathetic harmony with the conscious and intelligent part of the soul,—thus the prick of a pin sent to an unconscious centre will cause the withdrawal of the affected member; it also exercise certain independent functions in building up and taking care of the body, for which it has received, from the Creator, all necessary endowments.

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tion. The spaces enclosed by the lines surrounding D and I, and by the dotted lines around F and H (centres F and H being further in from the outer surface of the cerebrum), represent approximately the areas or centres of the senses.

The space (B) at the top of the head includes the areas which command volitional movements of the arms, legs, hands, etc.; space (A), movements of the head and eyes; (C) movements of the mouth, lips and tongue. (D) is the area or centre of vision; (I) of hearing; (F), surrounded by dotted lines, represents the two areas of taste and smell; and (H), also surrounded by dotted lines, represents the area of tactile sensation or touch. (E), the anterior or frontal space, is regarded by Ferrier as also mainly a centre of motions, largely of the inhibitory sort; (J), the posterior space, he concludes, from the result of certain experiments, to be the centre of the sense of hunger, etc.

Both hemispheres are exactly alike, with the same centres of sense and motion occupying relatively the same areas. Each hemisphere pertains to the opposite side of the body; the posterior and lower parts of the cerebrum belong largely to the senses, and the anterior and upper parts largely to volition.

There are certain parts of the posterior the functions of which Ferrier was unable to determine, as he could obtain no results from either the electrode or the other means tried by him. He had also no better success in regard to the frontal or anterior portion of the cerebrum. It is evident, however, that the front belongs largely to the volitions, as a very large number of efferent motor nerves pass from this region to the corpora striata, downward to the body. Because Ferrier was unable to stimulate these nerves in the front of the cerebrum by his electrode, or to ascertain by other means the special functions of its area, he supposes this class of motor nerves to be largely of the inhibitory kind, that is, of a kind to restrain and regulate the motions instituted at other centres. It would appear that nerves of this kind are used at other places, and we are not aware of any unfeasibility in his supposition, as all the efferent nerves of the body seem to act, react and restrain one another's motion with this kind of complex action. Ferrier oddly enough (in a materialistic way) hints that these efferent frontal nerves may be the nerves of attention, or are in some way specially connected with intelligence. We can see no reason for specially locating the attention in this quarter more than in any other. Any of the senses have as much to do with the attention or intelligence as the areas and nerves of inhibitory motion. The frontal part of the nerve keyboard may, however, be, and very likely is, that portion which is set apart for the finer manipulations of intelligence in controlling or sending forth the more subtle movements of the body. There is nothing,

secure and the law it then be denied e of the ordinary ure with the rule, that the action of ng to its own laws illet of gunpowder the gunpowder is e of matter is just a kind from other receives stimulus laws are the laws e not may appear

from the other is each of their acts eated, whether it of this may wisely

are the volitions and maintained in of matter.

e of materialistic fear of admitting eta, for which nit that there is e active principle," that there is any 1. Now, of what without power to a "could control without power to f by calling this the presence of

sciousness and of the soul, though consciousness h the conscious will cause the in building up endowments.

exist; or cause little action, if little of what causes action exist.

This proposition also fully accords with all the facts of physiological experience. Molecular waste is a constant result of molecular action, and we all know that the degree of molecular waste of the brain, etc., is always in accordance with the degree of spirit action, whether it be the action of the unconscious part of the soul in carrying on the functions of life, or of the conscious part of the soul in thinking, feeling, or willing about things within itself that do not necessarily involve the functions of the body at all. Much waste of the brain always attends much thought of any kind.

3. The work done by the one (that is, the soul or body) can never be the work done by the other. The one may do work for the other, but the one can never do the work of the other; else by nature and constitution they would require to be the same; and if in nature and constitution the same, the union caused by the necessity of the one helping the other would not at all be required.

Thus, for example, the matter of the brain centre never does the work of the mind or spirit in thinking, feeling, willing, etc.; but it does work for the mind or spirit by giving out influences to the body, or receiving influences from it, which the mind or spirit cannot do for itself, but which is necessary to it. The brain may tremble with the soul action of a thought, because tied to the soul that thinks; and it may thus give an expression to the face, or a volition to the hands; but thinking, feeling, or willing, are functions for which it is absolutely unfitted.

So neither can the soul do the work of the brain, any more than the telegraphist can do the work of his instrument that transmits messages either to or from himself. The experiments of Ferrier, Flourens, and many others, all decisively show that if thought were located in the brain in substance at all, it would be in the grey matter; but it can be proved that thought can go on without the grey matter; besides, the grey matter of the brain is of the same kind as the grey matter of the unconscious centres; therefore the brain is not the organ of thought, but simply the medium or channel between the organ of thought and the body.

There is no need for multiplying examples to show that the principle maintained in this proposition holds true of the whole soul (conscious and unconscious), and the correlated matter of the body. All experience confirms it. The work done by the unconscious soul in imparting vital stimulus, is a very different thing from the work done by the matter of the body on receipt of that stimulus; and it is just because there is a very different kind of action being done at the centres of union, that the action of matter in the body receives peculiarities distinct from those of material action out of the body. When the spirit action at the centres cease at death, these peculiarities cease also. The work done by spirit and by matter is different, and their organization is different. There is nothing in the organization of the brain, for example, that

former would probably indicate good powers in the latter, for it is the soul that builds the keyboard to suit itself, and not the keyboard that creates the soul.†

To judge, then, of human character from the head is not altogether amiss, for no doubt in this way the conscious soul does give some of its character to the head. Conscious soul seated on its throne of grey cells, with every point in that vast keyboard of nerves under its touch of intelligence, dwells in a palace of matter, which, developed capaciously upward, outward and forward, gives an air of dignity and intelligence to the whole cranium.

CHAPTER II.

Proofs that Thought or Consciousness is no Function of the Cerebrum or Brain, but of an indwelling Conscious Soul—A Proof of the Soul's existence.

I. It is clearly demonstrable, on the grounds of the late physiological discoveries of Dr. Ferrier and others, that consciousness or thought, feeling and volition, are no functions of any part of the cerebrum or brain, and that these functions must be performed by a conscious soul dwelling in the cerebrum. This may be regarded as an argument in proof of the existence of the soul, and classified as the first of those that follow at a later place in this work.†

1. It will be admitted at once, on the grounds furnished by the latest physiological discoveries, that there are just only two substances in the cerebrum or brain that can possibly in any way be related to thought, feeling or consciousness, or that, in other words, can possibly be conceived of as capable of consciousness or thought and feeling, namely, the nerves and

* Carpenter regards both the anterior and posterior parts of the cerebrum as additions peculiar only to the human brain.

† We see no reason to suppose that the conscious and the unconscious soul may not have some powers in common.

It must be manifest to any reader of Carpenter and Ferrier, even moderately acquainted with the mental and moral constitution of the human mind, that the psychological application of many physiological phenomena by both Carpenter and Ferrier are lamentably defective and inconsistent; and though neither of them deny the existence of the soul, the reader is largely left to infer that that conscious something is a machine made up of grey cellular matter and nerves. Their lack of clear intellectual discernment between the purely mental nature of thought or consciousness and its merely physical concomitants, which Ferrier and Carpenter seem so often to confuse or mix together, probably has arisen from a too exclusive study of physics, with a neglect of metaphysics.

properly fitted or qualified, such will be the functions or the work which it will be required to perform in union with the body; and therefore all its connections with the body must be such as will allow it to perform this work. It must have free communication through the body, be controlled by the body, and also have control over it; so that it can discharge by it, its duties in the outside world, or perform even for the body itself what cannot be efficiently done for it by the unconscious part of the soul. All the action of the conscious part of the soul will partake of the nature of consciousness, active or latent. Action produced in it by action from the body will be of the nature of sense; and all action in it acting on, or producing action in the body, will be either voluntary or involuntary.—In other words, volitional or automatic; thus, for example, the involuntary action of the conscious part of the soul in expressing its emotions, joy, fear, anger, etc., is not volitional at all, but purely automatic. This power of the conscious part of the soul to do automatically certain things thus associated with consciousness, is required, in order to leave the attention free to attend to its own proper duty.

2. The unconscious part of the soul, or the "psyche," which has also been already described in Chapter I., is just that part of her spiritual nature which is best fitted to build up, preserve, and take care of the body as a suitable habitation and medium of the conscious part of the soul; and thus by taking upon itself the chief care and management of the house, so to speak, the conscious soul, the other occupant, is allowed to devote his attention mainly to what is his own proper work.

It follows, of course, that the unconscious part of the soul must do automatically, or of its own accord, all this work that can be so done, initiating and controlling all its own movements; but of course whenever a work is required in any part of the body that cannot be done automatically by the unconscious soul, because it would require the use of consciousness and its senses to guide its movements or to initiate others, the conscious part of the soul, being in communication with every part of the body and knowing what is going on in it, must take up this work itself and do it, or at least lend what assistance is required in addition to the powers of the unconscious soul. The unconscious soul must always keep the house in the best state of readiness and suitability for all the wants of the conscious occupant.

As such is the work for which the unconscious part of the soul is properly fitted, such will be the work which it will be required to perform in union with the body; and therefore all its connections with the body must be such as will allow it to perform this work.

The unconscious soul is just that part of our nature which is fitted by the Creator to do what transcends, or may be done independently of human intelligence or the powers of the conscious part of our nature; and therefore this is the kind of work which it will be required to perform in union with the body. Like the conscious soul, it must have free communication

builds the cerebral area is totally destroyed; and therefore the grey matter is nothing more than a medium of molecular action between the organ of thought and the nerves leading to the body. It must be admitted, on the ground of proof furnished by the latest discoveries, that though a sensory motion, moving inward, cannot reach and produce thought or consciousness unless the corresponding grey cellular matter unimpaired is in the cerebrum; yet the organ of thought or consciousness is there, and is itself conscious that none of its parts are impaired, and that it possesses all its wonted capacities of receiving the sense impression, could the impression only reach it; if the sensory motion fails to reach it and produce consciousness, it must be because the grey cellular medium which conveys it from the nerve is wanting.

So, also, when a volition is made to move any part of the body, and though it cannot reach the nerves and move outward if the corresponding grey matter of the cerebrum is removed, yet the organ of thought, which makes the volition, is there, and is itself conscious that it makes the volition with none of its parts or capacities in reference to that volitional act impaired; when, therefore, the volitional act fails to reach the nerves, it must simply be because the grey cellular medium between the organ of thought and the nerves is wanting.

Thus, in the case of all the animals operated on by Dr. Ferrier, after the removal of the grey cellular matter connecting with particular nerves of sense or volition in the cerebrum, it is evident that the organ of consciousness or thought was entire in all its parts and capacities; because the animal, evidently aware of no defect in any of the parts and powers of consciousness pertaining to that particular sense or volition, and manifestly having none of them impaired, could be distinctly seen trying to catch the sound or sense impression, or to put into the body the requisite volitional movement, failing to do so only because the grey cellular medium was wanting. If some portion of the grey matter was left entire, the conscious animal succeeded to a certain extent, and evidently tried to do more. So far as the conscious act was concerned, it seemed to be perfect in all its parts; the failure arose from the defect of physical means to carry it out.

The human subjects (referred to by Dr. Ferrier) with the cerebral grey cellular matter connecting with certain nerves of sense or volition destroyed by disease, were conscious of having all the parts and capacities of consciousness relating to that particular sense or volition perfectly entire. If, for example, it was a sound they wanted to hear, or a touch they wanted to feel, they were quite conscious of retaining their full powers of being able to hear it or to feel it should it only come; and they knew that they put forth the same conscious powers of hearing or of feeling in the attempt to catch the sense impression that ever they had used when the physical connection was complete; they failed in hearing or feeling simply because the sense impression could not reach the organ of consciousness from want of the grey matter. Again, in cases where the same class of human subjects had the cerebral grey matter pertaining

though not so definite and clear. But as late physiological discovery enables us to locate this centre definitely in one particular part of the brain, it is better at once to do so. The particular part of the brain, then, which late physiological discovery shows to be the centre of union with the conscious soul, is the grey matter of the cortical substance of the cerebrum; for that this grey matter or cortical substance of the cerebrum is the immediate seat of consciousness, may now be regarded as fully established by the researches and experiments of Ferrier, Flournoy, Valpian, etc.*

The cerebrum, then, is the centre of union with the conscious part of the soul. Of the special structure of the whole brain, we may speak more hereafter; it is enough at present to invite earnest attention to the fact, so well supported by physiological science, that that part of it called the cerebrum is the centre of union with the conscious part of the soul, and that its position, as a part of the brain, at the top of the spinal cord, and with little mass of body between it and the exterior world,—so that short nerve lines, little in the way of other complicated nerve lines, may serve to give it communication with the outer world in seeing, hearing, etc.—pre-eminently qualifies it as a suitable centre of union with the conscious part of the soul.

Then from this cerebral centre to all parts of the body and through it, all these nerve lines are known to radiate, which are of that character which suits the conscious part of the soul,—both those that transmit afferent sensory impressions from the body or the exterior world to the soul, and those that transmit efferent motions, voluntary or involuntary, from the conscious soul to the body.

The cerebral centre, or, in other words, the cerebral hemispheres in which the grey matter and these nerves meet, are in the form of a hollow shell, and hang over the basal or subcranial ganglia and the top of the spinal cord. The grey matter occupies the outside of this shell; and the sensory and motor nerves, originating in the grey matter, come out at all points of the inner side of this hollow shell, and converging downwards in the form of a hollow cone, the afferent sensory nerves catch on to the optic thalami, and the efferent motor on to the corpora striata; whence both kinds of nerves pass the other ganglia and downwards through the spinal cord, when they separate from this tract, and spread themselves in pairs (one of each kind in a pair) all over the body. It will thus be seen, that the course of sensory molecular action will be upward along the afferent sensory nerves, which thus rising from the optic thalami spread and enter the inner side of the hollow shell, where they touch the grey matter,—and that the course of motor molecular action from the grey matter will be along these efferent

*The theory of Carpenter and Louget, that the aggregate of ganglia at the base of the brain constitutes the seat of consciousness, is no longer tenable.

sensation or volition for the grey matter of another place or of another nerve connection. But it has been distinctly proved that the grey matter never does this. Therefore the organ of thought is not the grey cellular matter, but the soul which abides in it; and the grey matter is simply the medium between the soul and the nerves.

2. The conclusion, then, to which we are distinctly brought is, that as there are only two possible substances in the cerebrum (or brain) conceivable as the organ of thought or consciousness, viz., the nerves and the grey cellular matter; and as it has been clearly demonstrated by the force of established facts (1) that the nerves are not that organ, and (2) that the grey matter is also not that organ but simply the medium or substance in which that organ invisibly dwells, therefore that organ of thought or consciousness is the soul. Conscious sensation and volition are functions neither of the nerves nor of the grey matter, but of an invisible something inhering in the latter; and that invisible something endowed with sensation and volition, is endowed with feeling, conscience, and all the other powers of the conscious soul, and is the soul.

II. Part of the substance of the foregoing argument may be put in a shorter and different form.

1. Consciousness or thought cannot be a function of the nerves of the cerebrum; because in no case is consciousness or sensation ever produced by nerve action isolated from its associated grey matter, nor can conscious volition ever produce nerve action so isolated.

2. Neither is consciousness or thought a function of the grey cellular matter of the cerebrum; for if it were, the conscious power to receive a particular sensation would be lodged in the cerebral grey matter connected with the nerves of that particular sense, and the conscious power to will a particular volition would be lodged in the grey matter connected with the nerves of that particular volition; because, as already proved by Ferrier's experiments, the grey matter of one place or connected with one set of nerves in the cerebrum, cannot do by proxy the work of the grey matter of another place or connected with another set of nerves. But it is known that the conscious power of receiving a particular sense or of willing a particular volition exists, and is exerted, even when the grey cellular matter connecting with the nerves of that particular sense or volition is entirely removed; therefore consciousness is not lodged in the grey cellular matter. And if not lodged in this or in the nerves, these two being the only possible substances in the cerebrum, it must be lodged in the invisible and conscious soul.

III. Again, did the powers of thought or consciousness abide in the nerves or in the grey cellular matter of the cerebrum, thought or consciousness would be a physical function. But every physical function inevitably requires a special physical adaptation of matter for its work; consequently, were thought or consciousness a function of the nerves or of the grey matter of the cerebrum, there would be a special physical adaptation of one or the other, or of both, for

muscle, and inform it when its mandates have been obeyed.

II. Keeping still in view the principles stated in the first proposition, let us next show that a like suitability of bodily organization is found in connection with the "psyche," or unconscious part of the soul. Physiological facts show very clearly that the unconscious soul has its own special centres of interactive union with the body, with attached nerve lines of connection in or through the body, especially and doubtfully adapted to the work which, according to Chapter VIII., is to be performed by it in connection with the body.

There is in reality but one centre of the unconscious soul, if the cerebrum or cerebral hemisphere may be regarded as one. This was the case, as the very nature of consciousness would imply one definite location for the soul. The centres of union with the unconscious soul, however, requiring less limitations, are, as might also have been expected, more than one. They may be briefly described as follows:—

(1) The bioplastic cells which are all over the body are just those centres from which the unconscious soul, or "psyche," builds up or organizes and keeps in repair all the organs or parts of the body. In other words, it is from these cells or centres that the unconscious soul prepares and keeps in order all the organic machinery which constitutes the body a proper medium, and upon which machinery the soul operates from other centres.

Like the builder or architect, the unconscious soul from these bioplastic centres erects all its own scaffolding, builds and finishes the house, requiring the aid of no preceding artificer either to prepare its materials or furnish it with lines of connection. These bioplastic cells are all over the body, and need no other lines of connection than themselves. From these cells the unconscious soul gives both structure and form to the body.

(2) The next centre that we shall speak of is the spinal cord, which, in the words of Carpenter, "consists of a tract of ganglionic matter" (made up of grey cellular matter) "enclosed within strands of longitudinal fibres, and gives off successive pairs of nerves which are connected at their roots with both of these components."

(3) The next centre or centres of the unconscious soul are the subcranial ganglia which intervene between the top of the spinal cord and the cerebrum. This ganglionic mass is divisible into different parts, with different kinds of work to perform for the unconscious soul. These parts (or centres), taken in their order upwards to the cerebrum or conscious centre, are as follows:—the Medulla Oblongata (which may be regarded as a continuation of the spinal cord), the Mesencephalon, the Cerebellum, and the Optic Thalami and Corpora Striata.

As we proceed upward from the spinal cord, each succeeding centre gives a degree more

* Study on this subject the latest physiological works.

† The muscular sense, argued for by Bain, has not been supported by physiological fact.

ion. But the organ of grey matter are only two light or con- rily demon- 2) that the that organ Conscious ; but of an with sense e conscious ad different n; because m its asso- of the cere- lodged in e conscious s, the grey lo by proxy es. But it a particular n the nerves n not lodged o being the conscious soul. n in the grey ction. But or its work ; y matter of both, for

The facts, then, which we have adduced in this chapter lead inevitably to the following conclusion, that thought or consciousness is a function of no part of the cerebrum or brain, but of an invisible something dwelling in it, which we call the conscious soul; therefore there must be a soul.

CHAPTER III.

The Cerebrum is the Keyboard of Communication between the Conscious Soul and the Body.

There is very abundant proof, on the bases of the same physiological discoveries, to show that the cerebrum (or brain), with its grey matter and nerves, is nothing but the keyboard of communication between the conscious soul and the body; putting this in other words, we have abundant evidence, that the only function performed by the grey matter and nerves of the cerebrum, which is in any way related to thought or consciousness, is simply the transmission of molecular impressions of sense or of molecular motions of volition, neither of which functions are of the nature of consciousness or thought.

To invest the nerves and the grey matter of the cerebrum with power of conception, feeling, conscience, memory, volition, etc., in the face of the clearest evidence to the contrary, is a gross violation of metaphysical and physiological truth, let alone common sense. In all the examples furnished by physiological research or experiment, there is not one which gives any countenance to the supposition that a single function of thought or consciousness is vested in the machinery of the cerebrum or brain.

(1) Beginning with the cerebral machinery pertaining to sensation: what work do the nerves of sense and the grey matter associated with them really perform for us? Light is molecular action of one sort, sound of another sort, and touch of a sort different from either; the moment any of these motions reach the soul, conscious sensation of a particular kind takes place, which the conscious soul recognizing, interprets on the basis of former experience. Now, these tools of sense are no part of the organ of consciousness, but just the means by which the conscious soul obtains sense impressions from things in the outer world, which

The same nerve lines might thus convey suitable action for the centres of both parts of the soul; and while the perfect continuity of every fibre of the main line is required onward to its terminus in the cerebrum, the fibres from the unconscious centre switched on downwards to the passing fibres of the main line would make all the downward part of the line available for the use of both centres.*

But this principle can only apply to cases where the unconscious centre lies conveniently in the line of connection with the cerebrum, and where the action dependent on that unconscious centre requires, from its character, to be always under the immediate oversight of consciousness and the control of conscious action from the cerebrum. In cases, however, where unconscious centres do not lie conveniently in the line of connection, or where the action requires to be separate and independent of all conscious oversight and control of conscious action from the cerebrum, then each centre must have separate and independent afferent and efferent nerve lines throughout.

This general method of nerve distribution appears, then, in the light of physiological science, to be the one adopted in the human body; and while there are afferent and efferent lines which the different centres have respectively and independently for their own use, there are also not a few afferent and efferent lines which, passing unconscious centres on their way from the cerebrum, are made by the above means, through a part of their course, to do work for both parts of the soul. There can be no obstacle in the way of the unconscious centre using in such cases the same tracks as the cerebrum; because, though the molecular action used by both should be even the same in kind, the action from the unconscious soul in its

* The only other principle that possibly could be adopted in such cases as this, is that of each centre having its own independent sets of nerve lines throughout; thus, instead of the same nerve lines doing the work of both kinds of centres by fibres switched on to them as they pass the unconscious centres, the unconscious centres could have their own independent sets of nerve lines, which falling in (for economy of space) with the tract of the cerebral lines as they pass by, could proceed onward in company with them, and so scatter and locate themselves alongside of the cerebral lines in the muscles and extremities of the body. The adoption of either the latter or of the former principle does not affect in any way our general theory or principles maintained in this book. The latter only adds some sets of nerves which the former dispenses with. The adoption of either the one principle or the other, therefore, would be to our general theory a matter of little moment. But as physiological discovery has revealed no such independent nerve lines in the above connection, and as their introduction would seem to add complication and to take up space for which we see no positive ground or necessity; and moreover as science has discovered the fact that nerve fibres do in such cases and in such manner connect the unconscious centres with the passing cerebral lines, we therefore adopt and give prominence to the simpler theory. As the action from the unconscious centres in all such cases must always be subordinate to that from the cerebrum, there can be no obstacle to both using part of the same nerve lines.

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initiation, regulation and stoppage, necessarily requires to be subject at all times to the action of the conscious soul, as well as to be under its continual conscious oversight.

1. The efferent excitor nerve lines connected with the unconscious centres are as follows:

(1) Those that, connecting with both the cerebrum and the unconscious centres, are, for a part of their course, the same as the afferent sensory. In other words, they may be described generally as those which, coming from all the muscles or parts of the body to the spinal cord, proceed upward, sending switching connecting fibres into, and exciting automatic action in, each succeeding unconscious centre, viz., the spinal cord, medulla oblongata, mesencephale, cerebellum, and optic thalami, until they terminate in the cerebrum, where they produce sensation. The afferent sensory nerves of general sense, and (according to proof furnished by Dr. Ferrier) even most of those of special sense, have afferent excitor nerves of this class switched on to them.

(2) Those afferent excitor nerve lines, that connecting alone with their own unconscious centres, are separate from, and independent of, the cerebral lines; thus the heart, lungs, stomach, etc., send many nerve lines of this sort into the unconscious centres, of the action of which we are wholly unconscious, but which nevertheless excites responsive automatic action from the unconscious soul.

2. The efferent automatic motor nerves connected with the unconscious centres are—

(1) Those that for a part of their course are the same as the volitional motor which descend from the cerebrum, and which are formed by fibres switched on to the fibres of the cerebral motor lines as they descend past each succeeding unconscious centre (viz., the corpora striata, cerebellum, mesencephale, etc.) on their way outwards, thus making the under part of the cerebral lines also available for action from the unconscious centres, which action of course must always be subordinate to that from the cerebrum. Most of the cerebral motor lines are associated in this way with efferent automatic nerve fibres of this sort, which serve to convey automatic action from the unconscious soul at these centres when the action is not under the special direction of the conscious soul at the cerebrum.

(2) Those efferent automatic motor nerve lines that, connecting alone with their own unconscious centres, are separate from, and independent of, the cerebral motor lines. This class are also numerous. From the great sympathetic ganglia and most other unconscious centres many independent nerve lines branch out into the respiratory organs, heart, and many other organs of the body, conveying action purely automatic, and altogether outside of the knowledge and control of consciousness.

III. As many of the functions of the body would be of such a nature that they would require to be performed by the unconscious soul, and also to be subject to the guidance or control of the conscious soul while so operating; and as the same bodily organs might often be required to do work for both the conscious and the unconscious soul, acting either at different times or simultaneously; it follows, that in a suitable organization many organs or parts of the body would require to be connected by sets of nerve lines with the centres of both parts of the soul; that is, these organs would require to be connected by afferent sensory and efferent volitional motor nerves with the cerebrum, as well as by afferent excitor and efferent automatic motor nerves with centres of the unconscious soul.

This is found to be the case; for while not a few organs of the body, which do not require to be controlled by the consciousness, are connected with centres of only one kind, there are very many others which, performing functions under both parts of the soul, acting either simultaneously or at different times, are connected by a double set of nerve lines with both the cerebrum and the unconscious centres. Thus, as already shown, all those organs which send sensory and volitional motor nerve lines to the cerebrum with branching excitor and automatic motor nerve fibres at the intervening unconscious centres, have this twofold connection with both kinds of centres. Then also many organs, such as the respiratory, etc., that cannot either properly or conveniently connect with both centres by accessory fibres to the main line, have separate and independent double lines leading to both the cerebrum and the unconscious centres.

Still further, as illustrating the manner in which the various organs of the body thus connected with both parts of the soul operate, it is found that when the lower part of the spinal cord is severed from the upper part, the prick of a pin applied to the foot will excite responsive action at the spinal cord and cause the foot to be withdrawn,—the conscious soul at the cerebrum meanwhile having no knowledge of what is being done below the point of severance in the spinal cord. Then, taking the other centres of the unconscious soul, viz., the medulla oblongata, mesencephale, cerebellum, and the optic thalami and corpora striata, in their order upward from the spinal cord to the cerebrum, it has been found by Dr. Ferrier and others, that while the responsive action of the unconscious soul at each ascending centre employs and co-ordinates the action of more organs of the body than it does at the centre beneath it, yet all of its actions, when initiated, go on automatically by a blind sympathetic

instinct harmonious with creature nature. Dr. Ferrier and others have also made it plain, that it is only when the nerve lines are open to the cerebrum, that all that is transpiring in the body, by action from the unconscious centres, becomes open to the knowledge and control of the consciousness. The great burden of proof goes to show that consciousness does not descend below the cerebrum, and that unconsciousness does not reach higher than the optic thalami and corpora striata. When the cerebral nerve lines are entire and open, then all the muscles and motions of the body are open to the knowledge and control of the conscious soul to initiate, continue, regulate or stop, as it pleases; and when motion is thus initiated by the conscious soul, the blind instinctive, or sympathetic automatic action of the unconscious soul from its centres relieves the conscious soul in some measure from the burden of management,—in the same way that the share of irrational instinct possessed by a horse relieves his rider in some measure from the burden of management in keeping him continually on the road.* (See "Ferrier's Functions of the Brain.")

IV. But, as has been already stated, a suitable organisation of body requires to be such that the conscious soul must be perfectly able and free to think, feel, will, and attend without distraction to its own proper duty; and that, in order to this, the main work of preserving and managing the more common functions of the body must be done automatically or involuntarily by the unconscious soul, and that even the conscious soul must do as much of its work automatically as possible, that the attention and volition may thereby be left free.

That the body is thus organised, we trust we have now distinctly shown to be the case.

The conscious soul, or "pneuma," as we have seen, has its own cerebral centre, and just those classes of nerve lines which it requires to perform its own proper duty, viz., the afferent sensory nerves which convey knowledge to it, the efferent volitional motor nerves which convey volitions from it,—also those nerve lines which give out automatically or involuntarily the expression of the thoughts, emotions, etc., in the face or person, and otherwise suitably influence the states of the body, as required by the conscious soul.

And the unconscious soul, or "psyche," has also its suitable centres, with the classes of nerve lines which it requires to preserve, take care of,—in short, do its own proper work in union with the body, viz., the afferent excitator nerves and the efferent motor nerves which convey automatic or involuntary motion; while also all those organs of the body that require to be affected from both parts of the soul are, as we have seen, connected with both kinds of centres by suitable nerve lines.

The experimental researches of Dr. Ferrier and other scientists all fully harmonize with this theory. The unconscious soul performs all its work automatically, and also the conscious soul gives expression to its emotions, etc., in the countenance or in the gesture, and does so much of its work automatically or involuntarily as can be done; thus leaving the attention

* As illustrative of the manner in which the conscious soul will respond automatically, at its centres, to stimulus coming through the afferent excitator nerves, it is well known that a frog, fish, fowl, dog, or any other animal, with its cerebral brain abstracted, or the nerve lines of sensation and volition connecting with it destroyed, will leap, swim, fly, balance its body, or act variously otherwise, according to the kind of stimulation applied to the outer ends of the afferent excitator nerves,—even while the creature may be absolutely unconscious of its own movements. The stimulation coming from the outside by the afferent excitator nerves to the centres of union with the unconscious soul produces spirit action, which in turn acts on the afferent motor nerves, and makes the members of the body act appropriately, perhaps partly from habit, and partly from unconscious sympathy or instinct.

Were the actions produced by outward stimulation precisely uniform in all cases, we might perhaps conclude that spirit action did not intervene at all between the first stimulation and the movements of the body. But the movements are not uniform but variable, and yet are always in harmony with a kind of unconscious instinct and sympathy with the plan and well-being of the whole, thereby clearly showing the intervention of spirit. The unconscious soul thus takes charge of all those movements of the body that would unnecessarily encumber and distract the attention of the conscious soul in the discharge of its own proper duty; the unconscious doing its own proper work, also carrying on the movements initiated by the conscious, and requiring, in such cases, from the latter, no more than the slightest surveillance.

It may then be affirmed generally of the action of all organs of the body which connect by nerve lines with the centres of the unconscious soul alone, or that are isolated from the consciousness by the severance of the cerebral nerve lines, that the balancing, the variety, and the fitness of movements in the organ, initiated by the stimulation of the outer ends of the afferent excitator nerves, prove the intervention between the stimulation and the movements of a spiritual something, which, though unconscious (that is, out of reach of the individual's consciousness), has nevertheless a general instinctive sympathy with the present condition and with the general well-being of the whole man, and regulates the movements accordingly; that spiritual something is the unconscious soul.

Therefore, at these centres of the unconscious soul, all impressions coming from the outside produce spirit action, which in turn produces molecular action, or movement in the members of the body.

There may be cases, however, in which molecular action, initiated elsewhere, passing through or by these centres, may merely be regulated in its passage by spirit action at these centres; for as spirit action can produce molecular action, it can of course easily regulate it; and the movement of a muscle in this case would simply be the result of the first stimulation, modified more or less by spirit action in its passage through the unconscious centre.

The reader is here referred to the latest and best physiological works on the nervous system.

and the volition free to attend to their own proper duties. The animal subjects experimented on by Dr. Ferrier after the cerebral connections were removed acted like so many automatons. Every animal remained inert as a manum, till the stimulus was applied to the afferent excitor nerves, and then it acted while the stimulation was continued, just as from habit or from constitution it might be expected to act; but the intelligent part of the creature's nature seemed to be completely cut off from all conscious feeling from the body, and from all control over it. While the cerebral connections remained entire, all the actions of the creature showed clearly the presence of conscious feeling from the body, and intelligent control over it.

Dr. Ferrier's clinical researches, with respect to human subjects, all confirm the same theory.

Thus, by the two parts of the soul having, as we have very fully shown in this chapter, different centres of interactive union with different nerve lines of connection in or through the various parts of the body specially adapted to the work which has to be performed by the different parts of the soul, the body is so organized that the conscious soul is free to attend to its own proper duty, while all the other work is done automatically by the unconscious soul. Here, then, our theory (as to the nature of the union between soul and body), physiological facts and experience, are in perfect harmony.

CHAPTER IX.

Each Nerve Line suitably adapted to its Work.

1. To be suitably organized for the work which it has to perform, each nerve line, whether it brings impressions from the parts of the body to a centre of union with the soul, or carries out volitions or motions from a centre to the parts of the body, would require to be a bundle of very minute fibres, and each fibre to stretch in unbroken continuity from its extremity in the body to its extremity in the centre; the fibres at the exterior, or body end, would require to be all spread out so as to leave no part of the body without necessary connection; then, to involve as little space or intricacy in the body as possible, they would require to come together and pass through the body in a bundle or sheath to the centres of union with the soul (which are composed of grey cellular matter), where they again would require to separate or spread out and put themselves in relations to one another corresponding to the relations which they sustain to one another at the other end; so that the soul can be able to receive or give out a distinct impression or motion from or to each point reached by a nerve fibre at the other end, and also be able to perceive the various relations between these points or parts at the other end. Thus, for example, in looking at a man, my optic nerve, in one impression, would require to convey from the retina of the eye to the cerebrum every point in the man's image, nose, mouth, eyes, hands, feet, etc.; and at the same time every one of these points or objects must preserve the same relations to one another, as seen at the cerebrum, that they sustain at the retina of the eye, otherwise his hands might appear where his mouth should be, etc.

That each nerve line would require to be organized in the above manner will be evident from the following considerations:

1. If each nerve line were not a bundle of fine fibres, which stretch continuously from the outward points of the body which they touch, down the stem of the bundle with which they unite, through to the centre where they touch the soul (in the grey cellular matter of which every centre, conscious or unconscious, is composed), it would be impossible for the soul, in any one use of the nerve line, to keep the impressions belonging to the different points of the body distinct from one another, whether in receiving sensory impressions inward, or in sending motor impressions outward.

2. These fibres of which the nerve line is made up, require to be very fine in order to take up little space and to give impressions to and from fine points; and if their outer ends were not separated and spread over all necessary parts of the skin or organs of the body, it would be impossible to transmit necessary impressions to or from these organs or parts. So also to save space and risk of harm in their passage through the body to the centres, these fine fibres require to come together like the branches of a tree to its stem, pass along the stem and spread themselves in the cerebrum or other centres. They differ from a tree in each fibre maintaining its own identity from branch to root through the stem or trunk; for if, like a branch of a tree, it should lose its identity and continuity on reaching the trunk, then the impression transmitted in each fibre would become utterly mixed up and confused with the impressions coming into the stem from the other threads.*

* This principle applies to the fibres of every line, not omitting those even which switch on from unconscious centres to passing cerebral lines. These switching fibres, which are well known to be numerous, find continuity in the lower part of the cerebral fibres.

3. Furthermore, these fine fibres must again separate themselves on reaching the centres, so as to allow of the soul acting on the end of the one without disturbing the other. Then, when separating thus, these fine fibres must also place their ends at the centres (in the grey cellular matter), at distances and in relations corresponding to the distances and the relations which they sustain to one another at the other end. The necessity of this will be seen by the following examples. We all know that it cannot be the picture in the retina of the eye that is immediately seen by the soul, but the picture at the other end of the optic nerve in the cerebrum; and yet the picture in the cerebrum must be the same as the picture in the retina. If, in the picture in the retina, there is the image of two flies one-sixteenth of an inch apart, and also of two flies twice that distance apart, it is evident that, in the picture in the cerebrum, the distance between the two latter will be still twice that which is between the two former; consequently the nerve fibres which conduct the images of the two flies that are furthest apart in the retina must also terminate furthest apart in the cerebrum.

Again, if I should lay the palm of my hand on the top of a small square box, did not the relations of the nerve fibres at the centre of consciousness correspond in some manner to their relations in the palm of my hand, I should be unable to tell whether this box was square, round; or irregular; and if I should wish to press down the lid at one corner, how should I be able to direct volitional motion to that point of the palm, did not the volitional nerve ends in my cerebrum in some manner correspond, in their relations, to their relations in the palm of my hand? The nerve fibres at the four corners of the box in the palm must also, so to speak, come to the four corners at the cerebrum. The nerve fibres at the four corners of a box in an image in the retina of the eye must also be the ones which, so to speak, are found at the four corners in an image in the cerebrum; and if I wish to pay particular attention to one corner of the box, I must have a corresponding volitional fibre in the cerebrum; which will enable me to adjust the retina so as to make that corner the centre of vision.

4. The foregoing statements, as already affirmed, apply to both kinds of nerves—both those which bring sensations or impressions to the centres and those which transmit volitional and involuntary motions from them. They apply to the nerves of both parts of the soul (conscious and unconscious), but in a special manner to those of the conscious connecting with the cerebrum. As the unconscious soul acts by an unconscious instinct, and the motions are perhaps simpler; the nerve ends may therefore be fewer in number, and arranged in relations less corresponding to their ends at the exterior, than are required at the cerebrum, where they are acted on by consciousness.

It is also important to notice, that the nerve connections of the unconscious centres, which are passed by cerebral lines, and attached thereto by short connecting fibres, are no exception to the rule. These connecting fibres must have continuity through the cerebral lines to the exterior, and be also spread in sufficient numbers at these centres to represent properly the parts at the exterior.

It is evident that as it would not do to have impressions coming from different points of the body, confused and mixed up together at the centres; so neither would it do to have different volitional or involuntary motions coming from the centres, mixed up together, confused, or failing to reach the particular parts of the body which are intended. If I wish to move my forefinger, I must move only the nerve fibre of the bundle which connects with it.

The degree of nerve complication, the number of fibres, and the correspondence of relation in the fibre ends at the centres, will necessarily vary according to the kind of work performed by each set of nerves, and that kind of soul centre with which they are connected.

We have now to show that the foregoing theory of this chapter with respect to nerve lines is in harmony with physiological facts, and hardly assumes a principle that has not already been discovered to exist. That the nerve lines are made up of bundles of very fine fibres (most of which are so very fine as to be indistinguishable to the naked eye), and that these fibres spread in the muscles or extremities, and, coming together, pass through the body in bundles or in sheaths, are facts now so well known that the quotation of physiological testimony in proof thereof is altogether superfluous. Respecting the continuity of every individual fibre of these nerve lines, from its point of location in the muscles or extremities of the body to its termination in a centre, Dr. Carpenter says: "Each fibre appears to maintain its continuity uninterruptedly from its origin to its termination without any union with other fibres, though bound up closely with them in the same nerve trunk; and there is strong reason to believe, that the white substance of Schwann serves as an insulator, whereby the axes or cylinders of the contiguous nerve fibres are kept apart from one another, just as are the numerous wires, each having its own origin and termination, which are bound up together in the aerial cable of the district telegraph." It is found that if even one fine fibre connecting with a nerve line be severed in any part of its course, the soul immediately loses all power of sensation or of motion over that point of the body with which it connects; this fact shows that the soul must have had distinct communication through that particular fibre.

Then, also, it is found that electric stimulation, applied to a bundle of nerve fibres at an intermediate part of their course, produces only a number of mixed or confused impressions or motions; this shows that the fibres require some degree of spreading at the centres to permit the initiation of a distinct impression or movement in every fibre.

Then, again, it is found that at the centres, which are composed of grey cellular matter, these nerve fibres do spread their ends and terminate in relations which correspond in a certain way with those of their ends at the extremities of the body. As every centre is an aggregate of grey cellular matter, Dr. Carpenter thinks that each fibre ends in a grey cell. Dr. Ferrier, however, has been able to determine the particular places of the cerebrum where a very great many of these nerves terminate in the cellular matter. He has in fact mapped out thus a large portion of the cerebrum. That portion of its area designated the Angular Gyrus, he proves to be the location of the nerves of sight,—the superior temporo-sphenoidal convolution, the location of the nerves of hearing,—and so on with the other areas pertaining to the other nerves of sense and motion. But what is important to notice, Dr. Ferrier's discoveries also show that the nerve ends pertaining to each sense or volition do spread and sustain relations to each other, in the area of the cerebrum which they occupy, corresponding to those of their exterior to an extent in all respects as great as we claim to be necessary for the purpose of clear and distinct communication between the soul and the body.

Thus in every area of the cerebrum pertaining to any particular sense or volition, the nerve fibres of a different part of the area were always found to connect with a different part of the body or with a different part of the same organ; and the degree of correspondence in the relations of these fibre ends at the cerebrum, with their relations at their exterior ends, was undoubtedly such as (on the principle claimed in our theory) would enable the soul to work, without confusion, all its telegraphic machinery.

So also in Dr. Ferrier's experiments on the sub-cranial and other unconscious centres, it is manifest that the same principles of spreading their fibres and giving their ends corresponding relations, prevail at these centres, though of course, as might be expected, in a less striking degree. The intervening unconscious centres connecting by short fibres with the passing cerebral nerve lines, are no exception to these general rules, as each is found to be supplied with a number of fine fibres.

II. Let us next add, that in a suitable organization, in order that space may be economized in the body and unnecessary complicity avoided, all the afferent sensory or excitor nerves which bring in impressions from, in other words, exercise surveillance over, a particular organ or part of the body, should come together and unite in their passage to the centres, with the bundle or sheath of efferent volitional or involuntary nerves which give motions to that organ or part of the body. Stating this principle in other language, those nerves giving motions and those nerves exercising surveillance over the same motions, which terminate in the same localities at their outward extremities and which come to the same centres, may properly come together and unite in the same bundle or sheath in their passage through the body. This principle leaves the communication through each distinct, and properly economizes room.

Physiological science shows that this principle is verified in the construction of the nerve lines. Thus, in every pair of nerves leaving the spinal cord, we find a motor line having its root in the anterior of the cord, and a sensory line having its root in the posterior of the cord, both coming together, and in the same sheath traversing through the body to the organ at their extremities with which they connect. The same principle in a general way holds true of nerve lines terminating in the cerebrum and other centres, and having to deal with the same organs at the exterior.

III. Let us also observe, that in a suitable organization the afferent sensory or excitor nerves and the efferent motor nerves which terminate in the same locality of the exterior organ or part of the body, need not necessarily terminate in the same locality of the centre to which they come. Each set of nerves, to keep their own impressions or work distinct, would necessarily require a different place. There is no need that the centres should be a typical or *fac similitic* representation of the exterior parts of the body.

The principle stated in this proposition is fully illustrated by physiological fact. Dr. Ferrier's experimental researches show that the areas in the cerebrum occupied by the nerves of sense, are different areas from those occupied by the nerves of volition. The same fact holds true of the sub-cranial and other unconscious centres.

CHAPTER X.

Peculiarities required in every Centre of Union.

To be suitably organized, every centre of union with the soul must be such that the soul can dwell at or unite with it, and be also such that the fibre ends of the nerve lines of all kinds distinctly and separately, and in such relations as correspond suitably to those which they sustain to each other at their other ends, can be in direct and constant contact with the soul; so that the soul can act or be acted on separately through each nerve fibre without confusion or mixture of its molecular action with that of others, and be able from the relations of these nerve fibre ends at the centres to distinguish the relations of the parts of the body with which at the other end they connect—whether in receiving impressions from these parts or in sending motions to them; and this contact or union between the soul and its centre or nerves must be so close and constant as that every kind of action in the one must produce some kind of action in the other.

The reasons for such an organization of the centres of union with the soul have been made so very plain in the last chapter, and in all the previous parts of this work, that it is scarcely necessary to repeat them again here. The soul must have points of the body to dwell at or unite with, otherwise the body cannot be made a proper medium between the soul and the world. The nerve fibre ends, separate and in proper relations, must come in direct contact with the soul, otherwise the soul cannot act or be acted on directly and properly through them; and if this union or contact were not constant, so that interaction between the soul and body might be close and constant, it would be impossible, as shown in the early chapters of this work, to constitute the body a proper medium between the soul and the world.

It is now our business to show that all the latest and the best established facts of physiological science fully harmonize with the theory stated in the foregoing proposition. The harmony, which was already shown in the preceding chapters, may now be made still clearer. Of course we do not mean to say that the discoveries of physiology have as yet thrown the clearest light on everything which may be involved in this theory; but we have assumed no important physiological principle which can really be said to be in advance of discovered fact.

The physiology of the centres of the body which unite with the soul then shows us that each centre is composed of two substances, viz., grey cellular matter and nerve ends; the first substance is of a grey colour, semi-transparent, pulpy, and consisting of cells or vesicles filled with granular matter; the second substance, white, opaque, and dense, which forms the larger portion of the centres, is composed wholly of the finest nerve fibres, which spread about everywhere and terminate their ends in the grey cells. Dr. Carpenter thinks that each fibre terminates in a grey cell. These fibres are so fine as to be invisible to the naked eye, though perceptible to the microscope. It is also agreed that all nerve movements (outward or inward) originate or terminate in the grey cellular substance, and that the seat of consciousness at the centre where it is located must be somewhere at the point where the nerve movements originate and terminate.

The researches of Dr. Ferrier and others now also show, almost beyond a doubt, that the centre at which consciousness is located is the cerebrum, and that all the other centres are simply the seats of unconscious or automatic action; in other words, these researches prove that the cerebrum is the centre of union with the conscious part of the soul, and that all the other centres are centres of union with the unconscious part of the soul. (See Ferrier's "Functions of the Brain.")

Here, then, we have, physiologically, the fundamental facts essential to our theory. The grey cellular substance is that wherein, in a special sense, the soul dwells—in other words, inheres or unites with; and the white dense mass of nerve fibres which makes up the rest of the centre, and which touches the soul in every corner of the grey cellular substance, is the great keyboard of all the nerve lines outward and inward, whereby the soul, as operator, keeps up communication with all parts of the body and with the outside world.

This grey cellular substance is common to all the centres; and all conscious or vital activity unquestionably emanates from it and its nerve ends.*

That the soul may use the substance of the grey cells for other purposes also than that of strict inhabitation, or only as a seat on which to face and touch the keyboard of nerves, is not at all improbable. Soul inhering in this matter, present in every part of the matter, and in the matter touching every fine fibre end in the keyboard, may find the grey cellular matter

* It may indeed seem remarkable that the soul should always choose its special points of union with the body of this cellular structure; yet it is invariably from cells that the soul operates, whether in building up the body at first from the bioplasts, or in regulating its functions afterwards from the brain or ganglia.

(which forms of itself a kind of compound, though not a chemical one) a most useful aid, either in initiating movements in the keyboard or in receiving them. This union of the essence of soul with the grey cellular matter, somewhat in the manner of a compound or of double alliances, may give soul its property of power over matter, and matter its property of power over soul; or the grey matter may be merely the fund out of which soul initiates molecular movements in the keyboard.

Then as to the arrangement of the nerve ends in the keyboard, our theory and the facts of physiology very evidently harmonise. It has already been very fully shown, that there must be a certain correspondence between the relations of the nerve ends at the centres and the relations of the ends of the same nerves at the extremities of the body. The degree of correspondence by no means requires the nerve ends in the keyboard at the centres to be in all respects a *fac simile* of those in the organs from which the nerves come. The correspondence must be such, however, that the soul at the centres can distinguish definitely the relations of the parts at the other ends, and affect them accordingly. It may be said that much of our knowledge of these relations at the extremities is acquired by experience, or due to instinct. This is no doubt true, but experience or instinct can aid us only through the use of the nerves themselves; and if the nerves are inadequate, so experience or instinct must be inadequate. The means certainly would be inadequate which would make an object appear round in the cerebrum which was square in the retina of the eye—which would lead a man to believe that a pin pricked his foot when it was pricking the back of his neck—or which would lead him to think he was moving his right foot when he was moving only his left arm.

We grant, however, that the testimony of the one sensory nerve line helps the testimony of the other sensory nerve line. The sensory nerve lines help us to regulate the motion of the volitional nerve lines, and the volitional also help the sensory. The degree of correspondence in the keyboard, therefore, need be no greater than allows the soul, with the foregoing helps, to form correct impressions as to the localities affected at the other end. Though this principle of nerve correspondence must hold true of all the centres of union, yet of course at the unconscious centres a smaller degree of correspondence will be adequate.

We have already in the preceding chapter shown that this theory of a certain relative correspondence in the nerve ends at the centres of union and their other ends at the extremities of the body, is in full harmony with discovered physiological facts. We shall now add a few others, which tend still further to confirm it. This peculiar constitution of the centres, which applies in a greater or less degree to all the centres of union with the soul, is no doubt most distinctly observable in the cerebrum.

There is nothing new in the fact that after the amputation of a leg, for instance, the consciousness continues to refer the pain, caused by the cutting of the nerves, to the toes and various parts of the foot, just as before the removal of the limb; this fact shows that the nerve ends in the cerebrum sustain a certain definite and corresponding relation to those in the toes and foot; nor is it found that this relation ever changes to the consciousness on any subsequent irritation of the nerve ends. The same principle applies in the case of all the other members of the body and their various parts. Every toe, finger, etc., must therefore have its corresponding nerve ends in the cerebrum in definite and just relations before the consciousness.

The responsive automatic action of the unconscious centres in cases of amputation parallel to the foregoing, shows that the same principle of correspondent nerve relation also applies to a certain extent in these centres. (See also Ferrier's experiments on animals divested of the cerebrum—"Functions of the Brain.")

Again, it is well known that the nerve fibres of both kinds—sensory and motor—radiate in immense numbers from the optic thalami and corpora striata, and entering the hollow side of the cerebrum, spread themselves in all directions in contact with the grey cellular matter which composes the outer side of it. Dr. Ferrier (see "Functions of the Brain") has been able to map out a large portion of the cerebrum or skull (in a manner resembling a phrenological chart), and to show very definitely a large number of the areas pertaining to the nerves of the different senses and the different parts of the body. In like manner he has established a large number of the areas pertaining to the volitional nerves. Each class of sensory nerves and each class of volitional nerves has its own special location. The right hemisphere of the cerebrum pertains to the left side of the body, and the left hemisphere to the right.

But what is at present specially important to notice in the discoveries of Ferrier are the facts, that the extent of area occupied by each class of nerves is very considerable, that different points in each area relate to different parts of the body, and that the scattered ends of the nerves do sustain relations corresponding to those of their exterior to all the extent which we claim to be necessary. (Ferrier's "Functions of the Brain.")

The experiments of Ferrier, Carville, Duret, etc., on the sub-occipital and other unconscious centres, also show that the same general principles which we have been referring to

prevail at these as at the cerebrum; though of course, as might be expected, the differentiation of effects at different points, from electric stimulation, is much more difficult at these centres than at the cerebrum.

Furthermore, as to the closeness and constancy of this interactive union between the soul and its centres, physiology and all experience show so distinctly that it is everything in closeness and constancy which a proper medium requires, that no additional proof is needed. The stirring of a thought causes a tremor through the whole nervous or material fabric; while, on the contrary, the prick of a pin is felt in every domain of the soul. The two-halved structure or arch of soul and matter spans the void between intelligence and molecular motion, and trembles alike with any touch that affects either matter or spirit.

These principles, as we have already said, apply in a greater or less degree to all the centres of union, but in a special manner to the cerebrum or centre of the conscious soul; and so throughout the late chapters the cerebrum has occupied a front place in the discussions.

Closely, however, as soul and matter may be allied at the centres, the two have nothing in common, either in substance or in functions. Thus, at the cerebrum the soul occupies a position somewhat similar to that of a telegraph operator in a telegraph office into which thousands of wires run from all directions, some of which transmit messages outward and some inward—all terminating, however, in one keyboard, each key distinct, and all of them in relations corresponding to the different quarters from which they come. The operator here is the conscious soul, his seat is the grey cellular matter, and the keyboard is the dense, white mass of nerve fibres, each touching in some place the operator in his grey seat. But here one very singular peculiarity of this telegraph office is, that the keys are not merely within reach of the operator, but the union between him and them is so close that there is not a key in the office which is not in constant contact with some part of the operator; so that there is not a motion on a wire that does not affect the operator, or a motion in the operator that does not affect the wires. This reciprocity of action between the cerebrum and the conscious soul is constantly going on. The conscious soul being, as before stated, capable of two degrees of consciousness, viz., active consciousness and latent consciousness, the molecular action of the cerebrum is affected by the spirit action of both degrees—though in a higher degree by the active consciousness, and in a lower by the latent. So also is the spirit action of the conscious soul in both degrees affected by molecular action in the cerebrum. There may be a kind of molecular action and communication going on in the cerebrum that affects the consciousness only to a latent degree; but a communication of unusual nature or interest no sooner comes to the latent consciousness from the cerebrum than the full flood light of active consciousness or attention flashes up to it; and the communication, borne to the soul centre on the wings of molecular action, at once becomes the subject of active thought, feeling, and volition. Thus the conscious soul, dwelling in his palace of grey cells, with its keyboard of nerve fibres all around and everywhere touching him, is ever fully informed of all that transpires in his kingdom, and executes his every wish in its remotest corners without stirring from its seat. In conclusion, let us repeat here what has in various ways been stated before, that the soul dwells in every other part of the body as well as at these centres. The soul in a general sense dwells in all the body; but the parts of it that in a special sense are in union with the body dwell at these centres. The soul is one whole, dwelling throughout the body; but the soul has certain places of interactive union with the body, and they are these centres. When the bonds of interactive union at these centres are ruptured, death ensues and the whole soul leaves.

CHAPTER XI.

Relations of the Centres to their Parts of the Soul.

1. According to the foregoing theory of a suitable organization, it would evidently then be an error to suppose that because the different parts of the cerebrum have different offices and work, and connect with the conscious soul at different points in the cerebrum, that therefore the conscious soul is divided correspondingly into different parts, with offices and work corresponding to those parts of the cerebrum with which they connect.

The conscious soul is one whole, performing all its functions as one undivided whole; and any part of it is capable of doing what may be done by the whole (see "Description of the Conscious Soul," at the commencement of this work); and therefore the parts of the cerebrum are organized with a view to their convenience to the parts of the body, and not with a view to their convenience to the parts of the conscious soul at all. The cerebral keyboard requires

space, so that the molecular action of the one fibre may not interfere with the molecular action of the other fibre, and be also kept in proper relation; and the nerve keyboard is thus placed all around, giving the conscious soul contact with every part of it.

Calling attention to the proof of this previously given, we shall add only, that here physiology and mental philosophy perfectly agree. Our ablest and best physiologists frankly acknowledge that they find nothing in the physiology of the cerebrum or any other centre analogous to the functions of thought, feeling, volition or of conscience; and all claims of phrenology subversive of this principle are alike contradicted by mental and physiological science; indeed it is well known that physiologists and mental philosophers, as a class, barely speak of phrenology with respect.

2. The principle embodied in the first proposition of this chapter applies also to all the centres of the unconscious soul, though perhaps in a less degree; and the same class of physiological testimony applies to all the centres.

3. According to this theory of a suitable organization it also follows, that the material organization of any one centre of union will differ from the organization of the other centres. As each centre, whether of the conscious or unconscious part of the soul, has its own peculiar work and its particular part of the body to attend to, each centre will necessarily be organized suitable for its office.

To this all physiology agrees.

4. Furthermore, according to this theory, the cerebrum and these other centres have no other use than that of being a means of interactive union between the body and the soul. Putting this in other words, the cerebrum and these other centres have no other use than that of affording to the soul a seat or point of union and a keyboard of nerves through which to keep up communication with the body.

The physiology of the cerebrum and these centres, all of which are made up of only two substances—gray cellular matter and nerve ends (the work of which has been ascertained)—reveals as we have seen nothing else. Any pretensions to anything more, by materialists and by some phrenologists, come directly in the teeth of our ablest physiologists, who frankly confess, that though they can find at these centres an organization and parts suitable for the transmission of sensory or excitor impressions inward, and the transmission of motor impressions outward, they are unable to detect in the cerebrum or other centres any material organization corresponding to a single function of the mind or soul. Here Carpenter, Ferrier, Loomis, etc., might all be quoted.

5. Lastly, according to this theory, then, the office or the work performed by the cerebrum and the other centres is quite different and distinct from the office or the work performed by the soul; and so at the cerebrum and these centres, where all organization of matter ends, matter and its work ends, and soul and its work begins. This is the teaching of common sense, and it is also plainly the teaching of physiology.

We find the work of the cerebrum and the other centres, each of which consists simply of a soul seat and a keyboard, to be purely and simply that of communication between the soul and the body. They have no other parts and they have no other work. The cerebrum is thus the medium of communication between the conscious soul and the body, whereby the conscious soul gives out or receives impressions from the body and does nothing else, just as a telegraph apparatus is the medium of communication between the operator and the outside world. This is its work, and its whole-work. It has nothing in common with the soul, and it does nothing in common with the soul. It has nothing to do with thought, feeling, or resolution; these things belong to the soul. Hence any assertions of phrenologists or naturalists that would imply anything contrary to these principles are utterly spurious; and every attempt to trace in the cerebrum (or in any part of the brain) an organization corresponding to that of thought, feeling, conscience, etc., will prove absolutely abortive. It is the candid acknowledgment of all physiologists that no such organization can be found. Here all mental and physiological science, and common sense, take the same side. Physiological facts show that the dense mass of white fibres and the grey cellular matter are both organized for simple material functions; and just as we lose all material organization among the grey cells, soul and its work begins. Of the organization or work of the soul, physiology reveals nothing.

SECTION II.

CHAPTER I.

Map of the Cerebrum.

In this section we add a summary of facts and explanations which still further elucidate and support the theory which we have advanced in the first section of this work.

Our object is not to anticipate future physiological discoveries, but simply to make a legitimate use of those already established, or at least generally received as such. Future discoveries may possibly cause some modification in the details of this theory.

MAP OF THE CEREBRUM.

The following woodcut presenting a side view of the human cerebrum, which, though not showing the various convolutions or pointing out minutely the various areas pertaining to the different parts of the body as Ferrier does, is intended to indicate in a general way the parts of the cerebrum occupied by the various areas or centres of volition and sensation, in so far as have at present been discovered. (See Ferrier's "Functions of the Brain.")

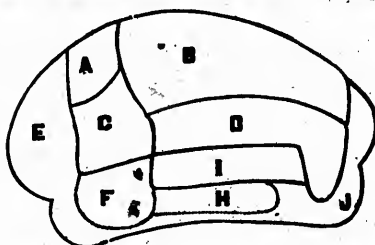
This map presents a side view of the left hemisphere of the cerebrum from the outside, with the location of the various senses and motions, so far as at present discovered.

The spaces inclosed by the lines surrounding A, B and C represent the areas or centres of motion. The spaces inclosed by the lines surrounding D and I, and by the dotted lines around F and H (centres F and H being further in from the outer surface of the cerebrum), represent approximately the areas or centres of the senses.

The space (B) at the top of the head includes the areas which command volitional movements of the arms, legs, hands, etc.; space (A), movements of the head and eyes; (C) movements of the mouth, lips and tongue. (D) is the area or centre of vision; (I) of hearing; (F), surrounded by dotted lines, represents the two areas of taste and smell; and (H), also surrounded by dotted lines, represents the area of tactile sensation or touch. (E), the anterior or frontal space, is regarded by Ferrier as also mainly a centre of motions, largely of the inhibitory sort; (J), the posterior space, he concludes, from the result of certain experiments, to be the centre of the sense of hunger, etc.

Both hemispheres are exactly alike, with the same centres of sense and motion occupying relatively the same areas. Each hemisphere pertains to the opposite side of the body; the posterior and lower parts of the cerebrum belong largely to the senses, and the anterior and upper parts largely to volition.

There are certain parts of the posterior the functions of which Ferrier was unable to determine, as he could obtain no results from either the electrode or the other means tried by him. He had also no better success in regard to the frontal or anterior portion of the cerebrum. It is evident, however, that the front belongs largely to the volitions, as a very large number of efferent motor nerves pass from this region to the corpora striata, downward to the body. Because Ferrier was unable to stimulate these nerves in the front of the cerebrum by his electrode, or to ascertain by other means the special functions of its area, he supposes this class of motor nerves to be largely of the inhibitory kind, that is, of a kind to restrain and regulate the motions instituted at other centres. It would appear that nerves of this kind are used at other places, and we are not aware of any unfeasibility in his supposition, as all the efferent nerves of the body seem to act, react and restrain one another's motion with this kind of complex action. Ferrier oddly enough (in a materialistic way) hints that these efferent frontal nerves may be the nerves of attention, or are in some way specially connected with intelligence. We can see no reason for specially locating the attention in this quarter more than in any other. Any of the senses have as much to do with the attention or intelligence as the areas and nerves of inhibitory motion. The frontal part of the nerve keyboard may, however, be, and very likely is, that portion which is set apart for the finer manipulations of intelligence in controlling or sending forth the more subtle movements of the body. There is nothing,



therefore, in the results adduced by Ferrier to lead us to regard the front of the cerebrum as the special seat of attention or intelligence; but much rather to show that the front of the keyboard is that place only which is set apart for the transmission of the finer effects of intelligence and attention into the body.*

Whether these nerves connecting with the frontal cerebrum are inhibitory or not, does not in any way affect our theory. The adoption of the one principle suits our theory as well as the adoption of the other. Ferrier concluded they were inhibitory because he could not excite them by his electrode. Still, it is premature to decide that these nerves are inhibitory, as Ferrier plainly admits that the amount of electric stimulus which produced action in one case or in one part of the brain was often inadequate to do so in another.

Then again, it is most important to remember, that it is not electricity that is the proper stimulus of any nerve of the brain, but soul or spirit, a vital one; when the true and vital stimulus is applied it will produce motion in all the nerves alike.

Some of Ferrier's experiments on the cerebrum (we distinguish here from his experiments on the automatic action of the unconscious centres) seem to illustrate the power of the conscious soul, while in a latent degree of consciousness, to respond automatically to outside stimulus. While active consciousness might be subdued by chloroform, as in some of his experiments, the soul might nevertheless be latently conscious, and respond by seeming starts of surprise, feeling, etc.

These experimental researches of Ferrier and other physiologists all distinctly show the cerebrum to be one vast keyboard of nerves, the sole or main purpose of which is to constitute a telegraphic apparatus of communication between the soul and the body. Carpenter very naturally concludes that the various folds or dipplings in the cortex or grey matter of the cerebrum are to give it a larger keyboard space. Each area in that keyboard relates to some sense or volition; and each point in each area relates to its own part of the body. Thus the human cerebrum, made up of only two substances, viz., grey cellular matter and nerve ends, is the seat and keyboard of the conscious soul. The peculiarities of development in the keyboard no doubt give some clue to the peculiarities of the soul; and a good development of the former would probably indicate good powers in the latter, for it is the soul that builds the keyboard to suit itself, and not the keyboard that creates the soul.†

To judge, then, of human character from the head is not altogether amiss, for no doubt in this way the conscious soul does give some of its character to the head. Conscious soul seated on its throne of grey cells, with every point in that vast keyboard of nerves under its touch of intelligence, dwells in a palace of matter, which, developed capaciously upward, outward and forward, gives an air of dignity and intelligence to the whole cranium.

CHAPTER II.

Proofs that Thought or Consciousness is no Function of the Cerebrum or Brain, but of an indwelling Conscious Soul—A Proof of the Soul's existence.

I. It is clearly demonstrable, on the grounds of the late physiological discoveries of Dr. Ferrier and others, that consciousness or thought, feeling and volition, are no functions of any part of the cerebrum or brain, and that these functions must be performed by a conscious soul dwelling in the cerebrum. This may be regarded as an argument in proof of the existence of the soul, and classified as the first of those that follow at a later place in this work.‡

1. It will be admitted at once, on the grounds furnished by the latest physiological discoveries, that there are just only two substances in the cerebrum or brain that can possibly in any way be related to thought, feeling or consciousness, or that, in other words, can possibly be conceived of as capable of consciousness or thought and feeling, namely, the nerves and

* Carpenter regards both the anterior and posterior parts of the cerebrum as additions peculiar only to the human brain.

† We see no reason to suppose that the conscious and the unconscious soul may not have some powers in common.

‡ It must be manifest to any reader of Carpenter and Ferrier, even moderately acquainted with the mental and moral constitution of the human mind, that the psychological application of many physiological phenomena by both Carpenter and Ferrier are lamentably defective and inconsistent; and though neither of them deny the existence of the soul, the reader is largely left to infer that that conscious something is a machine made up of grey cellular matter and nerves. Their lack of clear intellectual discernment between the purely mental nature of thought or consciousness and its merely physical concomitants, which Ferrier and Carpenter seem so often to confuse or mix together, probably has arisen from a too exclusive study of physics, with a neglect of metaphysics.

the grey cellular matter. As these are the only two substances available as constituents of the cerebrum or brain, if thought, etc., is a function of the cerebrum or brain at all, it must be a function of one or other of these two substances.

(1) It can be proved that the nerves in the cerebrum are not the organ of thought or consciousness, but only a link for transmitting action between that organ and the body. For if these nerves were the organ of consciousness, thought or consciousness would always be experienced whenever action was in the nerves; and *vice versa*, there would always be action in the nerves whenever there was the corresponding thought or volition; but this is well known not to be the case. Thus in sensation, consciousness is never experienced till the action, moving inward on the nerves, has passed from them into the region of the grey cellular matter; and if these nerves are cut or the grey cellular matter removed, consciousness or thought from the nerve action is not experienced at all. Again in volition, action, moving outward on the nerves, never takes place till after the thought or volition producing it has taken place in the region of the grey matter, and has sent its consequent effect on to them; and if the grey matter be removed or the nerves cut, the thought or volition may take place without the corresponding action in the nerves taking place at all. This proves that these cerebral nerves are a link of communication to and from the organ of thought, but they are not the organ of thought itself.

They are also known to be organized for the transmission of molecular action to and from the organ of thought, but they reveal no organization corresponding to thought itself.

(2) It can also be proved that the grey cellular matter of the cerebrum is not the organ of thought or consciousness, but only a medium of communication between the organ of thought or consciousness and the nerves leading to the body. For if the grey cellular matter were the organ of thought or consciousness, then the power of thought or consciousness relating to any particular sense or volition could never be exercised unless the grey cellular matter of the cerebral area pertaining to that particular sense or volition was always present and unimpaired. But it is well known that this power of thought or consciousness pertaining to a particular sense or volition can be, and is, exercised, even when the grey matter of the corresponding cerebral area is totally destroyed; and therefore the grey matter is nothing more than a medium of molecular action between the organ of thought and the nerves leading to the body. It must be admitted, on the ground of proof furnished by the latest discoveries, that though a sensory motion, moving inward, cannot reach and produce thought or consciousness unless the corresponding grey cellular matter unimpaired is in the cerebrum; yet the organ of thought or consciousness is there, and is itself conscious that none of its parts are impaired, and that it possesses all its wonted capacities of receiving the sense impression, could the impression only reach it; if the sensory motion fails to reach it and produce consciousness, it must be because the grey cellular medium which conveys it from the nerve is wanting.

So, also, when a volition is made to move any part of the body, and though it cannot reach the nerves and move outward if the corresponding grey matter of the cerebrum is removed, yet the organ of thought, which makes the volition, is there, and is itself conscious that it makes the volition with none of its parts or capacities in reference to that volitional act impaired; when, therefore, the volitional act fails to reach the nerves, it must simply be because the grey cellular medium between the organ of thought and the nerves is wanting.

Thus, in the case of all the animals operated on by Dr. Ferrier, after the removal of the grey cellular matter connecting with particular nerves of sense or volition in the cerebrum, it is evident that the organ of consciousness or thought was entire in all its parts and capacities; because the animal, evidently aware of no defect in any of the parts and powers of consciousness pertaining to that particular sense or volition, and manifestly having none of them impaired, could be distinctly seen trying to catch the sound or sense impression, or to put into the body the requisite volitional movement, failing to do so only because the grey cellular medium was wanting. If some portion of the grey matter was left entire, the conscious animal succeeded to a certain extent, and evidently tried to do more. So far as the conscious act was concerned, it seemed to be perfect in all its parts; the failure arose from the defect of physical means to carry it out.

The human subjects (referred to by Dr. Ferrier) with the cerebral grey cellular matter connecting with certain nerves of sense or volition destroyed by disease, were conscious of having all the parts and capacities of consciousness relating to that particular sense or volition perfectly entire. If, for example, it was a sound they wanted to hear, or a touch they wanted to feel, they were quite conscious of retaining their full powers of being able to hear it or to feel it should it only come; and they knew that they put forth the same conscious powers of hearing or of feeling in the attempt to catch the sense impression that ever they had used when the physical connection was complete; they failed in hearing or feeling simply because the sense impression could not reach the organ of consciousness from want of the grey matter. Again, in cases where the same class of human subjects had the cerebral grey matter pertaining

to certain volitional nerves destroyed, the individual was conscious of no defects so far as the parts and capacities of the organ of consciousness was concerned. In trying, for example, to move a leg or finger, he was conscious that he tried with all his wanted powers, and that so far as the conscious volitional act was concerned that was all right. In the parts and powers of consciousness relating to that particular finger, he knew of no defect; he knew he made the volition with the same consciousness, and with the same parts of the consciousness, as ever he had done it before with, when he had power to move the finger; the finger failed to move, not because any part of the organ of thought was absent, but because the grey cellular medium between it and the nerves was removed.

(3) Again, it could not be that the grey cellular matter of another place in the cerebrum could perform by proxy the function of thought or consciousness in behalf of the grey cellular matter removed. Because, in the first place, the Ego or organ of thought was conscious of doing its functions in each case with the same parts and powers as it possessed before the removal of the grey matter; and, in the second place, Ferrier's experiments show, and he himself plainly states, that the grey cellular matter of each place in the cerebrum is connected with only its own set of nerves; that the grey cellular matter connected with one set of nerves, never does by proxy the work of the grey cellular matter connected with another set; that he could not affect any one set of nerves, except by stimulating the grey cellular matter immediately connected with these nerves; and that he could not produce any particular kind of conscious sensation, except by leaving entire the grey cellular matter which pertained to the nerves of that particular kind of sensation, and stimulating the organ of thought through these nerves and their own immediately associated grey matter. To be capable of acting by proxy in thought, the grey cellular matter must be capable of acting by proxy in sensation and volition; and this, as now proved, it cannot do. It is plain, then, that the grey matter of one place of the cerebrum cannot do by proxy the work of the grey matter of another place of it. Therefore the grey cellular matter is not the organ of thought; for the very conditions of the grey matter being so would imply, that when parts of it were removed the grey matter of one place or of one nerve connection in the cerebrum would have to do by proxy the work of sensation or volition for the grey matter of another place or of another nerve connection. But it has been distinctly proved that the grey matter never does this. Therefore the organ of thought is not the grey cellular matter, but the soul which abides in it; and the grey matter is simply the medium between the soul and the nerves.

2. The conclusion, then, to which we are distinctly brought is, that as there are only two possible substances in the cerebrum (or brain) conceivable as the organ of thought or consciousness, viz., the nerves and the grey cellular matter; and as it has been clearly demonstrated by the force of established facts (1) that the nerves are not that organ, and (2) that the grey matter is also not that organ but simply the medium or substance in which that organ invisibly dwells, therefore that organ of thought or consciousness is the soul. Conscious sensation and volition are functions neither of the nerves nor of the grey matter, but of an invisible something inhering in the latter; and that invisible something endowed with sensation and volition, is endowed with feeling, conscience, and all the other powers of the conscious soul, and is the soul.

II. Part of the substance of the foregoing argument may be put in a shorter and different form.

1. Consciousness or thought cannot be a function of the nerves of the cerebrum; because in no case is consciousness or sensation ever produced by nerve action isolated from its associated grey matter, nor can conscious volition ever produce nerve action so isolated.

2. Neither is consciousness or thought a function of the grey cellular matter of the cerebrum; for if it were, the conscious power to receive a particular sensation would be lodged in the cerebral grey matter connected with the nerves of that particular sense, and the conscious power to will a particular volition would be lodged in the grey matter connected with the nerves of that particular volition; because, as already proved by Ferrier's experiments, the grey matter of one place or connected with one set of nerves in the cerebrum, cannot do by proxy the work of the grey matter of another place or connected with another set of nerves. But it is known that the conscious power of receiving a particular sense or of willing a particular volition exists, and is exerted, even when the grey cellular matter connecting with the nerves of that particular sense or volition is entirely removed; therefore consciousness is not lodged in the grey cellular matter. And if not lodged in this or in the nerves, these two being the only possible substances in the cerebrum, it must be lodged in the invisible and conscious soul.

III. Again, did the powers of thought or consciousness abide in the nerves or in the grey cellular matter of the cerebrum, thought or consciousness would be a physical function. But every physical function inevitably requires a special physical adaptation of matter for its work; consequently, were thought or consciousness a function of the nerves or of the grey matter of the cerebrum; there would be a special physical adaptation of one or the other, or of both, for

this work; but such is not the case, for both of them are entirely void of such adaptation. The nerves of the cerebrum are specially adapted for conveying molecular action to and from the organ of thought, and for nothing else; and the grey matter of the cerebrum also shows no adaptation for thought, but is in substance and organization, or adaptation, precisely similar to the grey matter of the other unconscious centres of the body; the grey matter pertaining to one sense being of the same apparent organization as that of another sense, or that pertaining to any of the volitions. The theory, therefore, that would make thought or consciousness a physical function, without a special physical organization in the cerebrum or brain for the function, is a contradiction of all reason and experience.

IV. In still further evidence of the absurdity of supposing thought or consciousness to be a function of the nerves or grey matter of the cerebrum;—were such the case, thought or consciousness could be produced by the electric stimulation of the nerves or grey matter immediately after death; because their other physical functions may be set in operation in this way, immediately after as well as before death. If thought or consciousness were a physical function, it would partake of the activity; but it does not. Bain's absurd theory regarding matter as a double-faced unity with two sets of properties, viz., one the ordinary physical, and the other thought or consciousness, involves the grossest contradictions. It requires the nerves and grey matter of the cerebrum to be specially organized for two entirely different functions, the one organization for the office of intercommunication between thought and the body, and the other organization for thought itself. In the first place, no organization for the latter office is discernible in the cerebrum or brain; and in the second place, two special organizations of the same substance, for offices so entirely different, are utterly impossible. Still further, were Bain's theory true, it would follow, that what would destroy the one function of molecular communication in any part of the cerebrum would, contrary to fact, destroy in it also the other function of thought relating to that communication; besides, the same electric stimulus that set the one class of functions in motion, immediately after death, would also set consciousness or thought in activity. Moreover, this would be the case even in life, for the stimulation of the one physical activity in the same matter would inevitably stimulate the other physical activity; and so the condition, on which Ferrier and others conducted many of their experiments, would be utterly impossible, which was to subdue and stupify the activities of the organ of thought itself, in order that they might play by electricity on its keyboard and system of nerves at pleasure.

The facts, then, which we have adduced in this chapter lead inevitably to the following conclusion, that thought or consciousness is a function of no part of the cerebrum or brain, but of an invisible something dwelling in it, which we call the conscious soul; therefore, there must be a soul.

CHAPTER III.

The Cerebrum is the Keyboard of Communication between the Conscious Soul and the Body.

There is very abundant proof, on the bases of the same physiological discoveries, to show that the cerebrum (or brain), with its grey matter and nerves, is nothing but the keyboard of communication between the conscious soul and the body; putting this in other words, we have abundant evidence, that the only function performed by the grey matter and nerves of the cerebrum, which is in any way related to thought or consciousness, is simply the transmission of molecular impressions of sense or of molecular motions of volition, neither of which functions are of the nature of consciousness or thought.

To invest the nerves and the grey matter of the cerebrum with power of conception, feeling, conscience, memory, volition, etc., in the face of the clearest evidence to the contrary, is a gross violation of metaphysical and physiological truth, let alone common sense. In all the examples furnished by physiological research or experiment, there is not one which gives any countenance to the supposition that a single function of thought or consciousness is vested in the machinery of the cerebrum or brain.

(1) Beginning with the cerebral machinery pertaining to sensation: what work do the nerves of sense and the grey matter associated with them really perform for us? Light is molecular action of one sort, sound of another sort, and touch of a sort different from either; the moment any of these motions reach the soul, conscious sensation of a particular kind takes place, while the conscious soul recognizing, interprets on the basis of former experience. Now, these tools of sense are no part of the organ of consciousness, but just the means by which the conscious soul obtains sense impressions from things in the outer world, which

impressions it interprets, and in accordance with which interpretations it forms its conception of the things presented.

Thus, in listening to the sound of thunder, the song of a bird, or a story told me by a friend, all that my cerebral machinery does for me here is simply to convey to the conscious soul certain waves of sound, which producing a certain conscious impression, this impression or sensation is interpreted by the conscious soul to represent certain things, and it forms its conception of these things in accordance therewith. The correct interpretation has been acquired by experience. The work of interpretation and of conception is all the work of the soul; the sending of the impression is the work of the cerebrum outside of the soul.

Again, in gazing on the face of a man or landscape, or in reading a book, all that my sight or cerebral machinery does in this case, is the conveyance to the soul of a certain molecular motion, which presents itself in conscious sensation as made up of forms and colours by the interpretation of which, the conscious soul forms a conception of the things or objects it presents; the soul having learned by experience what each form and colour of the sense impression represents in things external, forms its conception accordingly. All that the nerves and grey matter do, is simply to convey the molecular action of sight.

Again, in touch, I receive consciously a certain tactual impression of roughness, smoothness, etc., which I have learned, by this and the other senses, to represent certain properties in the object from which they come. I form my conception of the object in accordance with the properties which are thus made known to me, while the cerebrum does nothing more in the whole case than merely to convey to the conscious soul those motions which produce the sense presentations.

These principles apply in a similar manner to all the other senses.

(3) Then in regard to the cerebral machinery or volition; its work admits of a still briefer description. The grey matter and the nerves in this case do nothing more than just convey into the body certain molecular motions initiated by the conscious soul. Consciousness is none of their functions, and is out of their realm; in fact, there is nothing more of the nature of thought or consciousness in their action, than is in common electricity, which is known to act in them the same way and to produce the same results. Thus, there is nothing in the motion of a cerebral nerve, initiated in the grey matter by the conscious soul, for the purpose of moving the hand, to distinguish it in its nature and results from one initiated by Ferrier's electrode in the same place.

In conclusion, here we have only to say, that we most certainly believe, that all future physiological discovery will only confirm what its researches up to the present do assuredly prove, namely, that the cerebrum or brain is simply the soul's seat and keyboard of interactive communication with the body,—that all the work of the cerebrum is purely physical,—and that thought, feeling, conscience, and volition, are functions alone of the indwelling conscious soul.

CHAPTER IV.

Facts Further Confirmatory of the Foregoing Chapter.

Facts that still further show that the cerebrum is the nerve keyboard of the conscious soul; in other words,—facts that show, that if the cerebrum or keyboard of the conscious soul is removed, all communication between the outward world and the conscious soul is cut off; communication through the nerve lines connecting with the centres of the unconscious soul is still open, but communication with the conscious soul, through the nerves of sense and volition, is completely broken up.

1. It is found when the cerebrum of a monkey, dog, pigeon, fish, frog, etc., is abstracted, that by friction, touch, etc., of the outward extremities of the nerves which transmit excitator impressions to the centres of the unconscious soul, the animal will respond by going through all the motions which it has been accustomed unconsciously or automatically to go through,—in fact, by doing everything that does not need the interposition or the superintendence of consciousness.

The origination of all motion, however, depends upon this touch or friction; without the touch the animal will do nothing. It has become in all respects an automaton. The conscious part of the animal seems to be completely shut up from the body and the outer world, and to have lost all power of originating physical movements. Nothing transpires to show that the animal is consciously sensible of anything that is happening around it, or that it is able to initiate consciously a single voluntary movement. We can only infer, that the conscious part of the animal has lost all access to the nerves of sense and of voluntary motion; by the removal of the cerebral keyboard. All the actions performed by the creature are just those proceeding

from the centres of the unconscious soul,—and when initiated by touch, are done automatically, mechanically, and unguided by the least show of conscious intelligence. For illustrations of this kind of phenomena, see works of Florens, Longet, etc., on the Removal of the Cerebral Hemispheres in Pigeons, etc.; Ferrier's "Functions of the Brain," etc.

3. It is found, that if one hemisphere of the human cerebrum be removed or destroyed, the half of the body which is on the opposite side, but which connects with the abstracted portion, is completely paralyzed; that is, all power of sensation by the conscious soul from that side of the body, and all power of volition over it, is completely lost; while the functions depending on the centres of the unconscious soul and on the other hemisphere of the cerebrum are all complete, and go on as before. The conscious soul also can go on with all its functions of thought, feeling, and volition, the same as before. It follows then from these facts, that this hemisphere of the cerebrum is indispensably necessary as a nerve keyboard to one side of the body, and that it is not necessary for thought, feeling, volition, or anything else. If this holds true of the one hemisphere, the same thing must hold true of the other. If both hemispheres were then removed, all power of sensation and volition over the whole body would be lost, while thought, feeling, and volition might go on as before in the conscious soul, though completely isolated from the body. The whole cerebrum then is the nerve keyboard between the whole body and the conscious soul, and it is nothing else. If thought, feeling, etc., can be possible, whichever half of the cerebrum be removed, then thought, feeling, etc., are not located in either half, but in something else—namely, in the conscious soul itself.

3. It is found, that if any of the nerves of sense or of voluntary motion leading to the cerebrum are severed, the conscious soul loses all communication with the localities of the body with which they connect. This also shows that it is from the cerebrum as a centre, and the nerves lines radiating from it, that the conscious soul maintains communication with the various parts of the body.

4. Again (repeating some of the substance of a former chapter), it is found that if the nerves and grey matter in the cerebrum pertaining to any particular sense or volition, are removed, communication with the body through that particular sense or volition is destroyed, but the organ of thought or consciousness pertaining to that particular sense of volition is still unimpaired; thus, if the part of the cerebrum pertaining to the voluntary movement of my right hand is destroyed, though I cannot move my right hand, yet I have still conscious power to will the movement of my right hand. The part of the cerebrum removed, cannot then be the organ of thought; so neither can any part of it which still remains be that organ, because it is known that one part of the cerebrum never does by proxy the work of another part; therefore the organ of thought is the soul, and the cerebrum is its keyboard of communication with the body.

5. Lastly, if the conscious will to move the right hand is located in one part of the cerebrum, so then it can be proved to be located in every other part; and thus we shall have as many Egoes as there are parts in the cerebrum. Ten lives to a cat are a goodly endowment, but truly this gift would be parsimony itself compared with the number of souls and wills with which materialism would endow man.

The cerebrum is the nerve keyboard of communication, and nothing more. For other important facts confirmatory of the truths maintained in this chapter, we specially refer the reader to Chapter II, Sec. II.

CHAPTER V.

Facts which are Explained by the Theory of this Work, and which are generally Illustrative of the Manner in which Molecular Action and Spirit Action, at the Cerebrum or Brain Centre, affect one another.

As repeatedly stated and proved throughout this work, the union between the soul and the matter of the cerebrum or brain centre, in order to constitute a suitable connection, must be so close and constant that every kind of action in the one must produce some kind of action in the other; that it is an alliance in which spirit unites with and inheres in matter, and that therefore whatever disturbs the functions of the one must disturb the functions of the other. When this principle is kept distinctly in view, a very large class of curious phenomena pertaining to the joint action of soul and body is easily accounted for, and the whole subject kept clean from the dirt of materialism.

1. Suspension of consciousness in sleep:—On account of the necessity of a union on the principle of constant co-action, as above stated, it would be impossible for the body to rest or recuperate, had not the Creator provided means of subduing the constant activity of the conscious soul by the suspension of consciousness in sleep.

A soft, balmy influence, arising from the state of the body, acting through the nerves and centres on the state of the soul, produces this effect. Soul and matter are in such close alliance, that the state of the one affects the state of the other. There may be different degrees of unconsciousness in sleep. In some cases, the soul, ceasing to be actively conscious, may be latently conscious, and be therefore ready to rouse up at the least disturbance. In sound sleep, the degree of consciousness is less than that. This perfect inactivity of the conscious soul is necessary, in order to allow the unconscious soul, from certain of its centres, to repair the physical waste caused by the soul's activities while awake.

2. Fainting, explained by the same principles, is a merciful provision made to deliver the soul from the consciousness of agonies which it would serve no good purpose in the soul to suffer.

3. Dreaming is simply a result of partial consciousness in sleep, caused by disturbances from the body coming to the cerebral or conscious centre—as, for instance, in cases of physical disease, late suppers, etc. All thought in dreaming is partial and incoherent, and usually of the kind requiring least mental effort.

4. Insanity, or a derangement of the functions of the conscious soul, when resulting from physical causes, is also an effect of this close companionship of mind and matter. The molecular derangements of the matter of the cerebrum, necessarily deranges the action of the soul which inhabits in or unites with it, just as the disorder of things in a house must always obstruct and interfere with the movements of its occupant.

When insanity is produced by mental causes alone, the action of the spiritual will affect the action of the physical in a corresponding manner.

5. Then the mental states caused by intoxicants, etc., are all necessary results of the same intimate alliance. Intoxicants, etc., act on the matter of the cerebrum, and so influencing the state of the cerebrum, through it they influence the state of the conscious soul and goad it to greater activity. Then also, it must be remembered, that the amount of gratification which, in cases of this kind, comes to the soul through the nerves of sense, all tends to keep the soul in high excitement.

6. Failure of memory by febrile disease or old age may also be explained by the same principles.

7. Lastly, let us add that all those remarkable effects produced upon the body by mental or soul influence—as, for instance, fainting, apoplexy, or even death, on the reception of bad news, etc.—are all cases easily accounted for, by the same principles. To add more cases of illustration seems absolutely needless.

CHAPTER VI.

Relations of Phrenology to the Theory of this Work.

We may now inquire in connection with this theory and these facts, how much of the doctrines of phrenology is true. We know that, as a rule, most or at least many of the pretensions of phrenology have been treated by the masters of both mental and physiological science with but ill-concealed contempt. They find very little in either of their sciences to warrant its assumptions.

That the cerebrum or brain is an organ of the mind, and that its size and contour may indicate some general soul qualities, both classes readily admit. But that anything is found by physiology in the organization of the brain, or by mental science in the constitution of the mind, analogous to most of the absurdities taught by phrenology, is denied by the leading masters of both sciences.

Though we were at one time a believer in many of its pretensions, the following are now our real opinions respecting it:—

We affirm, that everything in phrenology, that would make thought, feeling, or volition a function of matter, or a function of matter and spirit conjointly, or a function of spirit dependent on some connection with the matter, is utterly spurious. We affirm that the matter of the cerebrum or brain is simply the soul's seat and keyboard of communication with the body, and that it is nothing more; this is its work and its whole work. Soul and brain have not a single function in common. For proof of these statements, see closing chapters of Section I., and early chapters of Section II. of this work; also foot note.*

* Thus it is found, that if the right hemisphere of the cerebrum be destroyed, though all communication between the mind and the opposite side of the body be lost, yet not a single function of the mind is destroyed. If the left hemisphere of the cerebrum be removed, the mind in thinking, feeling, etc., is destroyed. If then thought, feeling, and volition can go on unimpaired, which results precisely similar follow. * If then thought, feeling, and volition can go on unimpaired, which

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There is not a single well-authenticated fact to warrant the assumption, that various physical organs are located around the cerebrum or brain, one of which gives the sentiment of benevolence, another that of conscientiousness, a third the love of children, etc.* Neither is there anything but the merest conjecture to support the opinion that though these parts of the cerebrum or brain might not be endowed with the functions of thought, feeling, etc., they might nevertheless be the portions of the cerebrum or brain in which the parts of the soul which possess these functions might inhere. There is no evidence to show that the conscious soul is thus divided into different parts or organs for the performance of its functions, but everything in mental science to show the contrary. The conscious soul is one, in all its members and all its functions. The Ego, as one whole, does all its work.

While denying these things of phrenology, we admit that a large cerebrum probably indicates a large and powerful soul, and that it indicates good physical powers of observation, and great will and influential power over the body; and that a good frontal and top development may show intellectual and moral predominance, while a large brain rearward may imply more of the general characteristics of the animal. The body is built up and maintained by the powers of the soul; and the character of the brain and other parts of the body are, no doubt, affected by the character and powers of the soul. The brains of idiots, for instance, are all distinctly peculiar, but so also are the other parts of their bodies. We may indeed infer in a general way something of the character of the conscious soul from the character of the brain or house it inhabits; but the true test of its character is the test of its qualities in daily life.

CHAPTER VII.

Ghostly Power over Matter.

1. With reference to the power of ghosts or departed spirits to control or produce effects in matter, either by "spirit-rapping" or in any other way, the whole thing rests on the grossest fallacies. It is at once easy to be seen, from the facts on which our whole theory rests, that nothing but a body, and one organized *jee*, in a manner analogous to the human body, can put the human soul in a way either to exercise control over matter, or to be influenced by it. Of angelic endowments in these respects we say nothing.

2. It is also evident, that as it is by the powers of the soul that the whole body is built up and maintained, so it is by a failure, or more properly a change, in the powers of the soul, that the body goes to decay. We are full believers in the Traducian theory, that the child inherits essence and qualities of soul from the parents as well as substance of body.

We are also quite satisfied, that the soul is truly in the most perfectly developed stage of its earthly existence just before death, and that the decrepitude of old age is no disproof of this fact. The soul, so to speak, has acquired the highest attainments of knowledge and experience, and the highest moral development that this world can give it; and so becoming more self-contained and more isolated from this life, is on the verge of elevation to another and a higher. The childishness of old age, arising from the breaking down of its present environment, is but the evening of the first day in the roll of eternal being, with a greater day to follow. The walls of the earthly chrysalis fall, and the soul mounts the skies for another world and another stage of existence.

ever hemisphere of the cerebrum be removed, it follows that thought, feeling, etc., are not located in either hemisphere, but in something else which dwells in the hemisphere—namely, in the human mind or soul. If both hemispheres of the cerebrum or brain were then removed, the mind, though isolated from the body, would go on thinking, feeling, etc., as before, seeing these are functions purely of the mind or soul, and not of the cerebrum.

These facts are indeed what might have been expected. It is not in accordance with common sense, that spirit should take any help from matter, in doing what it is competent to accomplish without its aid; and matter is therefore required to perform an office for the soul which the latter cannot do for itself.

* No such organs are found; these parts of the brain constitute parts of the keyboard.

CHAPTER VIII.

Proofs of the Soul's Existence.

The very best proofs of the soul's existence are those given in Chapter II., Section II., page 24,—to which proofs we call special attention. It is only in order to save space that we forbear repeating them here. The proofs given as follows are merely supplementary to those which were given before.

Let us remark at the commencement, that it is often amusing to see the eagerness with which infidels seek to disprove the existence of the soul, just as if the acceptance of materialistic theories were going to overthrow the facts of the whole Bible system.

The substitution of materialism in place of the old, well-established doctrine of the soul's existence, would certainly help the infidel but little, if he hopes to destroy thereby all the obligations that rest upon him as a spirit to worship and obey God. The facts of consciousness—viz., intellect, morality or conscience, free will, duty, capacity for the misery of punishment and for the happiness of reward—still remain. The existence of this consciousness, and all the capabilities and obligations involved in it, are facts that cannot be gainsaid; and it matters practically but little to the infidel or to us whether this consciousness, with the powers belonging to it, inheres in the essence of spirit or in the substance of matter. Matter and mind or spirit are alike indestructible; and so any combination of matter that is possible now, is capable of renewal and of infinite continuance. An Ego made up of a combination of matter, certainly affords to the infidel but few points of preference before one made of spirit.

If the infidel hopes to escape the bonds of responsibility by fettering his own freedom of will by the chains of molecular law or fate, his consciousness gives the lie to that hope; for it shows to him that even now he is both free and responsible, and can both enjoy and suffer. If an Ego of matter with such a consciousness, is possible now, there is no escape from the fact that what is possible now, is possible of renewal and of infinite continuance; and unless that principle in him, which leads him to anticipate and dread a retributive future, is a lie (and it makes no lie in other things), there will be such continuance. If a combination of matter is capable of giving continuity of the same consciousness, amid all the flux or change of molecules occurring ten times in a life of seventy years, who shall prove the impossibility of the continuity of the same consciousness in the body of the resurrection?

I. The action of bioplasts in the bioplastic cells or centres proves the existence of the soul.

It is found that the egg-germs of all animals are exactly the same in substance and chemical composition; so that the germ matter of a lion is in all respects the same as that of an ox, or of a mouse, that of a hawk, or of any like composition which might be chemically manufactured.

All the germs are composed of the same elemental ingredients—carbon, hydrogen, etc.—combined in the same proportions, so that no chemical or physical test can distinguish the least difference in the one from the other; and all under the microscope are shown to be without structure or organization. Each germ then, in its first stage, is physically the same as its neighbour—a colourless, viscid, structureless or non-organized substance. This is the frank confession of all sciences, aided by the microscope and all the appliances of physics and chemistry. Keeping the egg-germ in proper conditions, it is found that in the second stage, bioplasts begin to form in the non-organized matter of each germ, and with quick dart-like movements proceed to build up and organize out of the germ matter the bones, blood-vessels, muscles, nerves—in short, all the parts of the various animals which the germs respectively represent. In the one germ is organized and built up the body of a young lion, in a second that of a young ox, in a third that of a mouse; in each germ is formed, in short, a young animal, different in all respects from his neighbour; and yet all the animals are formed out of non-organized material which is in all respects physically and materially the same.

L. Now as to the proof of the soul's existence from the foregoing facts:—

We know that different effects can never occur in things in which causes are the same. The different effects, viz., that of different animals being formed, cannot therefore proceed out of the germ matter, because in all the cases it is exactly the same; therefore the different effects must take place from something as a cause, that is not matter, but which inheres in it, namely, the invisible soul.

A cell is not a bioplast, but formed matter. A bioplast is that minute speck of substance in which the life force has begun to operate and to form matter.

3. Or we may apply to the foregoing facts an argument constructed in a different form:—
 (1) A cause is an essence which produces a certain effect; causation is therefore a property, and cannot exist unless there is an essence or entity in which it can inhere as a property,—just as hardness or softness cannot exist, unless a substance exists that can be hard or soft.

(2) Every substance or essence has its own essential properties or powers of causation, and these are incapable of increase, decrease, alienation or destruction.

(3) We cannot, therefore, take away or add to any of the properties—in other words, powers of causation—that belong essentially to any substance, without taking away of the substance itself or adding other substance to it.

(4) It follows, then, that a substance can never acquire a new property or power of causation, without the addition of a new substance or essence to it.

I. Applying these principles then to the foregoing facts respecting the phenomena of the egg-germ:—

1. It is known, that the matter of the egg-germ has no power to organise itself or to produce the phenomena of life, and that it differs in no respect from matter which, so to speak, might be artificially prepared; therefore the causative power which organises and produces the phenomena of life, must inhere in some intangible essence which has been added from the parents to the matter of the egg-germ, namely, in the invisible soul.

2. And as different effects can never occur from like causes, therefore different animals are formed from the same kind of matter in the respective egg-germs, because the soul in the one germ is different from that in the other.

3. And lastly, as different effects always cease to occur, when none but the same or like causes continue to operate, therefore all the phenomena of life and its differences cease to operate when the soul is removed from the matter at death.

It is evident, therefore, from these proofs, that the soul exists.

II. The action of thought, feeling, and volition, in the cerebrum (or brain), proves the existence of the soul.

Though it may now be regarded as established beyond all reasonable doubt, that the functions of thought, feeling, etc., are performed in the cerebrum alone, which is the chief or main part of the brain; yet as some persons may still have a doubt as to these functions, not extending also to the remaining part of the brain, the following argument in proof of the soul's existence, is as conclusive, applied to the whole brain, as to the cerebrum, the chief part of it; therefore, instead of applying it merely to the cerebrum, we shall apply it to the whole brain.

1. It is acknowledged, then, on all hands, that thought, feeling, and volition are performed in the brain. It follows, therefore, that all thought, feeling, or volition must be done either by the soul in the brain, or by the matter of the brain itself.

Let us suppose, with the materialist, that all thought, feeling, etc., are done by the matter of the brain itself.

Then it is a well-attested physiological fact, that if the right hemisphere of the brain is removed or destroyed, though all communication with the left side of the body is thereby cut off, yet all the functions of thought, feeling, and volition go on just as before its removal. These functions, then, must be lodged in the left hemisphere. In like manner, if the left hemisphere of the brain be removed or destroyed, while all communication with the right side of the body is thereby cut off, the functions of thought, feeling, and volition go on also in all respects complete. These functions, then, must also be lodged in the right hemisphere. Therefore, if it is the matter of the brain that thinks or performs these functions, these hemispheres must be two thinking machines, with two sets of feelings, two sets of wills, two memories; in short, they must be two Egos or persons with different consciousnesses, with half a body to each person, and that half, too, on the opposite side. Then as there are two persons to one body, the one person must always consult with the other before walking or any other work can be done that requires the exercise of both sides of the body; and where there is but one member for the use of both persons, as in the case of the tongue, the mouth, or the nose, the control of it must lead to disputes of unlimited number and degree.

But every man's consciousness reveals to him the fact, that he is but one Ego or person, having but one mind to think, one set of affections, one will, one memory, one consciousness,—that he alone has entire and perfect control over every member of both sides of his body,—and that no other Ego or person either inhabits, controls, or interferes with his possession.

Therefore, as the pretension of materialism, that thought, feeling, and volition are lodged in brain matter, is contrary to reason and fact, and is absurd, there must be a soul in the brain to do these functions.

3. The existence of the soul may be proved by another form of argument based on the same facts as the foregoing one.

Thus, it is found that if the right hemisphere of the brain be destroyed, though all communication between the mind and the opposite side of the body be lost, yet not a single function of the mind in thinking, feeling, etc., is destroyed. If the left hemisphere of the brain be removed, results precisely similar follow. If, then, thought, feeling, and volition, can go on unimpaired, whichever hemisphere of the brain be destroyed, it follows that thought, feeling, and volition are not located in either hemisphere, but in something else that dwells in them—namely, in the conscious soul. The conscious soul therefore exists, and would do its work of thought, feeling, and volition, though both hemispheres of the brain were destroyed.

8. Another form of argument still:—

If the function of thought is not performed by the soul dwelling in the hemispheres, then it must be performed by the hemispheres themselves. But the right hemisphere feels conscious sensations from the left side of the body, and not from the right; and the left hemisphere feels conscious sensations from the right side of the body, and not from the left. Each hemisphere, then, feels conscious sensations distinctly by itself; but conscious sensation is a function of thought. Each hemisphere must then be an organ of thought or an Ego by itself. There must therefore be two Egos or persons in the same brain, which is nonsense.

III. We have in the foregoing examples, but especially in Oup. II., Sec. II., given clear and decisive proofs of the soul's existence; but these are by no means all the proofs that might be adduced. There are many other clear lines of argument, which, if developed as the foregoing, would be no less decisive in their results. We shall here merely state a few of these arguments in synoptical outline, leaving the reader, at his leisure, to develop them into their fullest, clearest, and most effective form.

1. If there is no soul in the brain, the matter of the brain must have two functions—one mental, the other physical. It must therefore have an organization to each function. But in the brain, while there is found an organization corresponding to its function as a nerve keyboard or medium of communication between soul and matter, there is found no organization whatever corresponding to the mental function, thought, feeling, etc. Therefore the mental function must be performed by something else—that is, by the indwelling soul.

2. Mental and physical properties lodged in the same matter, imply two different functional organizations for different functions in the same matter. Two suitable organizations for different functions in the same matter are impossible; therefore one set of the properties and one of the functions must be lodged in something else—not matter—namely, the soul.

3. Matter has no power to organize itself into a body; it never organizes into a body but when there is added to it a something that has power to think, feel, and will, with all its properties different from those of matter. Wherever there is a property, there must be an essence; and wherever properties are different, essences are different; therefore, that something added to matter which organizes it, must be an essence different from that of matter—namely, the soul.

4. A person dies. While the properties that are left in the dead body are all physical, and common with those of matter elsewhere, a whole set of properties, thought, feeling, skill, design, reason, will, etc., have left the body, not one of which is physical or common with those of matter elsewhere. Wherever a property leaves, an element must leave. But as no matter has left the body, a something immaterial (that is, the soul) must have left it.

5. Physicists claim that all physical forces are convertible into one another—as, for instance, motion is convertible into heat. If life force were a physical force, then some other physical force would be convertible into it. But it is found that no physical force whatever, applied to the dead body, is convertible into life force; therefore life force is not physical.

6. The Ego of the consciousness is a unity. It is the same one organ that thinks, feels, wills, remembers, and performs all the functions of thought. But a physical organization of any kind is not a unity, but consists of different parts or organs for different kinds of work; and as the cerebrum or brain is an organization of many parts, therefore it cannot be the essential organ that is the Ego of consciousness, but something else, the soul.

7. The Ego is conscious of being the same one Ego from youth throughout life. An Ego made up of matter would not be the same throughout life, but would be one of flux, and of course change every seven years. Shall we believe the clear statements of our own consciousness, or the contradictory assertions of the materialist?

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CHAPTER IX.

Certain Axiomatic Principles Necessary to Preserve Clear Ideas Between Soul and Body.

Before leaving the subject which we have been discussing in the last chapter, it may not be improper to state a few general axiomatic principles which tend to preserve clear ideas of the distinctions between soul and body in all cases in which both are involved.

1. Every property must inhere in an essence or substance,—no substance, no property. Whichever a property enters, so must enter a substance.

2. Every substance or essence has its own essential properties; and these are ever active, unchangeable, and intransferable.

3. Every substance or essence entering into a compound carries its own essential properties with it, and maintains them in the compound ever active, unchangeable, and intransferable.

4. No compound can have an essential property that does not enter it by one or more of the elements.

5. Every property, discovered in the compound, that seems to be new or different from that of any or all of the elements entering into it, must be simply a co-operation, or a balancing or neutralization of the properties which entered it in the various elements.

To the foregoing five propositions may be added the following subordinate ones which arise out of them:

1. All elements and properties either mix (that is, amalgamate) with others in the compound, or they remain distinct.

2. If we have discovered an element to be (whether mixed or otherwise) in a compound, then we know its properties to be (whether mixed or otherwise) in the compound; and if we have discovered the properties of an element to be (whether mixed or otherwise) in a compound, then we know that element to be (whether mixed or otherwise) in the compound.

3. Elements and properties that do not mix with others in the compound, are always easily distinguished in the compound. Spirit and its properties, which cannot be weighed, measured, or tested by chemical or physical means, never can mix in a compound with matter and its properties which can be weighed, measured or tested by chemical or physical means; and therefore these elements and their properties are easily distinguished from one another in a compound.

Applying, then, prop. (4), for the sake of illustration, to the formation of the compound water out of hydrogen and oxygen, and the formation of the living compound of life, which Huxley maintains to be made out entirely of physical elements, and to be a case precisely parallel to the formation of water, it is evident that no new sets of properties which are not in the primary elements, come into existence in the compound in either case. And there is nothing in the phenomena of either case to show that our axiom is incorrect. All the properties appearing in each compound, existed ever active in one or more of the physical or spiritual elements entering into it; and every property which appears to be new in the compound, in either case, is simply a co-operation, or a balancing or neutralization of those entering it.

The solution of the question of difference between the two cases, then, rests on what properties are found in each compound, and on what elements enter into each compound.

In the first case, all the properties of the compound water are easily distinguished to be of the class physical; they can all be ascertained by weighing, measuring, or testing by other physical or chemical appliances. There can, therefore, be no immaterial element in the compound, because every substance or essence entering into a compound carries its own essential properties with it. See axiom (3).

In the second case, many of the properties of the living compound of life are easily distinguished to be not of the class physical, but spiritual; they can neither be weighed, measured nor tested by any other physical or chemical appliances; and it can be proved that an immaterial or spiritual element does enter into the living compound of life.

In the mere dead physical matter or protoplasm of life, there is no property in the compound that was not in the physical elements that entered into it. Its properties are all of the class physical, and can be ascertained by weighing, measuring, or testing by other physical or chemical appliances.

But in the living compound of life there are properties added to the combination, which were not in the physical elements of the dead matter or protoplasm; they are not of the class physical, and cannot be ascertained by weighing, measuring, or testing by any other physical or chemical appliances; such are the properties of thought, feeling, and volition, or those properties which, co-operating with or balancing or neutralizing the others

physical, build, sustain, and control the bodily organization in opposition to the physical and chemical properties of matter which would destroy it.

But as no compound can have an essential property that does not enter it by one or more of the elements [see axiom (4)]; and as we know certainly that no new physical or material element has been added to the dead matter of life to make up the living compound of life; and moreover, as we know that the soul properties appearing in the compound are not properties of physical elements anywhere; therefore we are infallibly made certain, that an element which is not physical or material has been added to the dead matter of life to make the living compound. That element is immaterial soul.

CHAPTER X.

Remarks on the Sophistries of Huxley, Bain, and others.

Huxley, who denies the existence of the soul, teaches that all vital phenomena are simply a certain form of physical phenomena, and that the laws and properties which pertain to life are merely laws and properties of matter, which take their rise when certain components are brought together in certain proportions, and under certain conditions. Huxley illustrates his idea of the production of life with its powers, by comparing it with the production of water with its powers; and maintains that the two cases are exactly parallel, and that we have no reason to suppose that soul enters into the one case any more than the other. He says:—

"When hydrogen and oxygen are mixed in a certain proportion, and an electric spark is passed through between them, they disappear, and a quantity of water equal in weight to the sum of them appears in their place. There is not the slightest parity between the active and passive powers of the water and those of the hydrogen and oxygen which have given rise to it. What justification is there, then, for the assumption of the existence, in the living matter, of a something which has no representative or co-relative in the not living matter which gave rise to it? What better philosophical statics has vitality than aqueosity?"

Our last chapter, we think, successfully disposes of these fallacious assertions of Huxley. We have shown that the two cases—the formation of the compound water, and the formation of the living compound of life—are not parallel, either in the class of elements entering into the compound, or in the class of properties displayed afterwards in the compound.

Huxley claims that "there is not the slightest parity between the passive and the active powers of water" and those of the hydrogen and oxygen which have given rise to it." We have shown that there is a parity; all the powers or properties of the water are of the same class as those of its simple elements; they are all alike of the class physical, and can be ascertained by weighing, measuring, or testing by other physical or chemical appliances, and are but a co-operation or balancing of the physical properties entering the compound. Huxley's assumption, that the formation of the living compound of life out of its mere physical elements is an instance exactly like that of the formation of the water, has also been shown to be false; because certain properties or powers appear in the living compound of life which are not of the same class as those of its physical elements. They are of the class spiritual, and cannot be ascertained by weighing, measuring, or testing by any other physical or chemical appliances. Besides, in their co-operation or balancing with others in the same compound, they control or oppose, and do not mix with properties of the class physical.

But as no property can be found in a compound that does not inhere in and enter it by one or more of the elements; and as these properties are known not to inhere in and enter by any of the physical elements into the body; therefore they must enter it by an immaterial and invisible element, the soul. Matter and its physical conditions are the same in the dead compound of life, at the moment after death, as in the living compound the moment before it; therefore like properties should appear when conditions are the same. But the distinctive properties of the living compound can never be added to the dead till something that is not physical is returned to it; that something is the soul.

In water, no essential property can be made to leave the compound without the removal of a physical element from the compound; in the compound of life, on the contrary, all its spiritual properties are made to leave in death, without the removal of a single one of its physical elements. But as no property can either enter into a compound or leave it without

* A power or property can be passive only in the sense of other powers acting against it, not in the sense of its being torpid or inactive.

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entering or leaving by one or more of its elements; so then the spiritual properties of the compound of life must leave in some non-material element, the soul: therefore—

The compound water and its properties—hydrogen and oxygen and their properties, and the living compound of life and its properties—
 — { the dead physical compound and its properties and the soul and its properties.

Again, these two cases of compound are not parallel as to the means or stimulus applied to produce them. In the one case, the stimulus producing the compound water, is the electric spark; and it is purely physical, and can be discovered by physical or chemical tests. In the other case, the stimulus producing the living compound of life out of dead matter, etc., is not physical, and is not of the class discoverable by physical or chemical tests; it is not a stimulus belonging to matter anywhere, and it can be obtained only from that something to be found in living matter which is immaterial, and which we call spirit. Therefore the two cases are not parallel; for there is no agency employed in the production of water that is not purely physical; and there is an agency employed in the production of life that is not physical; that agent must be the soul.

Huxley's main error seems to be, that he accepts properties in the compound which are not in the elements entering it, and imagines that these properties come into existence or become active in the elements, only on their entrance into these conditions, and are not elsewhere ever active, unchangeable, and intransferable. From Huxley's stilted and confused principles, he is unable to see that the properties of the living compound of life, positively cannot arise out of the dead physical elements of life; or that the formation of the compound of life is not parallel to the formation of the compound water,—or that a real, though invisible, element called the soul may enter into the one and not into the other.

Bain's materialism, first cousin to that of Huxley's, briefly amounts to this: that matter is a double-faced unity having two sets of properties,—the one set, what is ordinarily called physical; the other set, what is ordinarily called mental. Both sets, nevertheless, according to Bain, are properties of matter.

Bain's system, like Huxley's, is hopelessly full of contradictions in whatever way you may apply his principles.

1. If matter, then, is a unity with two faces or sets of properties, it would follow, that as every atom of matter is a unity, and has the one set of physical properties, it must also have the other, the mental set. Every atom of matter, then, besides possessing its physical properties, can think, feel, will, remember. No wonder that we start with surprise as we think of the vast amount of thought, feeling, and volition, all hopelessly pent up in the walls of our houses, the soil of our fields, and in the gravel of our highways. Surely Bain treads lightly when he thinks of the unmeasured suffering caused by the pressure of his steps, and hears a thousand Egoes cry out in the crunching gravel at every footfall.

2. But it is well known that thought, feeling, and volition, when found associated with matter at all, are never found connected with single atoms of matter, but with an organization of matter made up of many atoms, and that organization is the brain.

Let us try here, then, the double-faced unity and the two sets of properties lodged in the organized matter of the brain. As there is but one thinker, or Ego, in every brain, the first question to decide, then, is, whether the property of thought, feeling, and volition is lodged in only the whole and complete organization of the brain, or in a part of it; in other words, does it need the whole organization of the brain to perform these functions, or only a part of it? If we say this property is lodged in a part of it, then that part must be in one half or in both of the halves of the brain. But we know that if the right half of the brain be removed, all of these functions go on without it; and if the left half be removed, these functions go on also unimpaired. If the property of thought, feeling, and volition, then, is not lodged in either of these halves, it cannot be lodged in any part of these halves; therefore it cannot be lodged in only a part of the brain.

So, also, the property of thought, feeling, and volition cannot be lodged in only the whole and complete organization of the brain; in other words, it cannot need the whole brain to perform these functions, when, as we have seen, all of these functions go on perfectly without either half of it.

Therefore, the property of thought, feeling, and volition is lodged in neither the whole and complete organization of the brain, nor in a part of it, but in a conscious soul which inhabits it; and matter has but the one set of properties, and soul has the other.

Should Bain and his class, however, still insist on the organized matter of the brain possessing the property of thought, feeling, and volition, in common with its physical properties; then we are prepared to show that, as the right hemisphere of the brain thinks, feels, and wills without the left, and the left hemisphere thinks, feels, and wills without the right, there must be at least two thinkers, Egoes or persons, in the same brain. But then, having

brought things to this issue, we fear it will take the whole materialistic fraternity to be able to tell us which of these two thinkers in Bain's brain is Bain himself.

Lastly, this thinker or Ego of the materialist must be a creature of flux. Physiologists show that all matter of the body changes or passes out of it in seven years; so must this Ego or thinker pass out with it, and a new thinker take his place. Alas, for the materialist! how many thinkers have already passed out of his brain in sweat, that, under a false name, have been loving and living with his wife, and been teaching false metaphysics to the world. May a wiser and a better thinker come next!

The thinker or the Ego, with which we are acquainted, knows no flux, and is conscious of being one and the same since he was a child at his mother's knee. Shall we believe the clear statements of our own consciousness, or the confused and contradictory assertions of the materialist?

THE END

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