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ELEMENTS

OF

Modern Materialism:

INCULCATING THE IDEA OF A FUTURE STATE, IN WHICH ALL WILL BE MORE HAPPY, UNDER WHATEVER CIRCUMSTANCES THEY MAY BE PLACED, THAN IF THEY EXPERIENCED NO MISERY IN THIS LIFE.

BY

CHARLES KNOWLTON, M. D.

"They who would advance in knowledge, and not deceive and swell themselves with a little articulated air, should lay down this as a fundamental rule, not to take words for things, nor suppose that names in books signify real entities in nature, till they can frame clear and distinct ideas of those entities." LOCKE.

ADAMS, MASS.:

PRINTED FOR THE AUTHOR, BY A. OAKEY.

1829.

DISTRICT OF MASSACHUSETTS, *to wit*:

District Clerk's Office.

Be it remembered, That on the thirteenth day of January, A. D. 1829, in the fifty-third year of the independence of the United States of America Charles Knowlton, of the said District, has deposited in this office the title of a book, the right whereof he claims as author and proprietor, in the words following, to wit:

"Elements of Modern Materialism: inculcating the idea of a future state, in which all will be more happy, under whatever circumstances they may be placed, than if they experienced no misery in this life. By Charles Knowlton, M. D.

"They who would advance in knowledge, and not deceive and swell themselves with a little articulated air, should lay down this as a fundamental rule, not to take words for things, nor suppose that names in books signify real entities in nature, till they can frame clear and distinct ideas of those entities.—Locke."

In conformity to the act of the Congress of the United States, entitled "An act for the encouragement of learning by securing the copies of maps, charts and books, to the authors and proprietors of such copies, during the times therein mentioned:" and also to an act entitled "An act supplementary to an act, entitled, An act for the encouragement of learning, by securing the copies of maps, charts and books to the authors and proprietors of such copies during the times therein mentioned; and extending the benefits thereof to the arts of designing, engraving and etching historical and other prints.

JNO. W. DAVIS,
Clerk of the District of Massachusetts.

Annex
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1829

TO

THE FRIENDS OF TRUTH AND INTELLECTUAL FREEDOM,

THIS WORK

IS

DEDICATED:

As the strongest effort of a feeble pen, to brush away the scholastic mist that has so long enveloped the intellectual phenomena, and served to foster many important errors—

BY THE AUTHOR.

415848

ERRATA.

Page 27, 11th line from bottom, read "what *is*, would be," &c.
" 34, 16th " " top, before the word thing, insert *same*.
" 50, 5th " " top, for " Organical," read *Organic*.
" 58, 8th " " bottom, for " by witches," read *concerning witches*.
" 70, 14th " " top, for " ever knowing," read *even knowing*.
" 91, 2nd " " bottom, for " or abdomen," read *and abdomen*.
" 144, last line, for " Page 101," read *Page* 122.
" 168, 14th line from top, for " page 44," read *page* 41.
" 193, 13th " " bottom, read " ideas *of* extension."
" 195, last line, for " others," read *orders*.
" 295, 3d line from bottom, strike out the word "to" before the word constitute.
" 304, 12th line from bottom, strike out the word *John*.
" 318, 7th " " bottom, strike out the word *not*.
" 370, 2d " " top, read " the brain as the fiddler."
" 373, (which in a few copies is paged 337,) 15th line from top, leave out the word *in*.
" 374, 14th line from bottom, read " will *not* occur."
" 393, 8th " " top, after the word *faith*, put a comma in room of the period.

Besides the above, there a few other errors, which the reader will find no difficulty in correcting.

☞ At page 28, the author has made some remarks concerning the word *nature*, that will not bear criticising: it must be admitted that the word has more than one meaning. " The *universe* of opinion." would be a very odd expression.

Also, at page 70, in the last paragraph, there appears to be a *blunder*, which the author fears the reader will not be able to correct. He considers the faculty of man to communicate his ideas by signs, an *acquired* faculty; but he is not able to acquire this faculty because his vocal organs are better than those of a horse, but because he possesses hands, and a *better brain*, than a horse.

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PREFACE.

I am out at last, in the condition you see me. My author has had to contend with many difficulties in bringing me forth; and he would have me suggest to you, that if the circumstances under which he has composed me, were known, they would be considered as sufficient apology for many minor errors But for his attempting to write under such circumstances, he can offer nothing better than his conviction that he is able to throw considerable light upon several very important and very interesting subjects.—He firmly believes that the leading principles which I contain, are true; and that by the diffusion of truth, the happiness of the human family will in the end be promoted. He is aware, however, that many persons strangely ground their hopes of a future state, in the existence of a thing which I shall convince you has no being in nature; a thing which almost all philosophers who maintain its existence, admit to be unextended, and consequently not a millionth part as large as a pin's head;—a thing which they call Soul or Mind, but which is not declared in the Word of God to be immortal, and the ceaseless existence of which—admitting it to be such a feeling, thinking thing as maintained—is inconsistent with the doctrine of resurrection, as set forth in the Christian Scriptures. Such persons—though they may have their curiosity gratified by perusing me—will not be pleased with the sentiments which I contain; *unless* I succeed in convincing them that their future existence in a state of consciousness, does not at all depend on the existence of this unextended thing But this I may be able to do; for by showing what *personal identity* does in truth consist in, I shall remove the difficulties that have been supposed to attend the doctrine of a future state, if the doctrine of MATERIALISM be admitted.

As "The proper study of mankind is man," and as a knowledge of himself is the most useful knowledge he can acquire—that is, the most conducive to his happiness—it is intended that I be *studied* (for I am not written merely to please the taste) by all classes of readers; consequently I am not exactly the same thing I should have been, had I been designed for any one class in particular. And while men of science, and especially medical men, will find many facts already known to them; the less learned will meet with a few technical terms with which they are unacquainted. But I may, perhaps, be found interesting throughout, even to medical

gentlemen; for these facts are brought forward and arranged with a design to establish the important inferences my author has drawn from them. And as to technical terms, in almost all cases they are so brought in, that the reader will know their meaning as soon as he comes to them.

As it is believed that I contain a *new system* of notions,—that my merits may not be wrongly appreciated, it is my author's urgent request that the reader either put me aside at once, or read me through attentively, and in order, from beginning to end.—If my eleventh chapter be found rather tedious, it is necessary that it be attentively read, to the right understanding of what follows.

That my author might "begin at the beginning," and that he might have a fit opportunity to advance a few ideas for the consideration of those who love to think; he has inserted my first chapter: though he cannot see as it has any connexion with my leading principles.

Excepting what is contained in three or four chapters, I contain very little that is taken from other books. Nor has my author endeavored to exhaust any of the various subjects of which he has treated.—He has made truth his pole-star, and steered right ahead, laying down his principles, and explaining the phenomena of man upon these principles, without turning to the right or left to favor or oppose any sect or party: if he have done either, it is because it came in his way.

He does not say he presents me to an enlightened, *impartial*, and *unprejudiced* public, by whose decision I must stand or fall; for there is no such public in existence.

It is expected the critics will fall to nibbling my *soft parts*—of which I possess a pretty good share—but my author will never be troubled for this, should it be found that they are unable to destroy my *bones*.

Adams, January 28th, 1829.

ELEMENTS

OF

MODERN MATERIALISM.

CHAPTER I.

Which is the most rational supposition, that a being exists which never commenced existence, or that a being commenced existence wihtout an antecedent?

The sentiment, that a being exists which never commenced existence, or, what is the same thing, that a being exists which has existed from all eternity, appears to us to favor atheism: for, if one being exist which never commenced existence, why not another—why not the universe? It weighs nothing, says the atheist, in the eye of reason, to say the universe appears to man as though it were organized by an Almighty Designer; for the maker of a thing must be superior to the thing made; and if there be a Maker of the universe, there can be no doubt but that if such Maker were minutely examined by man, man would discover such indications of wisdom and design, that it would be more difficult for him to admit that such Maker was not caused or constructed by a pre-existing Designer, than to admit that the universe was not caused or constructed by a Designer. But no one will contend for an infinite series of Makers; and if, continues the atheist, what would, if viewed, be indications of design are no proof of a designer in the one case, they are not in the other; and as such indications are the only evidence we have of the existence of a Designer of the universe, we, as rational beings, contend there is no God.

We do not suppose the existence of any being of which there is no evidence, when such supposition, if admitted, so far from diminishing, would only increase a difficulty which is at best sufficiently great. Surely, if a superior being may have existed from all eternity, an inferior may have existed from all eternity ;—if a great God, sufficiently mighty to make a world, may have existed from all eternity, of course without beginning and without cause, such world may have existed from all eternity, without beginning, without cause.

Such being the arguments which atheists may advance, on the supposition that a being exists which never commenced existence ; we, as firm believers in the existence of an intelligent Creator of the universe, shall endeavor to show that it is more rational to suppose that a being commenced existence without an antecedent, than to suppose that a being exists which never began to exist.

It will be admitted that a man can no more conceive of a being existing from all eternity, in the common sense of the word eternity, than he can conceive of space extending so far that there is no conceivable space beyond. Let us think back as far as we please, in spite of us it will seem as though every being, agent, or entity, which does exist, must some time or other have commenced existence. We may verbally admit that a being has existed from all eternity ; but still, this *from all eternity* will seem to us as from some very distant period or commencement. It gives a close thinker no satisfaction to tell him that a being has existed *from all eternity:* he can have no such notion as these words are intended, and perhaps supposed, to convey ; and he is more and more convinced of this, the more he endeavors to form such notion.

Let us say that eternity is co-extensive with time, and that time is that part of duration in which a being has existed. We

shall thus have a sort of fixed point, or starting place; and can say that the Deity has existed *during* all eternity.

Now it follows, according to our use of the word time, that prior to the commencement of time, nothing was—neither matter, nor *laws of nature*. It had not been decreed that no effect shall take place without cause,—it was not then a law of nature that every event shall be preceded by some other event; that no being shall exist except it be caused to exist, and this too in a certain way. Hence it was just as likely that a being should commence existence as otherways; there was no reason why a being should commence existence and no reason why a being should not—nothing to cause to be, or to prevent from being, and a being commenced existence. Now this being, whatever it might be, was all-powerful, considering the relation in which it stood; for indeed, as nothing else existed, it stood in relation with nothing: no law or power existed to oppose or be opposed, and it might as well be one thing as another. Indeed, it is not unreasonable to suppose that this being underwent, as we may say, *fortuitous* changes—perhaps many millions of them—before it became a thinking Being. But after this, He decreed: HENCEFORTH NOTHING SHALL BE EXCEPT AT MY PLEASURE; and it was and ever has been so. For the decree of this Being was, and the decree of any other being *under the same circumstances* would have been, sufficient to determine any thing. (It takes but little to turn the scale when there is no weight in the other end.)

God now willed a universe into existence,* and Order was

*It was a dogma of all the ancient schools of philosophy, that matter could not be created out of *nothing*, by any power whatever, and such is the opinion of some modern philosophers. We shall not enter into any long discussion of this question; we believe

was the *second* decree of Heaven: it was decreed that nothing shall act until it be acted on, and the same antecedents shall be invariably succeeded by the same consequents, under the same circumstances. This was the law of order. Electricity now sprung forth and prevaded all things. This is the main-spring of the universe, which the Deity caused to be—it is the essential cause of all actions or changes,—it is the material life of a material world.

Now it was in heaven decreed that no being shall commence existence without cause and that like antecedents shall be invariaby succeeded by like consequents, under the same circumstances, *before* any man existed. Consequently no man ever saw a being commence existence without cause; instead of this, man sees that certain agents acting under certain circumstances, are invariably succeeded by certain actions or changes of certain other agents; and this gives rise to the belief—and to the language by which we express it—that agents or bodies possess intrinsick *powers* of producing changes in each other, and that nothing can and (forgetting that the laws of nature were totally different before there

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however, that on a full consideration of the subject, it will appear that we may as well admit that matter might commence existence, as to admit many other things which no one denies. To say that matter was created out of nothing, is to state the simple fact that *matter commenced existence*, in rather bad language. To create *out of* irresistibly conveys the idea of *to create out of* SOMETHING, and the expresson *to create out of nothing* seems to involve a contradiction, besides being an expression of that which is inconceivable. Let us say that the Deity willed it, and matter immediately commenced existence. Here are two events between which there is no intervening event, and we say we cannot conceive *how* or *why* the subsequent event followed the antecedent; but it will be made to appear, in the course of this work, that in every case in which one event *immediately* succeeds another we cannot conceive how or why.

were any laws of nature) *never could* commence existence, except it be *caused* to exist by something which possesses the *power* of causing it to exist.

But suppose the laws of nature, and consequently man's experience, had been intirely different; suppose that no man ever saw any event preceded or succeeded by another particular event more than once; suppose it were a very common and every-day thing to see men, machines, rocks, trees, &c. springing at once into existence, even in a vacuum, under all sorts of circumstances *or no circumstance at all*; to see heavy bodies rise into the air without force at one time but not at another, though under the same circumstances; to see precisely the same kind of oil mix with water at one time, though not at another: in short, suppose all events took place without any order or regularity, would any one think that every event must be preceded by some other event, that one body has the *power* of producing a change in another body, and that nothing can commence existence, unless something previously exist which has the power of causing it to exist? We think not.—we think if the events of nature never had occurred in some kind of order, we never should have heard any thing about *power*, *cause*, *effect*, &c. We think also, that men might then very readily admit, that a being may commence existence, or might have commenced existence, although nothing exist prior to such commencement, of course, without an antecedent.

Perhaps, reader, you will say, that if the laws of nature were totally different from what they now are, we may well suppose that events might occur without being preceded by other events in any way connected with them. Well, if you admit this, you accede to the sentiment we are endeavoring to maintain; for before there were any nature or laws of na-

ture, there could not have been any such laws of nature as there now are.

It appears, then, (to the writer at least,) that the difficulty which one experiences in admitting that a being might commence existence without an antecedent, is owing to a sort of *prejudice* which he acquires by witnessing events as they occur, since it has been decreed that the same antecedents shall be followed by the same consequents, and decreed also, that nothing shall exist except it be caused to exist. The conclusion is: It is more rational to suppose that a being should commence existence without an antecedent, than that a being exists which never had a beginning.

The reader will not suppose that we consider what we have been saying as any argument against atheism; for the atheist may grant our conclusion, but still tell us, it does not follow but that it is just as probable that the universe commenced existence without an antecedent, as that a Designer of the universe thus commenced existence.—Our arguments against atheism, are to be found in the fourth chapter of this work.

Should any one pretend it is irreverent to say of the Deity, that, though he is self-existing, i. e. not created, caused, or preceded, he, in some remote period of duration, *commenced existence;* we should ask, *why so?* We can see nothing objectionable in such doctrine. It does not follow that the power and goodness of the Deity are different from what they are supposed to be, by those who make the ambiguous assertion, that the Deity has existed *from all eternity*. It does not follow that the relation between the Deity and the universe, and the relation between men and their Maker, and between each other, is not the same as if we suppose the Deity never began to be. Nor does it follow that the Deity will ever cease to be: no mortal man can offer any reason why the De-

ity should ever cease to be, on the supposition that he once began to be, that cannot be given against his ceaseless existence, on the supposition that he never commenced existence.

CHAPTER II.

On Matter.

We define matter, *a combination of properties.* It follows, according to this definition of matter, that *space*, or what is sometimes called *empty space* is not matter, as was contended by Des Cartes, for space consists of but one single property, to wit, *extension.*

We know that much has been said about the *essence* of matter. Many philosophers speak of it, even at the present day, as though it were something distinct from the properties of matter, not something which these properties *constitute*, but something which is "the permanent exhibiter" of these properties. We are gravely told, that we are irresistibly led to ascribe these properties to such essence or permanent subject, "by the very constitution of our nature." But the present writer is rather unfortunate, for the *constitution of his nature*, (if he can divine what this is,) does not lead him to ascribe the properties of matter to something besides what they constitute; but the *construction of our language* compels him to speak as though he considered the properties of matter, or the material properties, as belonging to something which they do not constitute. He speaks of the properties of matter, and of matter possessing properties, just as he speaks of the students of a university, the father of a child, and of a man possessing a house; but he supposes that one combination of properties constitutes one kind or form of matter, another

combination another kind, and so on;—he would not be understood to suppose that the properties of matter are properties of any thing besides what they constitute.

We need resort to no long reasoning processes to convince one that the *essence* of matter is a name without a thing; every man will admit, after a very little thinking, that if all the properties which constitute any body, or if you please, of any body, be taken away, nothing will remain. Take from any body the property of extention, of impenetrability, of attraction, and every other property which may be present, and what, pray, will remain?—He that asserts that *matter itself*, as some say, or the *essence* of matter, as others say, is one thing, and the properties of matter something else, asserts a sheer and inconceivable hypothesis, in support of which he can bring nothing at all.

If, then, combinations of properties constitute the material world by which we are surrounded, and of which we are a part, the question may be asked, *what is a property?* A property, singly considered, is the most unique thing in nature, and does not, of course, admit of being defined. Every body must learn what a property is, by experience;—who can define *sweet* to a man who never could taste? *white* to a man who never could see? and *solidity* to a man who never could feel?

We cannot say what is the least number of properties, existing together; or, in other words, there may be some forms of matter in nature consisting of fewer properties than any form we are acquainted with. Extension and impenetrability united, would constitute what all men would willingly call matter; but it is pretty certain that these properties are never united in nature, without other properties being present; So, again, there may be in existence (as we will admit) com-

binations of properties, i. e. kinds of matter, in which extension and impenetrability are not both present.

Who is it that brings together three or four words, and says, that when those properties which these words signify exist together, what they constitute shall be called *matter;* and when one or more of these properties are wanting, what still exists shall not be called matter? It is a human being. We are all human beings; and as it is man who has invented the word *matter* to denote substances possessing certain properties, why may not men enlarge the meaning of the word, so as to comprehend those substances or existences now called spiritual, provided it is fit to do so? Do you say that those beings which are called material, and those which are called spiritual, are *essentially* different? But what do you mean by *essentially different?* To have nothing in common, you answer. They have something in common: both classes of substances are *combinations of properties.*—Did the man ever exist who believed that spirits consist of only one property? Spirits are generally spoken of as being extended, visible, and moveable bodies; and in olden times they used to have wings, ride in chariots, &c. The moderns know nothing about spirits; and it is probable they never would have thought of such things were it not for what has been handed down from men of ancient times, whose active brains were not *clogged* by an overstock of scientific knowledge. Had the ancients known as much as the moderns about the laws and properties of matter,—had they been as well acquainted with the nature of the atmospheric air, and many other invisible, intangible, and yet *material* bodies; it is probable they never would have invented, never would have had any use for, the word *spirit;* nor ever believed in the existence of any thing which is not material. Nay, we very much doubt if any ancient ever did be-

lieve in the existence of any thing immaterial, in the sense in which the word immaterial is now understood.*

We know not how recently the word *immaterial* has been invented ; we believe, however, the word is not to be found in the bible. And thanks to close thinkers, if any body ever meant any thing by it, men have been compelled to admit, that whatever is immaterial is *unextended!* And one might have reasonably expected that all who know enough to keep out of fire and water, would cease to talk, *gravely*, about a BEING that is unextended !—What sort of machinery is it, that is in such continual operation as to keep alive the most palpable absurdities ?

Although we have admitted that there *may be* substances in existence that do not possess the two properties of extension and impenetrability, we are far from *believing* that there *are* such ;—if there be, we must suppose that they consist of more than one property, and are, of course, whatwe should call material. Barely to the expression, *material spirits*, we have no more objections, than to the expression *material stones ;* but as professed searchers after truth, we cannot admit the existence of any thing until we have some other evidence of it, than merely that a name is provided for it, if it do indeed exist. The opinions of men of ancient times concerning the nature of things, can have but very little weight with philosophers of the present day, since such great discoveries concerning the laws and properties of matter have, in modern times, been made, and so many ancient errors detected.

The road to truth has been very much obstructed by old *thingless* names, got into use by the ancients ; and it is, at the

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* The Latin *spiritus*, from *spiro* ' to breathe,' is the original of our spirit, and means merely ' breath,' which is as truly matter as the earth on which we tread.

present time, no trifling and unimportant task, to show what words are insignificant, and to determine the precise things which other words ought to be used to signify.

CHAPTER III.

On the Universe, Power, Cause, Effect, &c.

By the word *universe*, we mean every thing that was created by an Almighty Designer. We do not consider *space* as a real entity or agent; we do not think it proper to say that space was created. With us, it is unconceivable that an agent should exist which never commenced existence; but with us, it is equally inconceivable that space should not have existed (if it be proper to speak of the *existence* of that which is not a being,) from eternity. Neither do we consider the Designer of the universe as a part of the universe, but as something distinct from it: we say that the word universe ought to be used to signify every thing that was *created*, and we say, furthermore, every thing which was created, is *matter*.

Now when any body of matter *acts*, this body may be called the *agent* of such action; and the action itself may be called an *event*. If an ultimate atom of matter act, this atom is, also, the agent of such action, and the action as truly an event as any other, although our senses may be too imperfect to perceive either the atom or the action; or, in other words, to perceive either the atom (at rest) or the *atom acting*; for the action of an agent is nothing other than, nothing distinct from, the agent acting, any more than a property of a body is something distinct from the body.

Events do not occur promiscuously; but it is a universal fact, or *law of nature*, that such event as is succeeded by a

certain other event at one time, is at *all* times succeeded by the same event, circumstances being the same.

We must now show what we mean by *circumstances*. The word circumstances, is a convenient word which we often use to denote all those preceding events which we do not wish to be at the trouble of enumerating;—we need not add, that we also use it to denote *conditions*, for this is implied, since the same chain of antecedent events gives rise to the same conditions. No body is ever in a *condition*, except it be put in such condition; and this *putting* any thing in a condition is an event; therefore, if the circumstances be the same, if the preceding events be the same, the present conditions will be the same. Hence, to say the word circumstances means *preceding events*, is as much as to say it means *preceding events and present conditions*.

Now the universal fact, or law of nature, that like antecedents are *invariably* succeeded by like consequents, under the same circumstances, has given rise to the words Power, Cause, and Effect. Men have found that a certain action, or change, of the body A, is *immediately*, and under the same circumstances, *invariably* succeeded by a certain action of the body B, but that an action of X, although X be brought in contact with B, is not followed by such change or action of B. Such experience has given rise to the sentiments, (and to the language to express them,) that the action of A is the *cause* of the action of B; that the action of B is the *effect* of such cause; and that A possesses a *something* [a power] which *enables* it to *produce* (both bad terms) a change or action of B, and which X does not possess.

Of *cause* and *effect* we shall treat more fully presently. As to the word *power*, there can be no harm in using it as above, if it be rightly understood, if it give rise to no false notions. By the *power* of A, to produce a change of B, nothing more

ought to be meant than the simple fact, that under certain circumstances, a certain change of A is *immediately* and *invariably* succeeded by a certain change of B. If a man suppose that the power of any body be something distinct from, and something more than such body, then is he deceived by language, and led to believe in the existence of a non-entity.

A power of a body, instead of being distinct from, or more than such body, is a *part* of such body, in the same sense that a property of a certain kind of matter is a part of such matter. Take away, or destroy any property, or power, of any body, and it is no longer the same body, logically speaking. Indeed, if there be any difference between a power and a property of a body, it must be a very nice and not *essential* one. We must make it ourselves, by saying that a body possesses a *power*, when we find that it *produces* certain changes in other bodies; and that a body possesses a *property*,, when we find that it not only *produces* changes in other bodies, but *suffers* changes from the action of other bodies.

But if there be no more real distinction between a power and a property, than this, some may wonder why we should say, as above, that, by the *power* of the body A to produce a change in the body B, nothing more ought to be meant than that, under certain circumstances, a certain change or action of A is *immediately* and *invariably* succeeded by a certain change of B. But this wonder will cease when we consider closely the only reason we have, in any case, for saying a body possesses a property. It will be found that the only reason is, because the body may produce a change in some other body, or suffer a change in itself from the action of some other body.

Some will see, at once, that this assertion is true; others will wonder at it, and ask what change in any other body, a piece of gold, laid away in a box, produces, that leads us to

say it is extended, yellow, and heavy. But it must be remembered, that gold would be to mankind *nothing at all*, if no piece of gold ever acted upon any of the senses of any man ; and, certainly, in such case, no man would have any reason to say that gold is extended, yellow, and heavy. And as to the particular piece of gold laid away in a box, he that knows nothing about *this* piece of gold, cannot say that *this* piece of gold is extended, &c. But some one has seen and felt this piece of gold,—then this piece of gold produced some *change* in that which sees and feels ; and on this account, whoever saw and felt the gold, has reason to say it is extended, yellow, &c.

We do not say but that trees, stones, &c. would have had the same properties that they now have, if no sentient being had ever existed ; but the only reason we have for saying that bodies possess properties, is, because they produce or suffer changes.

Perhaps one thing that serves to make many think there is more difference between a *power* and a *property* than what there really is, is this : we give properties particular names, but we do not powers. We say of a muscle, it has the power of contracting, and we say it has the property of contracting: this property we give the name of *contractility*, and speak of the property of contractility ; but the *power of contractility* is an expression not in use.

From what has been said, it appears that in metaphysical disquisitions, we might very well dispense with the word *power ;* for we cannot give it any *more* meaning than we give the word property ; and the reasons we have for saying a body possesses a power, are no more than the reasons we have for saying it possesses a property.

A power is neither an agent nor an action, an agent at *rest*, nor an agent acting ; but merely to express the simple fact, that, under certain circumstances, a certain change of A is im-

mediately and invariably succeeded by a certain change of B; in less words than these, we use the word *power*, and say that A has the power of producing a change in B. But it would be as philosophically correct to say A has the *property* of producing a change in B.

It may be asked *why* a certain change of A is immediately and invariably succeeded by a certain change of B, under certain circumstances? To this question, the only and the sufficient answer that can be given, is, such is the fact; or such is the law of nature; or such is the will of the Great Architect. The two first answers differ only in sound, and the last is like either of them, unless it be supposed that the Great Architect wills (and of course thinks of) the change of B to follow immediately after the change of A, or *did* will *these* particular changes to occur in this very order, at some former period.

It must be remembered, that in those cases in which it is *known* and admitted that two events occur in *immediate* connection, none but boys will attempt to *explain why* the subsequent event follows the antecedent. To *explain* the connection between any two events, is nothing more nor less than to point out intervening events, and the order in which they occur; but in case one event *immediately* follow another, there are no intervening events to be pointed out, of course, no explanation to be given.

To illustrate what we have here said, suppose a man strikes a ball, and the ball moves; now if it be asked why his striking the ball is followed by a motion of the ball, no *explanation* can be given, and no answer can be given, except that such is the fact, or law of nature. But if the ball move on and knock down a pin, and it be asked why his striking the ball is followed by the fall of the pin, the answer, the explanation is, because the ball moved on and hit the pin. Here you see there

is an intervening event (the motion of the ball) to be pointed out, and of course some explanation to be given.

But in some instances in which one event succeeds another, it is not easy to determine whether they occur in immediate connection or not; hence a man may sometimes attempt to explain the connection between two events when there is no explanation to be given; a man too who would not think of attempting to show why one event follows another, *knowing* that they occur in immediate succession. We believe, however, it more frequently happens that men think that they have arrived at ultimate facts or laws of nature, when a further analysis might be made, if they only knew all that is to be known.

When a man has discovered to a certainty what events intervene between two obvious and well known events, and in what order these intervening events occur, he may state what he has discovered; and such statement is an explanation of the connection between the two obvious events: it is telling *why* the first obvious event is followed by the second, in one sense of the word *why*. It is also telling what he *knows*, and is mere *history*. Whereas, when a man does not absolutely know what events intervene between two obvious events, but knows of facts which render it probable that certain events do intervene; he may state what he supposes these events are, and the order in which he supposes they occur; and this statement is an explanation of the connection between the two events; but it is hypothetical, or indeed an hypothesis,—an hypothesis supported by facts. But if a man suppose the existence of events, or agents, when there are no facts but what may be as well explained without supposing such events to occur, or such agents to exist, as with,—why, his suppposition is a groundless hypothesis, or more properly, a *whim*.

By general consent, the word *phenomenon* is now used in

such a broad sense, that we should not much extend its meaning, were we to say a phenomenon is any *known* occurrence or event. Using the word in this sense, we should say that, to explain a phenomenon, is to point out the agent which acts, the action of which constitutes the phenomenon, and to point out those events which invariably precede it, or are essential to its occurrence.—A feeling is a phenomenon or event which we know takes place; it is an action of that which feels; and to explain this phenomenon, is to show what feels, whether the nervous system or some agent distinct from it, and to show what gives rise to—what events must precede this—feeling. All explanations of the phenomenon of feeling must be hypothetical, for the action [the *agent acting*] which constitutes a feeling, is not an object of sense; we cannot look into the animal system and *see it feeling*, as we can look into some pieces of *mechanical* machinery and see the parts moving, and the order in which these parts act one upon another or one after the other. However, the supposition that the nervous system feels, may be so well supported by facts, that those who know these facts, can no more doubt, as we think, that this supposition is correct, than the astronomer can doubt the supposition that the earth turns on its own axis.

To explain phenomena, then, is to show what agents act, and the order in which they act. This is all. When it is *known* that one event *immediately* succeeds another, it would be even more absurd to ask why? than to ask what hydrogen is composed of.

Now it is evident, that to show correctly the *order* in which the events of any chain or sequence occur, we must point out *all* the events of such chain; for if we do not point out *all* the links of this chain, we leave out some one or more links, and this brings two links together, which, in nature, do

not come together. Suppose the events A, B, C, D, to occur in the order in which these letters, their representatives, here stand, and that after D a more obvious and remarkable event occurs, which we call a phenomenon, and represent by E,—now if you be requested to explain the connection between the event E and the event A, or as some might perhaps say, to show how the event A gives rise to the event E, or to explain the phenomenon E, you have nothing to do but to point out the intervening events in the order in which they occur. If you do this correctly, you will say the event B occurs immediately after A, C immediately after B, D after C, and then E. But if you do not discover C, you bring B and D together, which is not the order in which they occur in nature.

What is a cause, and what an effect? It is obvious, that in any one chain or succession of events, no one event can *immediately* precede any more than one of the other events, nor succeed any more than one of them. Now that event which immediately precedes another event, is the true and philosophical *cause* of such other event, and such other event is the true and philosophical *effect* of such cause. However, in familiar discourse we often say that one thing is the cause of another, when indeed several events—even known events—intervene between the two which we mention, as cause and effect.

A cause is generally defined to be an event which is *immediately*, and under the same circumstances, *invariably* succeeded by a certain other event. This is a very good definition of a cause, but we believe it is rather redundant; for that event which is *immediately* followed by a certain other event, is always followed by the same event, under the same circumstances; of course, immediate antecedents are also in-

variable antecedents, under the same circumstances, and may be understood as such.

The term *final cause*, is a bad one, as it does not at first excite such ideas as intended ; a person who has learnt the meaning of the word final, and the common meaning of the word cause, might look at these two words standing together, and fist his brains a fortnight before such ideas would occur as the term *final cause* is intended to excite, or more properly suggest. A final cause is the purpose, end, or design for which any thing is formed.

It is a universal fact or law of nature, that like causes or antecedents, as they are sometimes called, are always followed by like consequents or effects, circumstances being the same. The application of a spark to gunpowder is an event which is followed by the explosion of the powder, (which is another event,) at all times and places; provided the powder be good, dry, &c. which being good, dry, &c. are what come under the denomination of circumstances.

Now it is by experiencing this uniformity in the succession of events that we are enabled to predict what will be, by knowing what is or has been. If events took place without any kind of order, then *what* would be no sign of what *will be ;* and we may further add, if events took place thus, the words *power cause*, and *effect* would never have been invented.

To discover the *constitution* of any body or agent, is not only to discover what material elements it is composed of, but to discover its relation with other bodies ; that is, to discover what changes it may produce in other bodies, and what changes it may suffer by the presence of other bodies. When we discover these, we discover its powers and susceptibilities, or in one word, its properties. Now it appears to us, that the only proper objects of physical inquiry may be expressed in

these few words.—to discover the constitution of agents and the order in which they act, one after another.

What is nature ? Ignorance has given rise to many thingless names, and these names have so long constituted a part of our language, that it is almost impossible to converse without using them ; but so long as we use them, we ought to acknowledge that they mean nothing, or else use them to denote something that has, perchance, got a more appropriate name, and show distinctly what this something is. We had better give one thing two or three names, than to suppose that two or three things exist. when only one exists. *Nature* is not the God of nature ; but it is a word which means nothing, unless it means the same as the word universe. This being the only intelligible meaning (of course the *only* meaning, for whatever is unintelligible with us, means nothing with us.) which the word can have, it follows that whatever is natural is universal. The nature of opium, that is, the natural qualities of opium, are universal qualities of opium ; they are qualities that belong to—and indeed constitute a part of—opium, whenever and *wherever* opium is to be found ; therefore we say they are essential to it, and every body which does not possess these qualities is not opium. A natural event is an event of the universe ;—it is an action of some part or parts of the universe—entirely so, and independently such ; it is not an action of some part of the universe caused, connected with, or immediately preceded by an act of Divinity. If it were, it would not be a natural event ; for although it be an action of a part of nature, it would be caused by an immediate act of nature's God, and would be what we call a miracle. All those productions called artificial, are truly natural ; we only use the word artificial to show that they were produced by the intervention of the natural operations of that natural creature, man, or some other natural, *thinking* being.

"Law of nature."—Does this expression mean any thing? We will tell you, reader, what we think of this expression. It is an expression, often convenient, which means nothing more than the expression *universal fact*, that is, a fact which holds universally. It is a fact that, under the same circumstances, like antecedents are followed by like consequents. This fact holds true universally; it is not so at one time or in one place, and not in another; it is so throughout the globe, and as we believe, throughout the universe: it is a law of nature. A law of nature is not an entity or being of any kind and to say that laws of nature *govern*, is to speak figuratively. The immaterialists tell us that the laws of mind, or the laws of nature which govern the mind, or the operations of the mind, are totally different from the laws of matter. But admitting the existence of mind, they can only mean that the mind may act without being influenced by impulse, attraction, &c. Let us not be bewildered and led astray by the ambiguous and senseless phrases of the immaterialists. No doubt some things can with truth be said concerning the actions of the nervous system which cannot with truth be said concerning the actions of inorganic bodies.

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CHAPTER IV.

On Deity, and the Relation which subsists between the Creator and the Events of the Universe.

Our notions are, that the Author of nature is an Almighty, intelligent Being, consisting of more than one property, and hence material; that he has some definite place of existence, and no more exists in two places at a time, than any other *one*

being; that he organized the universe, either out of amorphous matter which previously came into being without an antecedent, or else spoke the word, and a world arose; the matter thereof not previously existing. In either case, we believe the Great Architect so organized the universe, that it continues in harmonious operation without any further exertions on his part,—without his immediate agency. Hence, although the Supreme is the *first* cause of all that we behold, he is not, as we maintain, the *immediate* cause of any *natural* event. But if human eye ever witnessed an *unnatural* event, such event was a miracle, and was *immediately* preceded or caused by an act of the Deity.

We do not believe the Deity ever intended, or thought of every particular event which has and will take place; for this would be to believe that he intended or thought of every motion of every grain of sand, of every motion of every leaf, of every thought of every brain, of every action of every insect; in short, of every action of every agent which ever existed, or ever will exist.

But we do believe that, at the time he organized the universe, he did intend, and of course think of, some of the more important events which have and will occur. He intended that the heavenly bodies should revolve as they do and consequently that there should be cold seasons and warm—seed time and harvest; that animals should propagate their species,—that plants should bring forth seed, each after its own kind;—that all men should die;—that the nervous system should feel and think, &c. &c. Nevertheless, we do not believe that any event, important or trifling, ever did occur which the Deity *intended* should *not* occur.

We believe that in organizing the universe, the Deity had certain important objects in view; and that he so organized

it as to fulfil these objects or designs. And although many trifling events occur, by virtue of this organization, which were not thought of at the time, still we do not believe that they occur *contrary* to the good pleasure of the Almighty: certainly not contrary to his permission; and we should think that an *Almighty* Being would not permit events to occur which displease [make unhappy] him. At any rate, if, in this stupendous machine,—the universe,—any events occur which displease the Creator, it would be blasphemy for man to talk of blame and culpability; for certainly the fault, if there be one, is not in the pot, but the potter.

I know that mankind have ever been a proud race of animals; and although they daily see other classes of animals suffering pain, sickness and death, men got it into their heads, thousands of years ago, that the Deity never intended, and is displeased at, whatever gives rise to human misery; or in other words, at whatever *they* call evil. But as events did occur which these ancient men called evil, they put their head to work to account for the origin of this evil, and the result was, a hideous world of fallen angels, devils, and evil spirits, all of them enemies of God, warring against him to obtain human souls!!

But I am wandering from my subject; I did not purpose to treat of devils, but to offer my notions relative to the Deity, and the relation which subsists between him and the events of the universe. Some of these notions I have already advanced, and I now proceed to offer some of my reasonings in favor of them.

I have expressed the opinion that Nature's God is an Almighty Designer. He is Almighty, inasmuch as there is none superior to him, and he may have just what agents exist, and just what events occur, he pleases. By willing it, he may create a new world or annihilate an old one,—at least, I will

not deny that he can annihilate matter. But it is not within the limits of possibilities for any being to cause the same thing to exist and not to exist at the same time, or to cause one and the same being to be in two separate places at the same time.

I say he is a Designer, because there is, to me, incontrovertible evidence of design in the natural productions which I behold. When I examine the several parts of the human system,—as the muscles, the ear, the eye ; and when I consider the powers of human beings to move, to sense, to think, and to propagate their species, I can but believe that the first man and woman were organized by a power who INTENDED that they should move, see, feel, think, and propagate their species.

I may indeed be told, that if I discover indications of an intelligent Designer in natural productions, I had as good say these productions came by chance. (that is without cause,) as to suppose the existence of a Maker ; for the maker of a thing must be superior to the thing made ; and the more powerful and knowing a being is, the more difficult is it for us to admit, that such being should exist without cause ; and we must ultimately arrive at a being which does exist without cause, let us suppose as many Makers as we please.

But I would reply : First. The heavenly bodies are but parts of one system,—the universe. These parts bear such relations to each other, as we have good reason to believe, that there would be great irregularity and confusion in their movements if any of hem should be annihilated or misplaced ; hence we may say that it is, and was at first, essentially necessary to the regularity in the movements of these bodies, that they all exist at one time as they now do. Now chance is nothing, and a nothing in one region of space can't know what a nothing in a distant region is about ; hence, to prevent confusion, and to bring the universe into its present state, *one* in-

dividual nothing must have knocked the *whole* universe into being at one blow!! If nothing made one part of the universe at one time, and afterwards found out that it did not go well, and then made another part, to complete the system,—this nothing or chance (I care not which you call it,) must have been a very strange nothing; for to "*find out*" supposes thought—a thought implies the existence of something which thinks—and a thinking something, but for which the universe had not been organized, is the Deity. Second. If things ever came by chance, i. e. without cause, *and there be no controller superior to man*, things may still come by chance,—why not? If a man and a woman ever came into existence without cause, why do not men and women pop into existence without cause now-adays? No man can be so big a fool as to believe and assert, that some time or other a *man* decreed that no men or women commence existence without cause, and that this is the reason why men and women do not thus commence existence now-adays. Man is not the sort for this,—we must have something different —something superior. We know that man cannot have things exist or not exist, as he may will or wish.

Do you tell me, atheist, that the *laws of nature* prevent men and women from coming into existence without cause, now-adays? Aye, and what are your *laws of nature?* Be they any thing more or less than simple facts? If they be, show them to me, and I will show you a God. I do not wish to be put off by empty talk; but I will not be particular about names. If your laws of nature are BEINGS which control events, which cause the existence of some things and prevent the existence of others, and which organized the first beings of the human race in such manner that they could see, hear, think, walk and propagate their species, you may call them by your favorite name, but I will call them God. But if they

be nothing but facts, tell me, if you please, that the simple fact that men and women do not come into existence without cause now-adays, is the *reason* they do not thus come into existence, and I may perhaps believe you, if my brain should ever be disordered.

The third notion which I have advanced, relative to the Deity, is, that he is material. In saying this, I only mean that he possesses, or rather consists of, more than one property. It appears to us that a BEING, an agent, or entity, which is unextended, is just no being at all. Think, reader, do but think, if you can, of a BEING that is of no extent. The smallest mote that may be seen by the most powerful microscope, is more than ten hundred thousand million times as large as such a being! Gracious! It is as great a perversion of language to say that a BEING exists which is unextended, as to say that the thing can be and not be, at the same time.

No man can ever have an idea of a being which is unextended. But this, the immaterialists will tell me, proves nothing. Well, grant it, if they will have it so; but I will tell them in my turn, that their stating that there may be an unextended BEING, proves nothing,—only that they are laboring to support some rotten cause. It is contrary to scripture to say the Deity is unextended; the scriptures no where tell us a word about unextended beings;—there is nothing in them that favors modern immaterialism. But stop, am I not beating against the wind? Have any philosophers ever pretended that the Deity is unextended? I do not know that they have expressly; but it is generally held that the Deity is immaterial, and modern immaterialists hold that whatever is immaterial, is unextended. I wish the immaterialists would clear up this matter.—If the Deity consist of extension only, he is nothing but space; hence we say he is material.

My fourth notion is, that the Deity has some definite place

of existence, and no more exists in two places at the same time, than any other one being. To say the Deity exists in two places at the same time, is in reality as much as to say there are two Deities, or at least, that the Deity is not one Being, but two separate beings. However, when I say a being exists in a *place*, I mean by this *place*, all that room which the being, as one continuous body, occupies. I should say the atmosphere of this earth exists in one place only, admitting it to be *one continuous* body. I should say that a house exists in a place, but if there were two separate bodies in the house, I should say that one is one place, and the other in another place. But from what I have now said, it does not follow but that a *part* of the Deity may be in Europe, while another part is in America; but these parts must be united together by intermediate parts, or else they are in reality two beings.

I say the earth is in one place, and the moon in another; now would it not be polytheism to assert that the Deity exists in both these places at the same time? *The Deity* is the *whole* Deity, and if *the Deity* exist in the earth, then the *whole Deity* exists in the earth; and if the whole Deity exist in the earth, and the whole Deity exist in the moon, at the same time. then we have two Deities;—not the same Deity in two places at different times, but two Deities in different places at the same time. The Deity then does not exist in two places at the same time; but this is not saying he does not fill all space;—by the bye, however, if he did fill all space, there would be no space to fill, for where matter is, space is not: matter may be surrounded by space, but space and matter cannot be in the same place at the same time. Space is the negative of matter.

Now if, *to maintain that the Deity is not in two or more places at the same time*, is not the same as *to maintain that no*

part of him is every where present, I will now proceed to maintain this last ; that is, to maintain that the Deity is not of such vast dimensions, that, go where you will, some part of him will always be there.

The doctrine that the Deity exists every where, not only virtually but substantially, is of modern origin. There are hundreds of passages in scripture which speak of the Deity as a Being of determinate dimensions, to one which speaks of him as a Being who fills immensity or all space. And if in a few instances the scriptures speak of the Deity as though he were of unlimited dimensions, (it is impossible to conceive any limits to space,) we have no reason to regard these few passages as any other than figurative expressions : we have no reason to suppose the writers of them would be understood to suppose that the Deity is so large that if there were less space than there is, there would not be room for the Deity to exist as he now is. No—they would only be understood to mean that the Deity can behold all his creation ; that, though seated on his throne in heaven, he knows full well what is going on in every part of his stupendous machine, the universe.

I know that philosophers of old have held that "the universe is an emanation or extension of the essence of the Creator." But what is this "essence of the Creator?" and wherein does an emanation of a material world from the essence of the Creator, differ from an absolute creation by the Creator? Did this essence contain all the matter that now exists ? If it did, it was a very gross essence ; if it did not, there must have been an absolute creation. But waving the further consideration of this matter, I proceed to state,—the created universe is something distinct from the Creator, or it is not. If it be, let its dimensions be what they may, it does not follow that its creator must be of equal dimensions ; but if the universe be nothing distinct from its Creator, then the

Creator and the thing created, are but one thing; or rather, there is no Creator.—Poets have sung:

"Jupiter is the air;
Jupiter is the earth;
Jupiter is the heaven:
All is Jupiter."

But what is this but a freak of a poet's brain, or downright atheism? "All is Jupiter!" The heavens, the earth, the sun, moon and stars, and all that in them or about them is, are Jupiter. I am a part of Jupiter, and you are another part.—Let us not be deceived by empty talk;—when one thing is called by several names, let us not so err as to suppose that each name has a peculiar thing of its own: Jupiter is something distinct from the universe, (as I have defined it,) or else *Jupiter* is a name without a thing. God, the Creator, is something distinct from the universe created, or there is no Creator nor world created; but a world by chance.

It appears, then, that all true and real Deists of ancient times, did not hold that the Deity exists every where, substantially as well as virtually; and this doctrine, as I have said, is of modern origin.

But the authority of the bible, and the opinions of ancient Deists, are not all I have to offer against the absolute omnipresence of God.

The notion is unfounded, ridiculous and degrading. It arose from faithlessness in God's omnipotence. Thinking it impossible for God to sit on his throne in heaven, and know what is going on in every part of his machine; thinking, also, that God is too powerless an architect to organize the universe in such a manner that all things may go on in it as harmoniously as they do without his looking to it—,without his immediate agency,—somebody, I do not know who, advanced the notion that God is every where present, upholding and

revolving the heavenly bodies, shooting forth vegetables, causing animals to be, operating upon the human heart, &c. &c.

But only think what an irreverent notion this is. "God is every where present;" that is, God is not only where space otherwise would be, but God is in every mess of matter. The atmosphere is one mess or body of matter; God is in this. Each individual stone is another body of matter; God is in every one of these:—I say God. This is impossible, unless there be millions and millions of Gods: I can only mean a *part* of God. And if there be such a devil as is talked of,——— ——— Let us examine the full extent and bearing of every doctrine, entirely unsupported by facts, before we give it credence.

As to the dimensions of that Being who "created man after his own image," I cannot say; but the God of the Old Testament is represented to be very much of the size and shape of a man; and the same we find to be the case with his Son, so frequently mentioned in the New. Judging from *these* data, the Author of nature very much resembles the human species in shape and size!

My fifth notion is, that God has so organized the universe, that all parts of it—all agents, go on acting in the same harmonious order in which they do, without any further exertions on his part; or if you do not like the word *exertions*, without any further concern or *willing;* and, of course, that he is not the *immediate* cause of any *natural* event, though he is the *first* cause of all,—if it be proper to call that a *cause* which is not *immediately* followed by what we call the effect.

This notion appears to me much more rational and *dignifying*, if I may so say, than the notion that the Deity is the immediate cause of natural events. Were we to adopt this last notion, several strange and irreverent conclusions must necessarily follow. We must conclude that the Deity *could not* so

organize the universe as to have it go on as it does, independently of himself, which would be much the most simple and direct way of bringing about events ; or we must conclude, contrary to all our notions of nature's simplicity, that he did not choose to ; but rather chose to be continually in exercise to make water run down hill, to make it thunder, to make the fire snap, to make the brain think, to make the earth revolve, to make one man kill another, &c. &c.

I have here mentioned events, some of which *men* would call important ; some, they would call trifling, and one, they would call evil. But I should hope that in these enlightened days, no man can be found who will be so irrational as to ascribe natural events to more than one source ;—no man who will ascribe some to the laws of nature—some to the immediate agency of the Deity, and some to the devil. But I trust that every well informed man who questions, *what is the truth ?* and not, *what will it be to my interest to maintain ?* will either say there is no main-spring—no motive principle in nature—every thing being a dead instrument, which never moves except the Deity lay his hands upon it ; or else say that all created things were so made, at first, as to act as they do, independent of the Creator. If he say the latter, he will meet with no difficulties but what proud man has created.—But if he say that God wills ever particular event at the time it occurs, he will meet with insuperable difficulties. Not to say a word about representing the Deity as a poor Architect, and a slave to his own creation, he will be forced to admit, (what he cannot believe,) that there are millions and millions of Divine wills, or else that one Divine will, may will millions and millions of billions of trillions of particular and distant events, at the same identical instant.

If God were the *immediate* producer of events, why all this nice organization in man and other animals ? could he not,

were He to attend to it, make an inorganic statue of clay think, move, and propagate its species? Do you tell me it was God's good pleasure to bring about his ends by certain means? This is just what I say. That men might be continually coming into existence without His being continually engaged in making them, He organized a man and a woman in such a manner that they could propagate their species. That men might think without His continual exertions, He made the first man with a nervous system; and now, d'ye see, as soon as this nervous system becomes, by any means, impaired, thinking ceases, or goes on irregularly. But I suppose that by an immediate and direct effort of the Deity, thinking might go on in a man, if he had a poor nervous system, or even none at all.

Need I use any more words to convince every rational and *disinterested* man, that God takes no part whatever in the production of natural events?

But it may be asked, if supernatural events or miracles have not, and do still occur, on or about this little globe of ours? We reply, that it is far from us to deny the power of the Deity to interrupt the ordinary course of nature, and of being himself the *immediate* antecedent or cause of events that would not follow natural antecedents; neither would we deny that men have existed who, being ignorant of the laws and properties of matter, witnessed phenomena which they could not explain, and which they ascribed to the immediate agency of the Deity, the devil, or of witches. But I think it an important question that must interest every man, and ought not to be settled without the most impartial examination of all that can be said on both sides of it:—Which is the most rational supposition, that a man should live three days in a whale's belly, walk unhurt through a fiery furnace, raise the

dead, &c. &c. or that one, two, or half a dozen men should tell a lie?

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CHAPTER V.

On Action or Change.

It will be admitted on all hands, that no event or change, of any kind whatever, can take place without action:—not a sensation or a thought can occur without an action of that which senses and thinks. True, it is difficult for us to conceive how a few rays of light falling upon the retinæ of one's eyes, can excite a change in his optic nerves and brain, and, as some would add, in his soul or mind; but we do know, if we know any thing, that we see objects, when we are in such relations with them that they may reflect light upon our eyes, and we cannot otherwise than believe that this seeing is an action of that which sees.

If, then, no change can take place without action, nor any action without change, we may consider *change* and *action* as convertible terms. For sound's sake, we may sometimes use the one and sometimes the other.

Now an action is nothing other than an agent acting, and as there are wide differences between agents, as it respects size, properties and relations with each other; and moreover, as we believe there are two classes of actions *essentially* different from each other,* we shall attempt to give a classification of actions or changes.

* The reader may be surprised to hear me speak of an *essential* difference between actions; but does he not believe that those actions which constitute thinking, are essentially different from any actions of inorganic bodies? He may admit that they are, but still

Were we to class actions according to their *essential* differences, we should have two divisions only. One division would comprehend all those actions which constitute sensing and thinking, or if you please, sensations and thoughts; and we should call them sentient or *conscient* actions. This kind of actions is invariably confined to the nervous system.

The other division would comprehend all other actions in the universe; and we should call them insentient or *inconscient* actions, in contradistinction to conscient actions.

But we proceed to make an arrangement of actions according to the agents which act. Hence our first division is into

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insist on it, that an action of any agent whatever, can be nothing other than a change of place, or what is the same thing, change of relation with some other agent or being; and that when we say one action is essentially different from another, we can mean nothing more than that the agents which act are essentially different from each other. Well, supposing we grant this; then the question is: Was it the determination of the Great Architect that actions of a material organ should constitute what we call thinking, or that actions of some immaterial thing should constitute thinking?

If we admit the existence of this immaterial thing, we can no more conceive that an action of it is any thing other than a change of place or of relation with something else than we can conceive that an action of some part of the brain is any thing other than a change of relation with some other part.—(We are here speaking of very minute "parts of the brain.")—Should it be said that this immaterial thing does not change its place, or its relation with any part of the brain when it thinks; but that its parts change their relations with each other; I should reply, that immaterialists hold that this immaterial thing (mind or soul) has no parts; and I should say furthermore, that admitting it to have parts, we can no more conceive how a change of relation among these parts should constitute thinking, than we can how a change of relation between the thing itself, and some part of the brain, should constitute thinking; or than we can how an action of a material organ, the brain, should constitute thinking.

Perhaps you, reader, (whom I take to be an immaterialist) have still something more to offer. You may say that,—admitting there is no great impropriety in speaking of an *essential* difference between actions, if we mean more particularly that there is an *essen-*

locomotive or *bodily actions* and *atomic actions*. Locomotive action appertains to bodies, or *perceptible* combinations of atoms which move as a whole, or in other words, the atoms of matter which compose the body do not change their relations with each other, but all move one way—the body itself, moves as one thing only.—All the atoms which compose the body change their relation with some other separate body, but, as I have said, not with each other.

The other division comprehends all those actions in which the atoms of any body change their relations with each other.

Of atomic actions we have three orders :—the actions of atoms which compose gaseous bodies ;—the actions of atoms

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tial difference between the agents which act ; still there is such a wide difference between thinking, and the actions which take place out of the skull, that we must suppose there is a wider difference between the agent which thinks, and agents out of the skull, than there is between the *brain* and agents out of the skull ; inferring from hence, that there is some thinking agent in a man's head besides the brain. But, sir, you must know that the nervous system, of which the brain is a part, is very essentially different from any thing to be found out of the animal system ; and moreover, that the physiologist can bring a host of facts which show most conclusively, that it *is* the brain which thinks, whatever may be said to the contrary notwithstanding.

Finally, let no man think to argue against materialism, by telling me that it is inconceivable how an action of the brain should be what we call a thought, notion, or idea, until he can show me *how it is* that an action of an immaterial thing should be a thought — Should he attempt to do this, he will soon find himself compelled to say,—it was the will of God Almighty that it should be so.— Which is just the same answer that I must give to the question,— How is it that an action of the brain should constitute a thought ?

The question, *What is it that thinks* ? is not to be determined by conceivables or inconceivables ; if it were, it would certainly be determined at once, that it is the brain which thinks ; for it is not only as conceivable that actions of the brain should constitute thinking, as that actions of an immaterial, *unextended !* thing should constitute thinking ; but the *existence* of this immaterial thing is inconceivable, whereas it requires no *very* great stretch of one's faith to admit that a brain exists !

which compose liquid bodies, and the actions of those which constitute solid bodies. If we must distinguish these three divisions of actions by particular appellations, we can think of none but the following *bungling* ones, viz. Gaseous Atomic Actions, Liquid Atomic Actions, and Textural Actions.

The order of textural actions we will divide into three genera. The first genus comprehending the atomic actions of elastic bodies; the second, the atomic actions of contractile bodies, and the third, the atomic actions of sensible bodies, [the nervous organs.] Let us say a few words in this place about these different bodies or textures.

The elastic texture is to be found in the kingdom of inorganic matter, and in the kingdom of organized beings. The mainspring of a watch is elastic; every bough in the woods is elastic; a piece of cartilage is elastic. But what is elasticity, or, in other words, when and why do we say a body is elastic? Answer: When the particles or atoms of matter which compose any body are forced from their relations with each other, by *mechanical force*, and still retain a tendency—a manifest tendency to return to their former relations, the body which they compose is said to be elastic, or (for sound's sake,) to possess elasticity.

As to the contracile texture, it is to be found only in organized bodies, both vegetable and animal. It is not very manifest in the vegetable kingdom. We find it in the sensitive plant, and have good reason to suppose that it exists in the circulating vessels of all plants. It is very manifest in animals, and constitutes the principal part of those organs called muscles.—But what is contractility, or in other words, when and why do we say a body is contractile?

Answer: When the atoms which compose any body approach each other more closely in any one direction, on the application of a *stimulus*, we say such body is contractile, or

possesses contractility ; and this approaching of atoms—this shortening of the body—is called *contraction*. But what is a stimulus ?

When any agent excites [when the application of any agent is *followed* by] a contraction of a muscle—not by mechanical force, but by virtue of the organization of the muscle—such agent is called a stimulus.

Some men call those agents which excite conscient actions of the nervous system, stimuli ; thus they speak of the stimulus of light, the stimulus of sound, &c. But there is no necessity for, but some impropriety in, using the word in this double sense. Those agents which excite conscient actions may be called *excitants*.

As to the sensible texture, it is to be found only in the nervous system; but we would not be understood to say that *every part* of the nervous system is sensible, nor would we say that only conscient actions occur in the nervous system. On the contrary, we believe that two other kinds of actions take place in that *system of organs* which is called by the comprehensive term, nervous system. One of these kind of actions we call the *secretory actions*, and the other, the *motive actions ;* but as it is probable that the secretory action is an action of the contractile texture, and as we cannot speak of the *motive actions of the brain* to advantage in this part of the work, we did not think it expedient to mention but three genera of textural actions.

But what is sensibility, or in other words, why do we say the nervous system is sensible ? Answer: Because sentient actions may be excited in it, by impressions upon the senses.

Further than this we say not, in this place, as sensibility, and sentient or conscient actions, will be fully treated of in other parts of this work.

We have now sketched a classification of changes or ac-

tions, which we know is not perfect; but sufficiently so, to answer our present designs.

The question now occurs,—What is the *principle* but for which created agents would not act? Does the Deity continually move one great wheel in the universe, which wheel moves a second, and this a third, and so on, giving rise to every action of every agent which acts at all? Or did the Deity, when he created grosser matter, add thereunto a mainspring, which is the moving principle of nature? We believe in the mainspring,—and query: What is it? and did any man ever see or feel it?

Many a man has both seen and felt it, and called it electricity. But for electricity, we believe that other forms of matter would never move, being otherwise constituted as they now are.

We shall not attempt to point out the connection between electricity and all the various kinds of actions which are known to occur. Nor shall we ask *why* electricity causes one body to attract another; for this, we believe, would be to question about an ultimate fact, of which, as of all other ultimate facts, there is no explanation to be given.

We may briefly state, however, that were it not for the principle of attraction, matter would not unite with matter. Animals, of course, would not exist, except they were every one organized by the immediate fiat of the Deity; and then, the physiologist has good reason to suppose that they could not move without the continual exercise of divine influence towards them. And if it can be shown that the actions of animals are dependent on this active principle, there will be no great difficulty in tracing all changes to the same source.

But I have a conjecture relative to electricity which I will venture to throw out. It is well known that caloric, or the matter of heat, exists in two very different states,—in that of

freedom, when it is capable of producing in animal the sensation of heat and of expanding almost all bodies; and that of combination, in which it ceases to be cognizable by our senses or by the thermometer. In the former case, it is called *free* or *uncombined caloric*; in the latter, *latent*, or combined caloric.

This free caloric has a tendency to an equilibrium, so that hot and cold bodies placed near to each other, even in a vacuum, soon become of the same temperature, as may be proved by applying the bulb of the thermometer to each. They will each expand, and of course raise the mercury to the same degree. It is known too, that all bodies do not conduct caloric with the same facility. Another fact is, that bodies may part with their *free* caloric without suffering any alteration in their properties, temperature excepted; but not so with respect to that caloric which is intimately combined with them, and which may be called their natural share. This natural share is an essential constituent of such bodies, and if it be taken from them, they are no longer the same bodies, inasmuch as they suffer some change in their physical or chemical properties.

Now I conjecture that electricity exists in two states, as well as caloric,—in one state it may be said to be free, or excitable; it is this free electricity that is collected by an electric machine, from surrounding bodies, without producing any change in their physical or chemical properties. To be sure, as the temperature of a body is altered by parting with its free caloric, so by taking free electricity from any body, you may alter its relation with another body, as it respects remote or *bodily* attraction; but you do not alter its chemical affinities nor the cohesive attraction of its constituent atoms. It may be said too, of electricity, as of caloric, that all bodies do not conduct it with the same facility; and furthermore, that

free electricity, like free caloric, has a tendency to an equilibrium.

In the other state in which electricity exists, it is intimately combined with bodies, of which it is indeed an essential part, and cannot be taken from them without a change of their physical or chemical properties;—they are no longer the same bodies, after parting with this, their inherent electricity. Electricity existing in this state, may be called latent or *fixed.*

Now as latent caloric may be set free, so may electricity be set free, and it is set free by the galvanic battery;—the plates and liquids, or moist substances, which compose the battery, suffering some change in their physical or chemical properties at the time. I shall maintain also, that it is set free by the nervous system, and constitutes the nervous fluid; the blood at the same time suffering some change in its physical or chemical properties by circulating through the nervous system. But as it is accumulated and conducted by organized bodies, it is not to be wondered at, if it do not *appear* to be in all respects the same kind of fluid that is accumulated by the galvanic battery.—We do not believe there are any elementary substances in man or any other animal which do not exist in the world around them.

I will here remark, that I am far from being convinced that the weight of bodies of all kinds, is the same in proportion to the quantity of gross matter which they contain, or in other words, in proportion to their density.

Matter attracts matter,—the earth attracts all bodies towards it, in a line passing its centre: therefore we say that bodies on or near the surface of the earth, are heavy. But I believe that some kinds of matter are more forcibly attracted by the earth than others, and hence that the difference in weight between a cubic inch of gold and a cubic inch of steel does not depend altogether on the difference between the

quantities of matter which they contain. I believe so, first, because a cubic inch of steel *appears* to contain more than about one third as much matter as a cubic inch of gold—and a cubic inch of ice, or of hard, solid wood, appears to contain more than one twentieth as much matter as a cubic inch of gold ;—a cubic inch of cork appears to contain more than one eightieth as much matter as a cubic inch of gold. Second : We know that the chemical attraction of all kinds of matter is not the same ; and we suppose that chemical attraction and the attraction of gravitation, both depend upon one principle. Third : I know of no fact that proves that an ultimate atom of gold, or we'll say of platinum, (as a body of this is of greater specific gravity than any other body,) is not heavier than an ultimate atom of silver, or of any other kind of matter. I know of a fact which has been thought to prove that the ultimate atoms of all kinds of matter are of the same weight, admitting them to be of the same size. The fact is this—" Gold may, by being dissolved in nitro-muriatic acid, and having its solution transferred to ether, be made to remain equally suspended in every part of this ether, which is the lightest of all visible fluids."

But we know that in a minute particle of matter, there is infinitely more surface in proportion to the quantity of matter which the particle contains, than in a larger body : we know too, that liquids possess some degree of adhesive attraction. Some portion of water (and undoubtedly of ether, until it evaporates,) will adhere to the sides of a glass or gold vessel which stands upright. Now we believe that by virtue of this adhesiveness, ether may buoy up minute particles of gold which present a very large surface to be acted upon, in proportion to the quantity of matter which the particles contain ; and thus we account for this fact, which frees us from the necessi-

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ty of admitting that a piece of gold contains nearly three times as much matter as an equally large piece of the finest and most compact steel.

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CHAPTER VI.

On Union—Mechanical, Chemical, and Organical.

Matter unites with matter in three different ways—mechanically, chemically, and organically. These three kinds or modes of union are *essentially* different from each other. This we infer from the fact, that chemical union gives rise to properties which mechanical union does not, and organic union gives rise to properties which never arise from mechanical or chemical union. But in every case, certain things are necessary, in order that matter may unite with matter. That matter may unite mechanically, the several quantities must be brought in contact ; that chemical union may take place, the several ingredients must not only be brought together, but they must be in dissimilar electric states, and one or more of them must, in almost all cases, be either in a gaseous or fluid state ;—that matter may unite organically, organized bodies must previously exist.—We say, that as fire gives rise to fire, where fuel is present, so does organization give rise to organization, where food and other necessaries are not wanting.

If I be asked how the first organized beings of each distinct species came into existence, I answer,—God made them.

To instance a case in which mechanical union gives rise to what we call a mechanical property :—take water and gum arabic, put them together, and *viscidity* will arise, which is a mechanical property that did not before exist, either in the water or the friable substance, gum arabic.—By the chemical

union of sulphur and the elements of water, we have *acidity* and several other chemical properties which did not before exist, either in the sulphur, the oxygen, or the hydrogen.—The compound arising from this union is considered more important than the one arising from the mechanical union of water and gum arabic ; hence a particular name is assigned to it. It is called sulphuric acid, or oil of vitriol.

By the organic union of phosphorus, sulphur, lime, soda, chlorine, oxygen, carbon, hydrogen, azote, electricity, and several other elements, we have physiological or vital properties which did not before exist in either of the separate elements.

We wish it to be remembered, that we do not suppose that by union something MORE exists, but something DIFFERENT, and hence something new.

The most important, or at least the best known, physiological properties that result from organic union, are sensibility and contractility : the first a property of the nervous system ; the last, a property of the muscular system.

Now the only reason we have in any case for saying a body possesses a property, is because it may produce a change in some other body, or suffer a change in itself from the action of some other body. We do not suppose that sensibility is any thing *distinct* from the nervous system, or any thing superadded to it, any more than we suppose that acidity is something distinct from vinegar or the oil of vitriol ; but we say the nervous system is sensible or (meaning nothing more) possesses sensibility, because *conscient** actions may be excited in it by impressions upon the senses.

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* One reason, among others, for preferring the word *conscient* to the word sentient, is because the word sentient has been applied to actions of the nerves,—even the nerves of feeling,—only ;—but we mean by conscient actions, certain actions of the nerves and brain, one or both.

But what good reason the immaterialists have to say the nervous system possesses sensibility, I cannot divine ; for their "soul" or mind which they talk much, but know nothing about, might be acted upon by impressions upon the senses, if the nervous system possessed no property different from a piece of catgut, for aught any one can say to the contrary. They cannot say but that their *naked* soul, stuck on to the end of a stick of timber, would hear the scratch of a pin on the other end, as readily as when an ear, an auditory nerve, and a part of a brain, intervene between the soul and the timber ; yet no man would say a stick of timber possesses sensibility. According to the immaterialists, it is not the nervous system that senses and thinks, but some immaterial thing seated in the brain ;—why, then, in the name of reason, do they say the nervous system possesses sensibility ?

I know that immaterialists have made a sentence by putting together certain ambiguous words in a certain order, which *they* call an argument against materialism. Some of them say.—It is impossible to conceive how *intelligence* can arise from any union or motion of unintelligent atoms ;—others say, it is impossible to conceive how *sensibility* can arise from any motion or union of insensible atoms.

As to intelligence, I believe that the meaning of the word is so far from being generally agreed on, that if five hundred persons were to give each his own definition, no two would define it precisely alike. I believe that, as the word is generally used, it means nothing at all, or else means the same as the word knowledge ; and I believe a man's knowledge is nothing other than his sensorial tendencies. Hence a man may have knowledge or intelligence when he is asleep ; that is, when he does not think. Now it is much more conceivable that a material organ should have tendencies to act certain actions, than it is that an unextended or immaterial thing

should have such tendencies.—The reader will discover what we mean by sensorial tendencies, in another part of this work ; and he will then see that the materialist does not maintain that *intelligence* arises from any combination of unintelligent atoms.

As to sensibility, it is just as conceivable that this physiological property should arise from the organic union of insensible atoms, as it is that acidity, or any other chemical property, should arise from the chemical union of materials that were not acid prior to such union. And I may with all confidence add, that we have as much evidence, and the same kind of reason for saying, that the nervous system is sensible, as we have for saying that vinegar is sour.

It is astonishing that any man acquainted with chemistry, should be so inconsiderate or so hardy, as to assert, that it is impossible for sensibility to arise from any union of insensible atoms. The truth is, false notions got abroad thousands of years ago, and gave rise to language which has continued ever since, and which can but serve to perpetuate such notions. The expression, " sensibility *of* the nervous system," carries with it the idea of something *more* than—of something distinct from—the nervous system ; and it is exceedingly difficult to admit that something MORE can arise from any union of material elements.

As we are now upon the subject of organic union, we may remark, that it is less permanent than either mechanical or chemical union. Substances mechanically or chemically united, may remain a great length of time without undergoing any change. Putty is formed by the mechanical union of oil and an earthy substance ; blue vitriol is a chemical union of sulphuric acid with copper :—both these substances may be preserved from change an indefinite period. But in organized bodies, it is generally believed that internal changes are con-

tinually taking place,—particles of matter being united with, and constituting a part of the body at one time, and at another, taken up and carried out of the body: so that a certain man of to-day, will not be precisely the same man to-morrow, as it respects the particles of matter of which he is composed.

The addition of atoms which enter into the constitution of organized bodies, is called *nutrition;* their removal is effected by a process called *absorption.* When the nutrition exceeds the absorption, the body is said to *grow;* when the absorption exceeds the nutrition, it is said to *pine.*

Furthermore,—the peculiar properties of organized bodies or beings, depend on such nice proportions and arrangements of material elements,—some of which are invisible—that these properties may be annulled by changes in such bodies; which changes cannot be detected by the senses. Thus the nervous system shall be no longer in such a condition that conscient actions can be excited in it by impressions upon the senses, i. e. it shall become insensible; and yet it shall *appear* like a nervous system that is in a condition to act. The nice organization of a muscle, on which its contractility depends, may no longer exist, yet it shall look very much like a muscle in a condition to act, and shall still be called an organized body; but there is none of that organization there, which I speak of, for the most part, in this work.

I have said that the nervous system may cease to think and feel, and yet appear like a nervous system that is in a condition to act. In this point, I may be disputed by the medical faculty, and I doubt myself whether this ever can be, or at least ever has been;—we do not very often see the nervous system when it is in a condition to act; if we did, we might perhaps find that it looks as much different when it is dead, as the countenance does.

There is this incontrovertible fact: *No man ever dies with-*

oul previously suffering an important change in some one or more of his organs.

A man does not die because his "soul" flies away from him! The truth is, a man is alive, as we express it, when his organs are in a condition to act, and when they are not, he is dead. This is all. A man never dies until his organs suffer a change; if he did, it would be some little shadow of evidence of the existence of souls. If to die, is to have a soul fly off from the body, it is passing strange that in millions of instances it never once flies off when the body is in health.

Again: Organized bodies having suffered such a change that their physiological properties no longer exist,—they, sooner or later, according to their composition and their situation as to heat and moisture, undergo other changes which are more *obvious*, but not so *important*, as the first changes. These more obvious changes, which take place in bodies that have by previous changes lost their physiological properties, are chemical changes.

That vegetables and animals, after suffering such a change in their organization that their physiological properties no longer exist, soon undergo chemical changes, is a fact which some have brought forward as evidence of the existence of a *life, vital spark, or vital principle*,—meaning by this life, not a condition of a body, but a real independent being. Their talk is something as follows:—So long as the life of an animal remains in the animal, it *controls the laws!* of chemical action; but when this vital spark flies away from the organized body, then the laws of chemical action which have heretofore been controlled by it, exercise their wonted authority; and chemical changes commence. Now all this talk appears to me like so much nonsense—it is worse than absurd, for it is calculated to make some men think erroneously.—The truth is simply this: an organized body is a combination of material ele-

ments, combined and arranged in a peculiar manner, and in nice proportions. So long as it is duly supplied with food, warmth, air, &c. it may continue to be an *organized being*—to be what is called a living and healthy body. But if, from any cause whatever, even its own wear and tear, this healthy condition be in some degree changed, the properties and actions of the organized body are impaired ; if changed in a still greater degree, these properties and actions are not only extinct, but the body suffers further changes which it would not, had it not suffered previous changes.

Why certain proportions of certain material elements united in a peculiar manner, should not undergo such chemical changes as they would were one or more of these materials absent, or present in some other proportion ; or as they would if some other material should be added to them,—I can as well tell, and no better, as I can why a little salt added to fresh meat should prevent the meat from suffering such chemical changes that it otherwise would.

I may remark, that chemical changes do go on in organized beings very frequently, *before* such beings are said to be dead. Now if there be a "vital spark" in animals which "controls the laws of chemical action," (what an ambiguous expression!) why do these chemical changes ever take place before this mighty power quits the body ? The simple fact is: this vital spark is nothing more nor less than organization, and is of course something essentially different from what is to be found in the kingdom of inorganic matter.—It would be absurd to speak of organic union, and then say it is nothing essentially different from chemical or mechanical union.

It may be well to observe in this place, that the immaterial philosophers do not mean the same thing by the word life, that they do by the word soul. By the terms soul, mind, perceptive principle, or immortal spirit, they mean an imma-

terial thing which is superadded to the organized body, and which thinks, feels and moves the body while it is alive, flies away when the body dies, and senses and thinks, one or both, independent of the body. Whereas, by the terms life, vital spark, vital principle, generative principle, or "unknown power," (as Magendie calls it,) they do not mean any thinking thing; but an immaterial thing, but for which organized bodies would not be generated—would not grow—would not be kept in decent order as a tenement for the soul.

According to these philosophers, a vegetable has a life, and an animal a life and a soul. It is to be remembered, they hold that the life and the soul are two real entities—two agents which may act, may do something; and which are essentially different from any material agent, being even unextended.

Now whoever believes in the existence of souls, is an *immaterialist*, whether he believe in the existence of lives or not; and whoever believes in the existence of lives, is a *vitalist*, whether he believe in the existence of souls or not.

It may be worth our time to inquire why the belief in the existence of souls and lives, was ever so very general as it formerly has been; and even as it is at the present time among those who are but little acquainted with the anatomy and physiology of vegetables and animals.

We have shown, that as chemical combination is a peculiar mode of union which gives rise to properties that do not result from any other mode of union, so is organization a peculiar mode of union which gives rise to properties peculiar to itself. Owing to these properties, organized bodies exhibit phenomena which inorganic bodies do not. Men witness these phenomena, and are led to think that they must be referred to something which is not to be found in inorganic matter, as in truth they must. And in ancient times, when

men had a mean opinion of matter, chemistry not having taught them that by its union, all the peculiar properties of compound bodies arise, this something was supposed to be some immaterial or spiritual agent, which enters organized bodies, and dodges out again ; leaving them an inert and *lifeless* mass of matter, destitute of all vital properties.

This notion, we may easily suppose, would be very general ; for it was not the result of an abstruse speculation of one man, but it arose from witnessing phenomena which were present to all men. It was an opinion which the *book of nature*—an universal book—*seemed* to declare. This notion having become general, gave rise to language which has ever since served to strengthen and perpetuate it. And when we consider that men are too cowardly or too lazy to search into the truth of what every body believes—what nature at first sight seems to declare—what they have been taught from their childhood, by parent, priest and primer—what the language of all nations seems to confirm :—when we consider also, that the phenomena which first gave rise to the notion, are still every where present, and are even brought forward as *proofs* of its correctness—it is not very marvellous that this strange notion, not less groundless than those formerly entertained by witches, should be as prevalent as it ever has been.

Nevertheless, an opinion is nothing the truer for being general or ancient. The time was when all men thought falsely, so far as they thought at all, concerning the movements of the heavenly bodies ;—they took things to be as they appear to be. And it is one principal object of this work to show that all men who did not believe that man is constituted *entirely* of matter, do not believe things to be as they actually are in nature.

CHAPTER VII.

On Vegetables.

Vegetables are insensible organized bodies :—they are insensible, because they have no nervous system.

Their origin is not fortuitous ; but they arise from seeds, roots or slips which are bodies organized by a parent stock. By virtue of this organization, they possess certain physiological properties, so that when heat and moisture are present, they begin to germinate, and if surrounded by such food as they have an affinity for, they take it up, and by internal actions which can never be known to man except by their effects, this food becomes assimilated to the embrio plant, which being thus enlarged, its plumule shoots up from the surface of the soil, giving rise to the trunk and branches ; while the rostel shoots deeper into the soil, giving rise to what we call the roots.

Stones are said to grow ; but stones, and all other inorganic bodies which may be said to grow, grow by juxta-position of particles ; that is, the particles adhere to the outside ;—they do not enter into or pass by any part of the body to which they are about to be added. But with organized bodies it is not so. We presume that in all instances in which a particle of matter is united with an organized body, such particle first passes by some other particles which are already united with the body, constituting a part of it.

In what way the vessels of plants circulate their juices, it is not fully determined. The supposition, however, that these circulating vessels are contractile, best enables us to account for all the phenomena connected with the circula-

tion of their fluids. Still, so far as I know, the opinion that the sides of the vessels attract the fluids, that extremity of the vessel towards which the fluid flows, attracting with the greatest force, is far from being proved erroneous. Perhaps the fluids are circulated partly by attraction and partly by contraction. For my own part, I have no very positive opinion about the matter, except I confidently believe that the phenomena of vegetables, as well as of animals, are the effects of material causes—that there are no agents or operative beings in either but what are material. And I would furthermore maintain, that when I ascribe the peculiar properties of vegetables to organization, I give just as much an explanation of them, as he does who says they depend on a life or a vital principle. And there is this in my favor: we know there is such a thing as organization—such a thing as material elements united organically; but we have not the least evidence of the existence of a life. The hypothesis of life, also, gives rise to many difficulties—many unanswerable questions that cannot be asked, upon the supposition that vegetables are constituted entirely of matter: as we will now proceed to show.

The life of a vegetable being an entity distinct from the matter of a vegetable, from whence comes it, and where, and only where, does it reside? Does the life of each little shrub and plant come directly from the hand of God? And if so, did he create a life for every particular plant which ever has or ever will exist, at the time he "created *all* things?" or is he continually emanating fire-new lives for vegetables as they spring up! Does the life of a vegetable ever exist any where but in the vegetable? He that says it does, ought to be able to show some reason for his saying so. If it do not, what becomes of the life of a vegetable which dies—a vegetable from

which the "vital spark" flies away ?* Does it straightway dodge off into some other vegetable? When a man clears five acres of his wood-lot, do the trees on the remaining five acres take a start all at once, and grow faster, or discover any other signs of having received a new life.

To say that you destroy the life of a vegetable when you destroy its organization, would be saying what a *cautious* vitalist will not readily admit; for this would argue that the life of a vegetable depends on its organization, instead of its organization being caused, modified, and maintained by its life; which would be taking away the *supposed* evidences of its existence.

Nevertheless, this is the most rational method the vitalists can suggest for getting rid of their lives of organized beings when they die; therefore we will grant it—we will grant, whatever destroys the organization of a vegetable or an animal, destroys its life:—and then say:—

As there are no lives flying off from plants or animals when they die, and as it is very difficult to admit that the God of thousands of worlds is continually making new lives for the numberless plants and animals that are continually springing forth; and furthermore, as the lives of trees and men exist only in trees and men, (taking this last for granted, until there be some evidence to the contrary,) the question arises: from whence come the lives of new or young plants and animals, but from the seeds from which they spring? But it will not answer to admit that a vegetable derives its life from the seed from which it springs; for according to this supposition, we are driven to one of two pitiful alternatives: we must either admit that an apple seed, six thousand years ago, contained as

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* Whatever I may say relative to the life of vegetables, will apply with equal force against the life of animals, man not excepted.

much life, or as many lives, as all the apple trees and apple seeds that have ever originated, either directly or indirectly, from this seed ; or else we must admit, that when any seed begins to grow, new life begins to be generated. But it would be a fatal thing to *vitalism* to admit that life or lives are generated by the propagation or growth of vegetables or animals; for this would be making life to depend on organization, instead of organization on life.

Finally, to give the vitalists every possible chance to support their doctrine, let us make one more supposition, and the most rational of all that can be suggested. Let us suppose that at the time the Deity "created *all* things," he created one universal vegetable life, which pervades the air and the soil, from which vegetables draw their support,—not a distinct life for every species of vegetables ; for since there are thousands of species, this would be multiplying the machinery by which nature works her ends, to an unwarrantable degree.

The vitalists, then, cannot do better than to say, that one universal principle was created for organized beings, or else one for vegetables and one for animals.

I would now ask, how one and the same vital principle shall cause one seed to become an oak and another a thistle ? Oh, say the vitalists, this is owing to the nature of the seeds themselves.—Very good. But what do you mean by *nature* of seeds ? The vital principle is out of the question—there is but one —it must of course be the same in all seeds : I repeat the question,—What do you mean by *nature* of seeds ? Do you not mean their make or constitution ? Do you not mean their organization ? I think this question must be answered in the affirmative. If so, it follows of course that it is difference of organization that gives rise to all the differences between vegetables. This being made out, I care for nothing

more ; but those who choose to fire away their powder and shot in defence of an insignificant, brain-begotten vital principle, which is not capable of effecting any difference between organized beings, still have the liberty to do so. But I shall say that the word life, like the word soul, is a name without a thing.

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CHAPTER VIII.

General Remarks concerning Animals.

An animal is a sensible, organized body.†

This I consider a correct definition of an animal, and I shall adhere to it. But there are some instances in which it is difficult to determine whether a being be sensible or not, and of course to determine whether it be an animal or not. The reasons of this difficulty I will here attempt to show.

All the higher orders of animals, and perhaps all beings

† Being convinced of the importance of a correct nomenclature in the science of physiology, (which, in its broadest sense includes all I understand by metaphysics,) I regret that the word sensible, as well as the word sensibility, has been used in different senses. It has been used in the technical or physiological sense, as I have here used it, denoting a conscient being, or a being in which sensations may be excited by impressions upon its organs ; it has also been used in a popular sense, as when it is said of one who can discern nice relations, and think of all that relates to a subject, he is a *sensible* man. And when we say of a person on whom impressions produce more than an ordinary effect—a person whose finer feelings or social passions are easily excited, he is a person of great *sensibility* : we do not use the word in its strictest physiological sense.

The reader will find that in this work the words sensible and sensibility will seldom, if ever, be used in any other than their technical significations.

that are *truly* animals, possess a nervous system consisting of two parts, which, though materially connected, subserve two distinct purposes. The one part performs the functions of sensing and thinking; it is also instrumental in the production of *voluntary* motions; but the other part has no direct share in the production of the conscient phenomena, being wholly subservient in the production of *involuntary* actions, as the actions of the circulating vessels and the alimentary canal.

These actions are vital actions, or in other words, they are actions of contractile organs; but they do not necessarily suppose the existence of feeling or volition; that is, they may be, and indeed are performed without either. To distinguish these two parts of the nervous system from each other, the former has been termed the *nervous system of animal life*; the latter, the *nervous system of organic life*. It is not to be supposed, however, that these two systems are distinct from each other in any other respect than that of the offices which they fulfil. On the contrary, there are many nerves passing from the one to the other, and so incorporating them that those organs which receive their nerves from the organic system, undoubtedly receive along with them a few fibres from the animal or *feeling* system; and on this account these organs may be the seat of pain, when in a morbid state. But these few fibres from the animal system of nerves, do not appear to be necessary to enable these organs to perform their ordinary functions; for the actions of these organs are not directly nor generally controlled by the thoughts or sensations going on in the nervous system of animal life; nor are their actions ordinarily accompanied with any sensation. It appears that this connection between the two systems of nerves is designed, not for ordinary, but for extraordinary purposes. By virtue of it, inflammations and other diseases of the heart, stomach, bowels, liver, &c. cannot go on to a final termination without pro-

ducing pain; hence, by warning the individual of his danger, it may often be removed. By it, also, a man's passions may be expressed in his countenance, in a way which we shall attempt to point out in the course of this work.

Now as there is, in the higher orders of animals, such a thing as a nervous structure; such a thing as contraction; and such a thing as important and obvious vital actions *without* any sensation, thinking, or volition; so there may be beings of an inferior order which possess no nervous system of *animal* life, and of course are never the subjects of any consciousness; but which may nevertheless possess a nervous texture, an *organic nervous system*, and a power of acting—their actions being caused and controlled, not by thoughts, not by conscient actions of a brain—but by material stimuli, as are the actions of one's heart. Hence we may see organized automatons, possessing something that appears like a nervous texture, and yet not be sure that it is a sensible being—not be sure that it is an animal.

Here then lies one great difficulty in determining, in some cases, whether an organized being be an animal or not. Another difficulty arises from the fact that an impression which may excite a feeling, and a visible, and perhaps *voluntary* motion in one organized being, may excite in another organized being a visible motion without exciting any feeling:—we cannot see that action which constitutes a feeling; and if you touch a polypus, and the polypus contract, you do not know whether the impression which you make, acts *directly* as a stimulus on the contractile fibre, or whether it gives rise to the contraction through the medium of a *will*, as immaterialists would express it. The existence of the contractile texture in any being is no proof of the existence of a sensible texture in the same being.

If there be any organized automatous beings, which pos-

sess any part supposed to answer the purpose of a nervous system of organized life, but which are never the subjects of any consciousness, I would neither call them vegetables nor animals, but *zoophites*.

We desire to avoid any difficulties that might arise from not strictly adhering to our own definitions of terms. It matters not with us what materials a being is organized out of; what its mode of existence may be ; or in what way it may propagate its species: if it do not possess the physiological property, *sensibility*, we say it is not an animal.

Some writers have laid down sensibility and locomotive power as the peculiar characteristics of an animal ; but presently they find that some beings are able to move, in which no traces of a nervous system can be found, and which discover no signs of feeling ; others they find, which they call plants, but which discover signs of sensibility. They are now very much put to their stumps, to draw a line of distinction between animals and vegetables. But if these men would only adhere even to their own definition of animal, they would find less difficulty than they do. Instead of this, they define an animal in one place, and perhaps in the next line tell you that this definition will not hold good, because some other thing quite different is also an animal. I will here insert a passage to the point, from Good's Book of Nature.

" Yet if we hence lay down consciousness or sensation and locomotion as the two characteristics of animal life, we shall soon find our definition untenable, for while the Linnean class of worms affords instances, in perhaps every one of its orders, of *animals* destitute of locomotion, and evincing no mark of consciousness or sensation, there are various species of *plants* that are strictly locomotive, and that discover a much nearer approach to a sensitive faculty."

In this sentence Dr. Good has done as much as to say,—if

we call a sensible, self-moving being, an *animal*, we shall find our definition untenable; for there are many *animals* which have no locomotive power, and evince no mark of sensibility, as well as *some plants* which are locomotive and discover signs of sensibility. Now this is much the same as if I should define water, by saying it is a tasteless and colourless fluid, and then say this definition is untenable, for a sour and reddish fluid [vinegar] is water. Surely, if we define an *animal* a sensible, self-moving being, then no being is an animal which is not sensible and automatous, let it be called a worm, a watch, or what you please.

As to the stuff that animals are made of, it may be stated that there is nothing to be found in them but what is to be found out of them. We find that they are organized "out of the ground," or "the dust of the ground," as stated in Genesis, chap. 2, v. 7, 19.

Animal substances are analyzed, at the present day, in such a manner that it seems impossible for any thing to be lost, and we find that those animals which are not of the lowest orders, are constituted of the following elementary substances: phosphorus, sulphur, carbon, iron, magnesium, calcium, sodium, manganese, potasium, silicium, alumium, chlorine, oxygen, hydrogen, axote, caloric, light and electricity.

There is nothing to be found in man that is not to be found in other animals.

It has been a question with physiologists whether the blood, while circulating in a living animal, is a living substance or not; but this is the same as to inquire whether it be organized or not. For my own part, I believe the materials of the blood are united organically.

The process by which organized beings give rise to organized bodies, has been considered as very mysterious. But when and why is there any propriety in saying any thing is

mysterious? If we do not say it is mysterious that one body in motion puts another in motion by striking against it, then there is no propriety in our saying it is mysterious that any one event follows another, in case the event immediately follow; and if we expunge from the catalogue of mysteries, all cases in which one event immediately follows another, there will be no cases in which there is any propriety in talking of mystery, but those in which we *suppose* there are intervening events between two obvious events; which intervening events we cannot discover to our satisfaction. Whether, in the process of generation, there be any more events which we are unacquainted with, than there are in the processes of nutrition, volition, or absorption, no man can say. But if there be, they are events brought about by virtue of organization; and instead of racking our brains in conjecturing what they are, we say that the first male and female of each species of animals were organized by the Deity in such a manner as to be able to propagate their species; and if they were able to propagate their species, they were able to give rise to other animals like themselves, which, of course, were able to propagate their species in their turn, and so on, one generation giving rise to another, to the present time.

We ought not to look upon a germ or embryo as any thing *distinct* from the parent body with which it is intimately united, but as a *part* of such parent body. To be sure, it is in time to be separated from the body of which it is a part, by a *natural* process instead of an artificial one; but it is none the less a part of the parent body, so long as united with it on this account, than the hair on one's head, or one's own heart. A part (an ovum) of the female becomes developed, or in other words, grows so as to become a foetus, because all the parts concerned are excited into action by a peculiar kind of stimulus; but this is no more wonderful than that any other part

should grow when duly furnished with nutritive matter. And I may add—he who says generation is effected by the influence or operations of a "*nisus formativus* which vivifies and shapes the hitherto shapeless spermatic matter," as Blumenbach has said, no more explains to us the process, than another one does, who says the whole process is accomplished by material organs, which, by virtue of their organization, have the power of accomplishing it.*

As to the natural or original superiority of man over other animals, we may state in a few words in what it consists: it consists in having *hands* and a *better brain*.—All the conscient phenomena may be divided into two classes, *sensing* and *thinking*. To sense, is to have a sensation, that is, to have a conscient action of a nerve and the brain; to think, is to have a conscient action of the brain alone. Judging or reasoning, remembering and imagining, are but modes of thinking: indeed we can scarcely call them different modes, for as it respects what goes on in the head, there is no *essential* difference between remembering, judging, imagining, and simply thinking. When a man is said to remember, imagine, &c. nothing other occurs in the brain than one thought [one conscient action of the brain] after another; but because these thoughts may occur in different orders, because they may relate to different subjects, and because of other things which I cannot here mention to advantage,—the terms remembering,

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* It may be remarked, that, *by virtue of organization*, means as much, and no more, as, *by virtue of those properties or powers which arise from organization.*

What, for instance, can be the difference between saying *the nervous system feels by virtue of its organization*, or *the nervous system is so organized as to be able to feel*, or, *sensibility arises from the organic union of matter as it occurs in the nervous system, and on account of its sensibility, the nervous system may feel?*—Sound excepted, there is no difference.

judging, imagining, &c. have got into use. Nevertheless, we are not to suppose that any more than one single thought occurs in a man's head at the same identical instant ; and as to double, or compound, or *complex* thoughts or ideas, there are no such things. Now all modes of thinking, if such they may be called, evidently go on in all animals, from a man down to a mouse, and even several grades lower. But they do not go on in the same degree of *efficiency*, if I may use the best poor term I can think of, in the lower orders of animals, that they do in man--owing to their not having the knowledge, i. e. the *sensorial tendencies* of a man.

I know it is very fashionable with the *unfeathered bipeds* to extol human reason as a divine endowment, peculiar to their own species ; but so far from their ever knowing what it is, I very much doubt if two out of a thousand would define it precisely alike. I am sure I should give the word reason a definition altogether different from the sense in which it appears to be generally used.

We have not enumerated the faculty of communicating ideas by signs, that is, by articulate sounds and marks on paper, as a *natural* endowment of man which gives him superiority over other animals ; for as the vocal organs of other animals, and of the deaf and dumb of the human species, appear to be as perfect as those of any men, we have good reason to suppose that if a man had the brain of a horse in his skull, he could no more articulate than a horse ; and if he could not, and had also the anterior hoofed extremities of a horse instead of arms and hands—why, then, if *all* men had always been so formed, we should have had no more language than horses have. Hence we see that the *natural* superiority of man does not, even in part, consist in the *acquired* faculty of communicating ideas.

I know that some have advanced the very irrational notion,

that man first received his language directly from heaven; but its origin can be very satisfactorily accounted for, without such a supposition as this. The hand is what has enabled men to bring their language to the present state of perfection.

Among our remarks relative to animals in general, we may state, that the intellectual or *conscient* functions of the brain, are performed in a manner more or less perfect, according to its natural make and condition. We say, according to its condition, for the brain of the same individual is not at all times in the same condition or state. It is not in such a state in infancy and old age as in middle life; and like all other parts of the body, it is liable to be diseased.

As to original make, the brains of individuals who belong to the same species, widely differ. Some men, for instance, have a good large plump brain, as indicated by a high forehead, standing well forward, the temples being full and distant. A person with such a head, you might take for a natural genius without much risk of mistake, if you only knew that the internal organization of his brain is good, and is not enveloped by uncommonly thick skull and membranes; but as some brains are, as we may say, phlegmatic, and not very active—not easily and readily acquiring strong *sensorial tendencies* by exercise; and as others may be enveloped in uncommonly thick skull and membranes, a large head, even on a small body, is not a sure indication of natural superiority as to thinking abilities. So on the other hand, a man's head may be rather narrow, from temple to temple—his forehead may be low, and soon receding back, and his eyes, instead of being sunk, as it were, into his head, may be nearly as nigh to you as the *superciliary ridges* of his *os frontis* which arch over them; still such a headed man may "know something;" but as a general rule, you may conclude there is no great share of original *susceptibility* in such a looking head.

As to the condition of the brain, it is never altered from a state of health without a corresponding alteration in its ability to think. In infancy it is softer, and in old age it is more dry and rigid than in middle age ; and at these two periods it performs its functions as imperfectly or feebly as do the other organs of the system at these periods. Diseases, injuries, and spirituous liquors, disenable it for performing its intellectual functions at all, or cause it to act very feebly and irregularly—as we see in cases of asphyxia, apoplexy, hydrocephalus, ebriety, compressed brain from depression of a part of the skull, &c. The brain (and consequently is functions,) is also under the influence of sex and climate, as are the other organs of the system. Finally, we may lay down the position (which, if disputed, can never be refuted,) that we have just the same kind of evidence that sensing and thinking are functions of the nervous system, as we have that the secretion of bile is a function of the liver, or the secretion of urine a function of the kidnies. And there would be just as much sense and propriety in my saying the bile is secreted by a biliary agent distinct from the liver, as there is in immaterialists saying that thinking is performed by a soul, mind, or thinking agent distinct from the brain. Nor do immaterialists better the matter by acknowledging, as some of them have, that it is as much a function of the brain to think, as it is of the liver to secrete bile, *provided* they add—the brain is enabled to perform this function by the superaddition of a "percipient principle."—A distinct agent is a distinct agent, call it by what name you please, whether mind, soul, percipient principle, or something else. If immaterialists say that the brain is enabled to think by means of a percipient principle superadded, I will say the liver is enabled to secrete bile by means of a *bile-secreting principle* superadded, and then ask them how this sounds.

As I design to establish the principles of materialism, by giving a satisfactory explanation of the conscient phenomena of man in health and disease, upon these principles—I shall not attempt to point out the differences in the size, shape and complication of the nervous organs in different species of animals, showing, as others have already done, that these differences are exact criteria of the differences in their thinking abilities. I will here remark, however, that as the thinking abilities of man are superior to those of any other species of animals, so is his brain larger, in proportion to the amount of nervous elongations that proceed from it, than the brain of any other species of animal.

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CHAPTER IX.

On the Nervous System.

The nervous system consists of several parts between which there are obvious marks of distinction; but we consider them as parts of *one* system, because they are not entirely separated by the intervention of any thing that is not of the nervous texture. Different parts of the nervous system perform different functions; hence the reader will not be surprised to hear us speak of the *organs* of the nervous system. Indeed, custom justifies us in speaking of *two* nervous systems in the same animal—a nervous system of animal life, and a nervous system of organic life, as an ingenious French physiologist has called them.

The Nervous System of Animal Life consists of the brain which fills the skull; the spinal marrow—or more properly, spinal cord—which extends from the brain through the whole

length of the vertebral column; and all the nerves which proceed from the brain and spinal cord. These nerves are distributed more or less plentifully to every part of the body in which a sensation may be excited.

The brain is a pulpy body of very irregular figure, having a number of projections and depressions, corresponding partly with the irregularities of the skull, and partly produced by convolutions and cavities in the brain itself. Scarcely any thing is known with respect to the use of these projections and depressions; therefore we shall not give a particular description of them; nor shall we describe the membranes which envelop the brain and dip into its fissures—some of them entering and lining what are called the *cavities* of the brain. But it is necessary to remark, that what I have here called the brain, is generally described as consisting of four principal divisions, called *cerebrum*, *cerebellum*, *pons Varolii*, and *medulla oblongata*.

The cerebrum completely fills the upper part of the cavity of the cranium or skull, being several times larger than the other three parts collectively. It is divided into two equal parts, called *hemispheres*, which are separated vertically by the *falx*, a membrane which dips down from the skull. This vertical separation does not extend through the whole depth of the cerebrum in its central part, but it divides it completely before and behind. The under surface of each hemisphere is divided into three *lobes*, an anterior, middle, and posterior. The cerebrum, and the cerebellum also, consists of two substances of different colours and consistence; one of which is for the most part exterior to the other. The exterior substance is of a light brown colour, very vascular, more soft than the inner, and has a glandular appearance when examined by the microscope: it is called the *cineritious* or *cortical* substance. The lower and central portion of the cerebrum

is white, and in man is larger in proportion to the cortical substance, than in other animals. In the fœtus it is less abundant in proportion to the cortical substance, than in the adult. It is called the *medullary* substance.

I mention these different substances of the brain, because as, in the same species of animals, like structures have like appearances, and perform like functions, it may be inferred from this fact alone that the cortical and medullary portions of the brain perform different functions;—and we have good reason to suppose that the cortical secretes a subtile fluid, but is not sensible, while conscient actions take place in the medullary portion. Take an animal and slice off portions of the cortical part of its brain, and it will exhibit no signs of pain, nor will you destroy its ability to think and move; but when you get pretty well down into the medullary part, you produce pain and contractions of the voluntary muscles, and finally destroy the animal's ability to think and move, that is, kill it.

Below the cerebrum and cerebellum, we find the *pons varolii*, which is formed by processes from the cerebrum and cerebellum. From this part the *medulla oblongata* proceeds downwards and backwards under the cerebellum. The medulla oblongata soon reaches a large hole an inch or two posterior to the centre of the base of the skull, called the *foramen magnum* of the occipital bone. As soon as the medulla oblongata passes this foramen, it enters the spinal canal, and takes the name of spinal cord, or spinal marrow.*

* "The most striking character of the human brain is the prodigious developement of the cerebral hemispheres, to which no animal, whatever ratio its whole encephalon [the whole contents of its cranium] may bear to its body, affords any parallel.

"It is also the most perfect in the number and developement of its parts; none being found in any animal which man has not; while several of those found in man are either reduced in size, or

From the lower part of the brain proceed nine pairs of nerves, most of them from the medulla oblongata, some from the cerebrum, but none from the cerebellum. These nerves are white cords, consisting mostly of medullary matter ; and it is impossible for the anatomist to trace them to one common centre or point in the brain ; but there can be no doubt but that they all have a connexion with that part of the brain which we shall call the sensorium, when we get to the chapter on sensation. To enumerate these nerves in order, commencing with the most anterior :—The first pair are the *olfactory nerves ;* they proceed to the organ of smelling, and are distributed to the membrane which lines the nasal cavities, called the Schneiderian membrane. They are so organized that odours, by coming in contact with this membrane, excite such conscient action in them, and consequently in the brain, as constitutes the sensation called smelling.

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deficient, in various animals. Hence it has been said, that by taking away or diminishing, or changing proportions, you might form, from the human brain, that of any animal ; while, on the contrary, there is none from which you could in like manner construct the brain of a man.

" It approaches the most nearly the spherical form. That the nerves are the smallest in man in proportion to the brain, has been already pointed out ; the brain diminishes, and the nerves increase from man downwards, in the scale of animals. In the fetus and child the nerves are proportionally larger than in the adult. The assertion that the human brain has the largest cerebrum in proportion to the cerebellum, does not seem correct. It has, however, the largest crebrum in proportion to the medulla oblongata and spinal cord, with the single and indeed singular exception of the dolphin.

" In the animals mentioned below, the weight of the cerebullum is to that of the cerebrum as follows :—

Man,	1—9	Mole,	1—4 1-2	Cow,	1—9
Dog,	1—8	Baboon,	1—7	Wild Boar,	1—7
Horse,	1—7	Sheep,	1—5	Beaver,	1—3
Hare,	1—6	Mouse,	1—2	Rat,	1—3 1-2

LAWRENCE'S *Lectures on Zoology, &c.*

Behind the olfactory nerves are the *optic*. These are the nerves of vision. They pass through holes in the back part of the sockets of the eyes, and through the thick strong coat of the eye ball. Here they expand each into a semi-transparent, pulpy membrane, called *retina*. Rays of light passing through the anterior transparent coat, and through the humors of the eye-ball, fall upon the retina and excite that conscient action in the optic nerves and brain which constitutes seeing.

The optic nerves in passing from their origin to the eyes, run towards each other, and either cross each other so that the one which arises from the right side of the brain, goes to the left eye, and vice versa ; or else having united with each other without any interchange of fibres, they again recede, each nerve forming in its course to the eye an obtuse angle. Anatomists are not agreed as to the nature of this union ; but there are pathological facts which favor the opinion that they cross each other.—In many instances in which the vision of one eye has been destroyed by some disease or injury of the brain, or of an optic nerve before its union with its fellow, such disease or injury has been found by dissection to be on the side opposite the affected eye.

The *third* pair of nerves are distributed to the muscles which are attached to the eye-ball, and roll it upwards and downwards, inwards and outwards.

The *fourth* pair of nerves are so small that they appear like sewing thread. They are exclusively appropriated to a small muscle of the eye.

The *fifth* pair of nerves are the largest nerves that arise from the brain ; they have a very extensive distribution about the scalp, face and mouth—going to muscles, membranes, glands, skin, &c. It is important to mention that the immediate organ of taste is a branch of the fifth pair of nerves.

This branch, which is distributed to the tongue, is called the *lingual* or *gustatory* nerve. An anatomist of Rome, Columbus I think his name was, once had an opportunity to dissect a man who never had any power of tasting—all foods and drinks exciting no other sensation in his mouth than that of feeling. The gustatory nerve was found wanting.

We here see, in the case of the fifth pair of nerves, that branches of one and the same nerve are the immediate organs of two different kinds of sensations, tasting and feeling. Hence we have reason to suppose, that it is difference in the organization of the organic extremities of nerves, that enables one nerve to be excited by one class of agents, and another only by agents altogether different.

The *sixth* pair of nerves are small, and pass to certain muscles of the eye; but before they reach the eye they send off a small twig, which, being joined by another small twig from a branch of the fifth pair, passes out of the skull through the canal which admits the carotid artery, and unites with the upper extremity of the upper cervical ganglion, which ganglion is a nervous body belonging to the *nervous system of organic life.*

We may consider the upper end of this ganglion as one extremity of the organic nervous system, and these twigs from the fifth and sixth pairs constitute one of the several communications between the animal and organic systems.

The *seventh* pair of nerves comprises two distinct cords on each side, which have very different destinations; and have, therefore, been considered, by several anatomists, as different nerves. One of these nerves is appropriated to the interior of the ear, and is the proper *auditory nerve.* The other is principally spent upon the face, and has been called the *facial;* they are, however, more frequently called the *seventh pair,* owing, I suppose, to their passing from the brain nearly

in contact, and their making their exit from the cavity of the cranium, through one foramen. But there is a great difference in their texture ; hence one is called the *portio dura*, or hard portion, and the other *portio mollis*, or soft portion. It is the *portio mollis* that is the essential organ of hearing. It terminates in a pulpy expansion on the internal surface of certain sacs and canals, which constitute parts of what is called the *internal ear*.

To give a particular description of the apparatus of hearing, would be to enter into one of the most difficult parts of anatomy. We might say a great deal, and then not be understood but by those already acquainted with this apparatus. But it is necessary that we define the names of certain agents and actions concerned in the production of hearing.

A sound is a vibratory motion impressed on the particles of bodies by percussion, or any other cause. When the particles of any body have thus been put in action, they communicate it to the elastic bodies which surround them ; these act in the same manner, and thus the vibratory motion is communicated, oftentimes, to a great distance. Elastic bodies alone, generally speaking, are capable of suffering that vibratory motion of their particles which constitutes sound. If these vibrations are not equal to thirty in a second, they will not give rise to that action in the auditory nerves and brain which constitutes hearing, or in other words, they do not constitute sound, according to our dull organs. Some have used the word sound, not only to denote the cause of hearing, but the sensation itself; but this use of the word is improper, and has given rise to disputes about such questions as this : when a tree falls in the wilderness, is there any sound if there be no animal within miles of the tree?

Now the use of the external ear, or what is commonly called *the ear*, is to collect the sonorous vibrations of the air, and

direct them into the *meatus auditorius externus*, which is a canal leading to the *membrana tympani*, which is a tense, thin, circular membrane, stretched across the inner extremity of the external meatus, forming a complete partition between this canal and the *tympanum*, which is a cavity that constitutes what anatomists call the *middle* ear. Across this cavity is extended a chain of very small bones, one end of which chain is attached to the centre of the membrana tympani, the other end to the membrane which closes the *foramen ovale*. Pass this membrane, and you are in the *vestibulum*, which is a central cavity or point, where all the other cavities of the internal ear communicate. These cavities are lined with a pulpy expansion of the auditory nerve, and are filled with a limpid fluid, called the fluid of Cotunnus.

Now when vibrations of elastic bodies, such as the air and liquids, make impressions upon the membrana tympani, an action is communicated to the chain of bones, as well as to the air in the tympanum ; (for the tympanum receives air through a tube reaching from the back part of the mouth ;) this chain of bones transfers the action to the membrane that closes the foramen ovale, and this again to the fluid of Cotunnus, and this to the auditory nerve, and this again to the brain; and thus is that action excited which constitutes the sensation called hearing.

The *eighth* pair of nerves is often called the *par vagum*, on account of its very extensive distribution. This nerve sends branches to the muscles which constitute, in part, the organs of respiration and voice ; it also sends important branches to the nervous system of organic life—branches which assist nerves of this system in forming net-works or *plexuses*, as they are called ; which are nervous cords uniting with each other in all directions, leaving little spaces or *meshes* between. From the plexuses, which branches of the eight pair of nerves

assist in forming, nerves proceed to the lungs, heart, and stomach. On this account the powers of these organs to perform their functions may be impaired or even destroyed by tying or dividing the eighth pair of nerves in the neck; and it is *partly* on this account, too, that these organs, particularly the heart and stomach, may be influenced as they are by the passions.

When we say that the power of the heart, lungs and stomach, may be *destroyed* by dividing the eighth pair of nerves, it must not be supposed that this division destroys these powers directly and immediately; but it must be remembered, that the powers of the heart, lungs, stomach, and also of the muscles of respiration, and even of the voice, have such dependences on each other, that when one power is impaired, another suffers on this account, and then another, and so on, until you get round to the first impaired organ, each imperfection mutually increasing each.—Surely, to divide the eighth part of nerves can have no *direct* influence on the muscles of the lower extremities; yet if this division occasion death, we must admit that it has a very great influence on these muscles in the end. No important organ in the animal system can be impaired, without having more or less influence, direct or indirect, on all the others. However, we do suppose that the division of the eighth pair of nerves has a direct influence on the heart, lungs, stomach, and many of the muscles of respiration and voice; but yet, if the functions of these organs were independent of each other, this influence is not such as to destroy life, or even to *destroy* the functions, or more properly, the powers of *one* of these organs.

The *ninth* pair of nerves is chiefly distributed to the muscles about the neck and mouth.

Thirty pairs of nerves, proceeding from the spinal cord, and of course belonging to the nervous system of animal life, are

not yet noticed. To give a particular description of the several plexuses formed by these nerves; to point out the particular parts to which they are distributed; or even to name all these nerves, is not necessary on the present occasion.

We must state, however, that they send several twigs to the nervous system of organic life, and, putting aside those parts which receive nerves directly from the brain, these spinal nerves go to all parts of the body *endowed with feeling or voluntary motion;** but they do not go *directly* nor plentifully to all organs which possess any degree of sensibility or contractile power, as we shall see when we come to treat of the nervous system of organic life.

Among the parts entirely destitute of sensibility, we may reckon the bones, cartilages, and tendons, to mention no other. These parts are destitute of nerves; and it is on this account that no conscient action—no feeling—can be excited in them; you may pinch, pull, cut, or burn them, without producing pain or any other sensation, if you do it without making any impression on the neighboring parts which are sensible. It has been said that when these parts are inflamed they are painful; but some, if not all, of the most learned modern physiologists, consider this opinion erroneous. The truth is, (as they believe,) when these parts are diseased, they irritate the nerves of the surrounding parts, and thus give rise to the pain. Should any fact ever prove that these parts, when inflamed, are the actual seats of sensations, then it would prove that they receive nerves, either by way of the coats of the nutritive vessels which enter them, or else nerves so very

* I trust the reader is already aware of the imprecision of the above expression in italics; but such is our present language that I must use it, to avoid much circumlocution. A feeling and a voluntary motion are both *actions;* and it is bad enough to be under the necessity of saying a part is *endowed with power;* but it is worse still, to say of a part, it is *endowed with an action.*

small, and of colour so like that of the parts themselves, as not to be discovered by our senses ; and we should be under the necessity of admitting that inflammation of these parts may so affect their nerves, that conscient actions may be excited in them.

Some circumstances connected with the anatomy of the brain yet remain to be noticed ; one is, the great quantity of blood transmitted to it by the arteries. Haller concluded that one fifth of the blood of the whole system went to the head, although the weight of the human brain is not more than one-fortieth of that of the whole body ; but admitting the brain to receive only one-tenth of the blood, this will be a very great over-proportion. The great quantity of blood received by the brain is one evidence that this organ performs very important functions ; and as those organs which secrete fluids, and which are called glands, receive large proportions of blood, we have additional reason for supposing that one function of that complicated organ, the brain, is to secrete a nervous fluid—we believe, as we have said, that it is the cineritious part of the brain which secretes this fluid.

Another circumstance is, that the brain has no lymphatic absorbent vessels, at least, no such vessels can be discovered, even with the aid of a microscope ; and considering the size of the brain, and the great quantity of blood which it receives, we should expect its absorbents, if it had any, would be pretty large. But as this fact has some relation with the phenomena of remembering, we shall advert to it in another place.

As to the chemical and physical properties of the nervous matter, they are obviously peculiar to itself, unlike what we meet with in any other of the constituents of the body ; but wherever it is to be found, it exhibits nearly the same properties. It is generally agreed that the medullary part of the brain is fibrous, and that these fibres are placed in such a di-

vection as to converge towards the base of the brain. It appears from the microscopical observations of several physiologists, that these fibres are chains of globules, connected together by a peculiar glutinous substance.

A fibrous structure is discovered in the spinal cord, though less distinct than in the brain. The fibrous structure of the nerves of animal life is very obvious; but the ultimate nervous filament is not supposed to be a chain of globules, like that of the brain, but a cylindrical canal, containing a viscid pulpy matter. With respect to the nerves of *organic* life, and the branches of the eighth pair from the head, (which branches, after assisting in forming a plexus, go to involuntary muscles without entering a ganglion,) the disposition of their fibres differs from that of the other nerves. These fibres, instead of being straight and parallel, are irregularly connected with each other and twisted together.

As to the *use* of the nervous system of animal life, it is not our intention to say much in this place. But it may be well to just glance at some of the effects which arise from certain experiments, diseases and injuries.

By dividing or compressing, as by a ligature, the nerves going to any part or organ, you destroy the power of such organ to sense. Tie the olfactory, optic, auditory and gustatory nerves, and you disenable the animal to smell, see, hear, and taste. Tie all the other nerves from the brain and spinal cord, or instead of tying these last, tie the cord as soon as it issues from the foramen magnum, and you destroy, as we may say, the sensibility of every part of the body; and not only so, but you completely disenable the animal to move.—If the animal might still think, not a muscle could he contract; of course, not a member could he move, though he *will* to move them ever so greatly.

Were it possible for an infant to be born and to grow to the

size of an adult, with a ligature, or something to the same effect, around every nervous elongation that proceeds from the brain, such being would never be the subject of any sensation, thought, or emotion—in a word, would never be the subject of any more consciousness than a block of marble; and, let his muscles be ever so good, he would no more possess the power of locomotion than any other body you can mention.

This is no speculation—it is plain matter of fact, as every physiologist well knows;—he is as certain of it as the astronomer is that the earth turns on its own axis.

If, by any means, the lower and central part of the brain be compressed, all consciousness ceases until such pressure be removed. If the spinal cord be compressed in its course, all parts receiving nerves that issue from below this spot, can no longer feel nor be moved by the will.

We have said that a great proportion of the upper part of the brain may be removed without immediately affecting the animal's ability to think and move; but it is not so with the lower and medullary part. And the lower down you get, the more mischief to these powers do you do; but yet it is proper to mention that this lower part of the brain will suffer very *gradual* changes, in what may be called its mechanical or physical organization, without affecting its functions so much as the effects of sudden changes would lead us to expect.

The fact is, whatever operates suddenly on organized bodies, affects their nice internal, *physiological* organization more, in proportion to the effects produced on its physical or mechanical structure, than causes which operate gradually—giving the organ, as we may say, some chance to accommodate itself to the change. Now it is this *nice*, *internal*, *physiological* organization, that is the very *life*, *soul*, and *power* of organized bodies.—It matters little what shape or condition

you may force an organized body into, provided you do not injure its internal organization.

The Nervous System of Organic Life consists of two chains of ganglions situated within the body, one on each side of the spinal column; and of the infinite number of small nerves which proceed from these ganglions.

The ganglions are little reddish or greyish bodies, of a texture which has nothing in common with that of the cerebral substance, being rather spungy than pulpy. These bodies, as well as the nerves which issue from them, possess but a very low degree of sensibility. Bichat has shown that they may be powerfully irritated in a living animal without the animal exhibiting signs of suffering; but if you irritate a nerve from the brain or spinal cord, the animal instantly cries out and struggles. I think it more than probable that what little degree of sensibility the organic system possesses, is owing to the many twigs which it receives from the animal system.

It must be remembered that the nerves of any organ are what enable the organ to sense,* and although it is a common way of speaking, to say of such organ, *it is sensible*, still it is sensible inasmuch as it possesses sensible nerves; and *it* is no more sensible than the nerves which it possesses. Hence the lungs, heart, stomach, liver, spleen, bowels, in short, all those organs which receive the principal part of their nerves from the organic system, possess but a low degree of sensibility, especially in a healthy state. We do not feel the blood pour into the heart; we do not feel the contents of the bowels moving downwards; we do not feel any of the healthy actions

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* *To feel*, is to have only one of the five kinds of sensations, but *to sense*, is to have any sensation: hence, in some cases, the latter term is far preferable to the former.—We say there are five *species* of sensations.

of those organs contained in the two great cavities of the body—the *thorax*, which is above the *diaphragm* or midriff, and the *abdomen*, which is below the diaphragm.

The ganglions strung along on each side of the spine, from the upper part of the neck to the lower part of the pelvis, are united with each other *directly* by a nervous cord that proceeds straight along, from one ganglion to another. Each ganglion gives off several nerves, and these nerves, proceeding from the ganglions on each side of the spine, form several important plexuses; and from these plexuses proceed nerves to the thoracic and abdominal viscera. And although several of the viscera, as the heart, stomach and bowels, are muscular organs, they cannot be excited into action or stopped, by any thinking going on in the head, or, to use the more convenient, but less correct language of the schools, these muscular organs are not under the control of the *will:* hence they are called *involuntary* muscles.

The ganglions, like the brain, are supplied with a large proportion of blood, and I believe their office is, not to unite nervous fluids coming from different quarters of the nervous system of animal life—a thing which might as well be effected by a plexus—but to secrete a nervous fluid. Concerning this matter we shall say more, when we come to treat of the relation between the nervous and muscular systems.

CHAPTER X.

On the Muscular System.

We have already said that the contractile texture is the most important texture in those organs called muscles or muscular ; we have also shown that we mean by contractile texture, a texture that may be excited to contract by a stimulus.* We think it proper to call every organ in the animal system, which possesses the contractile texture, a muscular organ, whether custom approve of our doing so or not.—Hence, to determine whether an organ be muscular or not, we do not pick it to pieces, and squint at it with our poor eyes, to see if we can discover good large red fibres ; but we query whether or no it contract on the application of a stimulus. Should the organ be so minute, so situated, or its contractions so trifling, that we cannot discover its contractions with our senses, we consult reason.—Should there be several facts which may better be accounted for by supposing such organ to contract, than in any other way ; and if there be no one fact to prove that such organ does *not* contract, we conclude that it contracts, and of course, call it a muscular organ.

In man, and in all the higher orders of animals, there are two muscular systems, differing essentially from each other in form, in texture, in the nature of the stimuli by which they are excited into action, and in the functions which they perform.

The muscles of one system are under the control of the will, and are called *voluntary* muscles, or *muscles of animal*

* See pages 44—45.

life, and we may sometimes call them the *solid* muscles. The muscles of the other system are not under the control of the will, and are called *involuntary*, *hollow*, or organic muscles.

The *Voluntary Muscles*, by their contractions, give rise to all those actions which a man may perform or not perform, as he chooses. They are not immediately concerned in the circulation of any matter, either fluid, pultaceous, nutritive, or excrementitious; hence they are not immediately concerned in the growth and nutrition of the body: they are immediately concerned in procuring the materials for this nutrition; but the muscles of organic life work upon these materials and distribute them to every part of the body. As it is by the aid of the system of voluntary muscles that we act upon surrounding bodies, and even express our thoughts and sensations to our fellow beings, or in other words, as it is by this system of muscles that we maintain a relation with the world around, it may with propriety be called the *muscular system of relation*,—an appellation already given it by the French physiologists.

This system of muscles, including its vessels, (which indeed are little muscular organs of the organic system,) is of more considerable size than any other system of organs in the animal economy. Besides the numerous regions that these muscles fill, they are generally spread out under the skin, and protect, like it, the adjacent parts, and like it, can bear the action of external bodies without the fatal consequences that would arise from a lesion of the deeper seated organs which they defend.

From the external form of these muscles, they may be divided into long, broad and short. The long ones occupy in general the limbs; they are situated in a sort of fibrous gutter which retains them powerfully, so that when they contract, they do not displace themselves as they otherwise would.

They are in general much thicker in their middle than at their extremities ; this arises from the abundance of fleshy fibres at this part, which fleshy fibres are the proper muscular or contractile fibres. As you proceed towards the ends of these muscles, the contractile fibres become less numerous, until, in many instances, they wholly disappear ; and what ekes out the muscle and attaches it to the bone, is a strong, compact, white cord, which is of a nature altogether different from the middle or belly of the muscle.

This cord is destitute of sensibility and contractility, two important physiological properties, both of which are possessed by the belly of the muscle.—It takes no active part in the production of motion, and when separately considered, we call it a *tendon*, and should never think of calling it a part of a muscle, were it not for the inconvenience that would arise in describing the muscles, if we did not consider them as including this part.

In some instances the tendon of a muscle is longer than the fleshy or contractile part.

The long muscles almost always have both of their ends attached to bones ; and in all such instances, they pass by an articulation—[an articulation is the union of one bone with another]—an articulation, too, which admits of a motion between the bones articulated. This is what we should expect, knowing that the use of these muscles is, by their contraction, to move one bone upon another, and thus to produce the motions of the body. Now when a muscle contracts, it does not move both bones to which it is attached, but it moves one bone upon the other ; and in speaking of the attachments of a muscle, we say it *arises* from that bone which generally remains stationary when the muscle contracts, and that it is *inserted* into the bone which it moves.

I may here remark, if you divide a muscle in a living ani-

mal, or an animal that has been but a short time dead, the divided ends will retract from each other,—the limb to which the muscle is attached being in its natural extended position. This retraction is owing to the organization of the contractile part of the muscle, and not to that of its tendinous part. There are several facts relative to this retraction of the ends of a divided muscle, worthy of notice. If the animal be in a weak and sickly state when the muscle is divided, the retraction will not be so great as if the animal were strong and healthy. And in case the animal have recently died, the retraction will be infinitely less if its death were occasioned by a stroke of lightning; by a diffusible and active poison, as prusic acid; or by any cause that *instantly destroys the secretion of nervous fluid*, than if occasioned by some other cause.

Owing to the above mentioned facts, some physiologists have ascribed to muscles a *physiological* property which we have not mentioned, and which they called tone, or tonicity. And it must be admitted, that if the extended state of a muscle be its natural state, the retraction which we have mentioned is not one of those facts which lead us to say a body is elastic or possesses elasticity—see p. 44. Consequently this retraction must be ascribed to a property peculiar to organized beings, that is, a physiological or vital property. But instead of giving muscles a peculiar property besides their contractility, on account of this retraction of its divided ends, I would attribute it to that organization on which their contractility depends, and say it is a manifestation of contractility without a stimulus.

The *broad voluntary* muscles occupy in general the parietes or walls of the cavities of the animal system, as those of the thorax or abdomen. They form in part these parietes, defend the internal organs, and at the same time, by their mo-

tions assist their functions. Their thickness is not great, most of them appearing like muscular membranes.

The *short* muscles are those in which the three dimensions are nearly equal, having a thickness in proportion to their width and length. They are generally found in places in which much power is required, and but small extent of motion permitted.

The muscles which we have been speaking of are each enclosed in a sort of membraneous sheath, and for the most part are separated from each other to some little distance by the interposition of cellular membrane—the many little cells of which are sometimes filled with fat. But more than this, the muscles themselves are formed of bundles of fibres called *lacerti*, each of which is also enclosed in a sheath of membrane ; these lacerti are also divisible into still smaller bundles, and these again into smaller, apparently without any limit,—each bundle still having a very delicate membrane of its own.

Physiologists suppose, however, that there is an ultimate muscular fibre, which has its own nervous twig and its own capillary, nutritive vessel ; and much speculation about the nature of this fibre has been offered. But at present we will speak of such fibres, or rather bundles of fibres, as may be distinguished by the naked eye.

In some muscles, even very long ones, the fibres run the whole length of the fleshy mass ; but in other cases they have an oblique direction forming what are called penniform muscles. In such cases there is a membrane in the body of the muscle to which the fibres are attached.

Bichat says, that " Every muscular fibre runs its course without bifurcating or dividing in any manner." He says, too, that " All the fibres of the voluntary muscles are straight, those of the sphincters excepted." Yet when a muscle is lib-

erated from its attachments, it may contract so as to give its fibres a wave-like appearance.

Much more force is required to rupture living than dead muscular fibres, or in other words, when an animal is in that condition called *living*, the particles of matter which constitute its muscular fibres adhere together in a much greater degree than when such animal is dead. But this is not the case with the fibrous textures ; to which class of textures belong the tendons of which we have been speaking.

This fact relative to the difference of strength in the living and dead muscular fibres, I consider as one among very many others tending to show that the muscular system, during a state of health, is as constantly receiving a fluid from the nervous system as from the sanguineous.

With respect to blood vessels, there are no organs so plentifully supplied with them as the muscles, excepting some of the viscera. The arteries are distributed among the fibres in numerous branches, which divide and subdivide with so much minuteness, as at length to become no longer visible. The capillary veins are equally as numerous as the arteries, but the manner in which the arteries are connected with the veins, is not accurately ascertained.

The apparatus of nerves which is sent to the muscles, is very considerable ; and especially to those which are under the control of the will, being greater, in proportion to their size, than to any other part of the body, except the organs of the senses.

As to the size and nature of the *ultimate muscular fibre*, or that fibre which cannot be divided without a breach of substance, the microscopical anatomists do not agree. Leeuwenhoek supposed that many thousands of them united to form one visible fibre. Sir A. Carlisle describes the ultimate fibre as a solid cylinder, the covering of which is a reticulated

membrane, and the contained part a pulpy substance regularly granulated, and of very little cohesive power when dead. Bauer makes out that it is about 1-2000 of an inch in diameter ; some have considered it as straight, some as zig-zag or waved, some as knotted, some as being solid and others as hollow, while others consider it as jointed, consisting of a number of parts connected together like a row of beads.

Another opinion was, that it is entirely composed of vessels, either possessing some peculiar arrangement or consisting of the small branches of arteries. Another opinion zealously defended by Cullen, was, that the muscular fibres are continuous with those of the nerves ;—that they are in fact nerves under a different structure, &c. &c. But all these conjectures do not help us in the least to *explain* the phenomena of contraction ; and I only advance them to show that learned men of renown have suffered themselves to advance notions that are not in themselves plausible, and if true, do not help us to explain any thing.

We have already said that if the nerves going to a voluntary muscle be divided or compressed, in any part of their course from the brain to the muscle,* the will has no more power over the muscle until the nerves be restored to their natural state again. We may here add, that if the arteries be tied so that no blood can go to the muscles, or the veins tied so that the blood cannot return from them, their contractility is soon extinct.

We believe that the nerves going to the voluntary muscles answer two purposes, not to say any thing about feeling.—One purpose is the same as that which the nerves of the in-

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* So far as it respects this, and the like operations, the spinal cord may be considered as one great nervous trunk, giving off *branches* to the parts, to which we commonly say it gives off *nerves*.

voluntary muscles fulfil, to wit : convey something to them which intimately unites with them, and assists in making out that organization on which their contractility—their property of being excited to contract—depends. The other purpose is to communicate to them whatever it is that is the immediate cause of their contractions.

Many attempts have been made to explain the phenomena of muscular contractions, that is, to point out the changes or events which precede it, and the order in which these events occur ; but it is not necessary to the accomplishment of any of my present designs, to lay these attempts before the reader. I shall advance my own notions in the next chapter.

One remarkable circumstance respecting muscular contraction is, that after a stimulus has been applied for some time, the contraction ceases, although the stimulus continues to be applied. This is observed in all experiments upon muscles, with either mechanical or chemical agents ; it likewise takes place in all natural operations of the system, and is to be observed in a remarkable degree in the voluntary muscles. In performing any voluntary act which we strongly desire to perform, we find ourselves unable to persevere in the action beyond a certain length of time, even if our lives depended on such perseverance. But merely by resting for a certain time, we may be again able to commence the action, especially if the system be well nourished. Respecting this circumstance, I know of no facts that prove conclusively whether the muscles lose their power to contract by their continued exercise, or whether the failure is owing to a lack of that which causes them to contract ; or we will say, a lack of stimulus, be the nature of this stimulus what it may.

Respecting the relaxation of muscles, it is generally considered as merely a passive effect, and I believe this opinion is correct so far as it respects the voluntary muscles, but not

so as it respects the hollow or involuntary. And when one considers all the circumstances which relate to these two classes of muscles, it does appear to me that he can find no difficulty in admitting that what we call the relaxation of one set, is different in its nature from what we call the relaxation of the other set.

In the case of the voluntary muscles, their constituent particles have, at all times, a tendency to approach each other more closely than they do in their ordinary state of being, as is proved by what takes place when we divide a muscle which is not liberated from its attachments ; but owing to circumstances, this tendency of its particles must be increased before they can approach each other more closely. Now what are these circumstances ? Why, the muscles are attached to the bones at both ends, which bones cannot be moved without some force ; but more than this, the voluntary muscles have their antagonist muscles, which, as we may say, are continually pulling the contrary way. But when the cerebral stimulus shoots along down into a certain set of muscles, it gives their particles so strong a tendency to approach each other, that they do so, notwithstanding the powers which they must overcome in doing so ; but as soon as the cerebral stimulus ceases to operate, these powers (the antagonist muscles, the weight of some parts and the elasticity of others,) bring the contracted muscles back again to their former state of relaxation; hence this relaxation is a passive effect. It is not brought about by the inherent powers of the muscles which relax, but by other powers.

But mark the circumstances of the hollow muscles, for instance the heart. The situation of this hollow muscle is such that the constituent particles of its contractile fibres may at all times approach each other as closely as they are disposed to. The fibres of this organ are not generally on the stretch ;—

take the heart out of the body and empty out all the fluids which it may contain, and its fibres will *not* shorten ; in other words, the heart will not approach the state which it is in when contracted, as the solid muscles will when liberated from their attachments. Cut a gash in the heart, and the cut surfaces will not recede like the cut extremities of solid muscles.

From these and other facts which might be adduced, it is evident that the heart is so organized that it has a tendency to remain in that state, which is called the dilated or *relaxed* state. Its constituent particles do not want, if I may so say, to be any nearer each other than they are when the heart is dilated ; on the contrary, they are disposed to be as distant from each other as they are when the heart is in this state :— this is their natural state of coaptation. Nevertheless, such is the relation between the fibres of the heart and the blood, that when the blood comes into the heart, it causes the constituent particles of the heart's contractile fibres to approach each other more closely ; or in other words, causes the heart to contract. This contraction forces the blood out of the heart, that is, removes the agent which caused the contraction. This being done, the constituent particles of the heart recede to their former wonted relations, as they have a strong tendency to do. Hence we see that what is called the relaxation or diastole of the heart, is not a passive event ; it is done by the heart's own powers, and it would require a force to prevent it, instead of its being caused by the operation of a distinct agent. And instead of saying the blood pours into the heart and dilates it, we ought to say the heart dilates and sucks in the blood. But, as we have shown, it is altogether different with the voluntary muscles—the muscles which have antagonists ; the particles of these muscles cannot enjoy the privilege of being in as close contact as they are disposed

to be, except they be enabled, by times, by the cerebral stimulus; but as soon as this fugitive cause ceases to operate, they are drawn asunder even further than they are disposed to be, and the muscle is said to be relaxed.

This, then, is the conclusion :—The heart in a living state is *disposed* to be dilated, and the blood must act upon it to bring it out of this state ; but when the blood is removed, the heart resumes its dilated state with some considerable force, and of its own inherent tendency ; as would a caoutchouc bag or bottle, after being compressed in on all sides. Yet I do not think it strictly proper to say the heart is elastic or possesses elasticity on account of its dilating itself after suffering contraction : I think it would not be proper, because we apply the word *elastic* to those bodies, the particles of which have a manifest tendency to resume their former relations after being displaced by *mechanical force ;* and every body who knows what mechanical force is, and what the heart is, knows that the heart is not caused to contract by such force. If I must say the heart *possesses a property*, because, after contracting it dilates as it does, (and I have just as good reason to say so, as I have to say vinegar possesses the property of acidity,) I would rather name this property *extensibility* than elasticity. And we should say that the distinction between extensibility and elasticity is very obvious—extensibility being invariably confined to the contractile organs, and manifesting itself after the operation of a *stimulus ;* whereas elasticity invariably manifests itself after the operation of a *mechanical force*. Stop,—this moment it occurs to me that there is an objection to this use of the word *extensibility :*—it has been used to denote the ability of being extended, whereas I have used it to denote the faculty of an organ to extend itself.—What if we should use the words *active* and *passive* to distinguish these two kinds of extensibility,—saying that when

an organ has the faculty of extending itself, it possesses active extensibility ; but when it barely admits of being extended by a distinct agent, it possesses passive extensibility ?

In support of the above speculations, it may be remarked, that by grasping the heart of a bullock which is so detached that it cannot be caused to dilate by the rushing in of the blood, a man cannot prevent its dilatation, as I remember to have read somewhere in Bichat's System of General Anatomy. And furthermore, we cannot give a satisfactory explanation of the circulation of the venous blood, but by supposing the heart to dilate by virtue of its own organization, and to suck it up. But this is not the place to speak of the properties and functions--

Of the *Involuntary Muscles.* These muscles, like the voluntary, are far from being entirely composed of the contractile texture ; but we shall not notice particularly the less important textures of which they are in part constituted.

They constitute a system of organs which agree with each other in being hollow, in being excited to contract by their contents, and (with the exception of a few, more immediately concerned in generation,) in being wholly subservient to the growth and well being of the individual of which they are a part.

This system comprises the alimentary canal, (with the exception of its extremities, the muscles of which receive nerves from the animal system, and of course are under the control of the will,) the heart, and the infinite number of contractile vessels concerned in the circulation of the blood, in nutrition, secretion, exhalation, and perhaps absorption ; it includes also the uterus, the bladder, in short, every vessel, whether tubulated or spheroidal, which is excited to contract by its contents.

Of these organs we must take more particular notice, that

we may know more of the animal system, and be better prepared for explaining many of its interesting phenomena.

Besides the two extremities above mentioned, the alimentary canal consists of an œsophagus, a stomach, and an intestine ; which last is about six times the length of the system, [head, body, and lower limbs ;] and having particular names applied to particular parts of it, we often speak of *intestines* as though there were more than one in the same animal.

The œsophagus extends from the mouth to the stomach ; it is that part which is vulgarly called the *meat-pipe*. When it is empty, its sides collapse, so as to be in contact, or nearly so ; but like the stomach and intestines, it possesses no small degree of passive extensibility ; it has, like the intestines, two sets of muscular fibres, circular and longitudinal ; the food passing from the mouth to the stomach excites such an action of these fibres as assists in propelling it along ;—it is not carried along solely by its own weight : if the œsophagus possessed no propelling power, a few mouthfuls swallowed by a man lying horizontally, or with his head lowest, would not reach his stomach.

As soon as the œsophagus passes out of the thorax into the abdomen, it ends, that is to say, the alimentary canal suddenly widens out at this place, and presently contracts again so as to form a sac with two openings. This sac is what anatomists call *stomach*, and is quite a different organ, and lies in a somewhat lower region than what many people appear to think when they lay their hands upon the anterior part of the thorax, and speak of a weakness of the stomach, of pain in the stomach, &c.

The superior orifice of the stomach, or that which leads to the œsophagus, is called the *cardiac* orifice ; the inferior, leading to the intestines, is called *pylorus* or *pyloric* orifice. Each of these orifices is surrounded with a considerable

quantity of muscular or contractile fibres, in such a manner as to form sphincters, which may close their orifices completely. It is by means of its sphincter that the pylorus is closed so as to retain the food in the stomach until it has undergone due changes. We shall presently notice an interesting fact relative to the action of the pylorus.

When the stomach is empty it is collapsed ; when full, it approaches the conical form, though considerably curved. That extremity towards the cardiac orifice is the largest, and lies towards the left side ; the lesser or pyloric extremity is a little to the right of the centre of the body ; as the stomach lies obliquely across the body, inclining a little downwards from left to right, the pyloric extremity is somewhat lower than the cardiac extremity.

The stomach is capable of being extended by our foods and drinks so as to contain from two to six pints, and in some rare cases, much more : instances of *Limosis Experns* or insatiable craving for food, are given, in which a boy only twelve years of age has taken in six successive days 384 pounds avoirdupois of foods and drinks ;—in which a lady has devoured fourteen hundred herrings at a meal,* &c. &c.

It is probable that in such cases as these, some of the food begins to pass out of the stomach into the intestines before the person has done his *baiting ;* but in common cases the food is retained in the stomach an hour or two before the pylorus suffers it to pass into the bowels.

The stomach, as well as the intestines, consists of three laminæ or membraneous coats besides its muscular. One of these coats performs such important offices, that we must take notice of it. It is the internal coat, and is called the mucous or villous coat ; it is continuous with the internal or

* See Good's " Study of Medicine," vol. 1, p. 73.

mucous coat of the œsophagus and intestines, and like them possesses an apparatus for secreting a bland viscid fluid called mucus; but it is of a different structure from the mucous coat of these organs, and possesses an apparatus for secreting a fluid of great solvent powers, called *gastric fluid*. This fluid, though destitute of any remarkable sensible qualities, has the power of producing great changes on the materials taken into the stomach. It has frequently been known to dissolve the coats of the stomach itself, in cases where healthy persons have been suddenly killed, as by accident, whose stomachs contained a portion of this fluid in a high state of perfection, without any materials in the stomach for it to work upon. It is very generally admitted among medical men, that the presence of this fluid in the stomach without materials for it to mix with, is the cause of the sensation of hunger. Hunger may be relieved by taking this fluid from the stomach by means of an elastic tube introduced down the œsophagus.

In cases of inordinate appetite for food, this fluid may be more abundant, or of a more active nature than in health, or what in many cases appears more probable, the mucus of the stomach which is calculated to defend its surface from the action of the gastric fluid, may be deficient.

Whatever affects the secretion of this fluid, so as to impair its quality or diminish its quantity, injures the appetite; hence we shall be able to show, in the course of this work, how certain passions take off the appetite, or interrupt the proper digestion of a meal of victuals already down.—It will be remembered that the stomach receives some of its nerves more directly from the brain than any other abdominal organ.

Like all organs which perform important functions, and especially all organs which secrete a fluid, the stomach receives a large proportion of blood.

The function of the stomach is to convert the food into

chyme, and to propel it into the intestines. The chyme is generally described as being a homogeneous, pultaceous, greyish substance ; but its properties depend much on the kind of aliment, and on the condition of the stomach as being healthy or unhealthy.

The stomach converts the food into chyme by means of its gastric fluid, and it propels the chyme into the bowels by means of its muscular coat ; the action of this coat also assists the gastric juice in coming in contact with the materials in the stomach, by moving the chyme onward, out of its way, towards the pyloric orifice, as fast as it is formed.

If any indigestible substance, as a piece of metal, present itself at the pyloric orifice for a passage into the bowels, it is not at first permitted to pass, for it excites a contraction of the sphincter of this orifice—this contraction not being confined to the orifice alone, but extending along towards the cardiac extremity, the indigestible substance is worked back again, for the intent, as it were, of undergoing still longer the action of the gastric fluid. Some time after this a contraction again commences at the cardiac extremity, and again works the substance along towards the pylorus, but it is perhaps again thrown back as before ; but after soliciting a passage several times, it is at length permitted to pass the pylorus, although it have suffered no essential change by lying so long in the stomach. This curious fact we cannot explain, but by referring it to the *influence of habit*. We say that in time the pyloric orifice becomes so habituated to the stimulus of the indigestible substance, that it does not excite it to contract to so great a degree as at first, and hence it is permitted to pass. Some other phenomena occur in the animal system, analogous to this.

About twelve inches of the upper extremity of the intestine—the extremity that is connected with the stomach at its

pyloric orifice—is called *duodenum*. The diameter of this portion is much larger than the diameter of the *jejunum* or the *ileum*, the two next portions in order. A duct from the liver called the *hepatic* duct, and a duct from the gall bladder called the *cystic* duct, unite and form the *ductus choledocus communis*; this common duct, and a duct from the *pancreas*, open into the duodenum by one common orifice. Bile is conveyed into this intestine by the common bile duct, and a fluid analogous to the saliva or spittle, by the pancreatic duct.

The pancreas is a long, tapering, glandular body, of a dull white color, tinged with red, and extending transversely across the upper and back part of the abdomen;—it is that part which is commonly called the sweet-bread;—it secretes the pancreatic fluid.

The chyme having passed from the stomach into the duodenum, is here united with the bile and the pancreatic fluid, and is converted, much of it, into a fluid much resembling milk, called *chyle*; what is not converted into chyle is of no use in the animal economy, and is called *excrementitious matter*. This matter, together with the chyle, is propelled by the peristaltic motion of the duodenum into the jejunum, where much of the chyle is taken up by the thousands of minute vessels that open on the inner surface of this intestine. These minute vessels are called *lacteals*—We shall speak of them presently. But all the chyle is not taken up by the lacteals that open on the inner surface of the jejunum, for the peristaltic motion that commences in the duodenum, or even in the stomach, continues downward, through the whole extent of the bowels, or nearly so, and by it much of the chyle is hurried on, as it were, from the jejunum into the ileum, where it is taken up by other lacteals opening into this intestine; but the excrementitious matter is propelled into the large intestines, viz. the cœcum, the colon and the rectum.

The peristaltic motion of the intestines is effected by a contraction of those contractile fibres which form their muscular coat ; and these fibres are excited to contract by the matter contained by the intestines ; hence such matter may be called their stimulus. In a healthy state this contraction commences in the upper extremity of the intestinal canal, and proceeds gradually downwards. It is of such a nature that the diameter of the canal is very much lessened wherever it exists ; but it exists only in a small extent of the canal at one time ; for relaxation follows close after contraction. We have reason to suppose that the contraction is so great, in some instances, as to bring the sides of the canal nearly or quite in contact ; for although some of the intestines, as the colon, make such turns that whatever passes them must be forced perpendicularly up, against its own gravity, still quicksilver is thus forced up, as is proved by its having passed from the mouth through the body.

Among the involuntary contractile organs, I think we may class the *absorbents*. It is true we can discover no such looking fibres in the absorbent vessels as we can in most muscular organs ; but we do not determine whether an organ be muscular by its appearance, but by its properties : if it may be excited to contract by a stimulus, we call it muscular ; for it is evident that it possesses more or less contractile fibres. Now it is certain that the absorbent vessels circulate their contents, and the most rational supposition is, that they do it in part at least by contraction.

Two classes of vessels, not to mention certain glands, compose what is commonly called the absorbent system. The *lacteals* above mentioned constitute one class ; the vessels that constitute the other class are called *lymphatics*.

It is generally believed that every organ in the system possesses lymphatic vessels, though none have been discover-

ed in the brain, notwithstanding they have been much sought after. Their proper function is a disputed question ; for experiments prove, and some pathological facts seem to show that the veins may absorb *liquids*, and if the veins can absorb, of what use are the lymphatics ?

I conjecture it is the proper function of the lymphatics to to eat down, as it were, and carry off the *solid* parts of the body, which parts are continually recruited by another set of vessels, which may be called *nutritive* vessels, but which, in fact, are exceedingly minute branches of the arterial system.

I know of no facts tending to show that the lymphatics do *not* perform this office, nor of any facts proving that the veins *do* perform it ; and we can but believe that the lymphatics have some peculiar office to perform—an office which cannot, under the present arrangement, or nature of things, be performed by the veins.

Almost all physiologists admit that all parts of the body are continually undergoing changes, the old matter being removed and new deposited, so that the atoms which composed the body called G.W. in 1775, were none of them present, perhaps, in the body still called G. W. in 1790. But it may hereafter be admitted that the brain suffers no such changes.

The lymphatics from the lower extremities, and the lacteals from the jejunum and ileum, unite into one common duct, in the abdomen; this duct passes along up from the abdomen, very near the spine, to the upper part of the thorax, and opens into the left subclavian vein, pouring into the sanguineous system both lymph and chyle, mixed together. Other lymphatic vessels from the superior extremities, and from those parts of the head which are exterior to the brain, open into the right and left subclavian veins.

The lymph we consider as the old worn out matter of the system ; the chyle as the nutritive matter, to supply the place

of the old. After entering the veins, both kinds of matter soon reach the heart, mixed with the blood.

The *heart* is a hollow muscular organ, of a conical form, enclosed in a membraneous sac, called *pericardium*, and is situated pretty near the centre of the thorax. It is placed obliquely in the body, so that its base presents backward and to the right, and its apex forward and to the left. Its cavity is partitioned into four apartments, two of which are called *auricles*, and the other two, *ventricles*—the auricles form the base of the cone and receive the blood from the veins; the ventricles form the body and apex, and force the blood into the arteries.—We say that one auricle and one ventricle belong to the right side of the heart, and the other auricle and ventricle to the left side. The walls of the heart, particularly around the ventricles, are very thick and powerful, being composed almost entirely of contractile fibres which cross each other in various directions.

Two great veins, called *venæ cavæ*, which bring blood from every part of the body, open into the right auricle, from above and from below; the right auricle opens into the right ventricle, and from the right ventricle arises the *pulmonary artery*, which passes to the lungs. The *pulmonary veins*, which bring back the blood from the lungs, open into the left auricle; this auricle opens into the left ventricle, and from this ventricle proceeds the great artery, called the *aorta*, which carries blood to every part of the body.

At the instant the right auricle contracts, the right ventricle dilates, and not only *lets* in the blood, but, as we believe, *sucks* it in from the right auricle; but there is a valve so situated over the aperture by which the blood enters the ventricle, that when the ventricle contracts, this valve shuts down, and the blood, instead of passing back into the auricle, is forced up into the *pulmonary artery*; but this artery is also furnish-

ed with valves at its origin, so situated that, although they suffer the blood to pass into the artery, they will not permit it to return into the ventricle, when it again dilates, and when the artery contracts upon it, pushing it along into its branches. The pulmonary artery divides and subdivides into innumerable minute branches, which ramify in the delicate membranes which form the air cells of the lungs.—Concerning these air cells, we must say a few words in this place.

What are called the lungs, are two bodies of minute cells, if we may so say,—one body is called the right lung, the other the left; in shape they somewhat resemble the hoofs of an ox: the heart is situated between them, but they are united above the heart. These minute cells are formed by very thin membranes, and they communicate with each other in such a manner that the air coming down the *trachea* or windpipe during inspiration, may find its way into every one of them. These are the air cells. They are far from being entirely emptied by expiration; but the air generally remaining in the lungs is estimated at about 2000 cubic inches, and the quantity drawn in and forced out by each inspiration and expiration, is estimated at about 300 cubic inches. The air in the cells keeps them expanded, or in other words, keeps their parietes stretched out in such a manner that the vessels of these parietes, which are very numerous, circulate their fluids with much more facility than they otherwise would.—Often the venous blood becomes so collected about the right side of the heart as to give rise to a slight sensation, which may be relieved by deep inspirations or by yawning; for in this way much air is inhaled—the air cells are expanded, and the circulation of the blood through the lungs facilitated. But this is far from being the important use of the air in the lungs.

The air consists of 21 parts of oxygen and 79 of nitrogen

chemically united ; there is also mixed with it considerable aqueous vapour, and a small proportion of carbonic acid gas ; the proportion of this acid is variable, but generally one hundred parts of air contain one of the acid.

The oxygen is so essential to the existence of animals, that they die when deprived of it but for a few minutes. Consequently, by being breathed, the air suffers a change, not only in its chemical composition, but in the materials which are mixed with it : instead of consisting of 21 parts of oxygen, 79 of nitrogen, one of carbonic acid, and some aqueous vapour, the expired air contains 18 or 19 parts of oxygen, 3 or 4 of carbonic acid, and a great quantity of vapour, called pulmonary transpiration—the proportion of nitrogen remaining nearly the same. In some instances of hard drinkers, this pulmonary transpiration becomes so loaded with alcoholic matter that it is inflammable ; in such cases the individual had better be careful about breathing into a candle, unless he wishes to have his thorax blown to pieces.

Now the venous blood which is found not only in the veins, but in the right auricle and ventricle of the heart, and in the pulmonary artery, is of a *brown red* colour, but when it passes through the minute branches of the pulmonary artery which ramify in the thin membranes which form the air cells, it suffers great changes—it assumes a *bright scarlet* colour ; its odour becomes more sensible, its taste more distinct ; its temperature rises about one degree ; a part of its serum or more aqueous portion passes off, constituting a part of the pulmonary transpiration, and its tendency to coagulate augments. The venous blood having suffered these changes, becomes arterial blood. That these changes are produced by the operation of the oxygen of the air, is manifest, from the fact, that if there be any other gas in the lungs, or if the air be not suitably renewed, these changes do not take

place. Blood exposed to air or to the action of pure oxygen gas, out of the body, suffers a like change of colour. Indeed, if you put venous blood into a moist bladder, and plunge it into oxygen gas, it becomes scarlet all over its surface. Hence we need not wonder that the very delicate vascular walls which, in the lungs, separate the blood from the air, are no obstacle to the changes of the blood which the air produces. But it may be inquired how the oxygen produces these changes in the venous blood. Chemists are not agreed upon this point. Some think that it combines directly with the blood; others that it removes from the blood a certain quantity of carbon; and there are others again, who are inclined to believe that both these effects take place.

When the nervous blood is changed into arterial, in the lungs, it does not immediately pass into arteries, but into minute venous branches, which collect into four trunks, called *pulmonary veins*. These four veins convey the blood to the left auricle of the heart; when the left ventricle dilates, it receives the blood from the auricle; but the aperture by which it receives it is furnished with a valve, so that when the ventricle contracts, the blood is not forced back into the auricle, but into the aorta, which is the great artery that, by its innumerable branches, conveys blood to every part of the body.

This great artery, together with its branches, forms what is commonly called the arterial system, for the objects accomplished by this system of vessels are altogether different from the object accomplished by the pulmonary artery. This last does not carry any thing to the lungs for their growth or maintenance; its office is to carry the blood to the lungs that it may undergo the changes above mentioned. The substance of the lungs receives its proper arteries from the common *aortic* arterial system, by which it is nourished, as does every other part of the body.

When the branches of the aorta become as small as hairs, and even some of them so much smaller as to be invisible to the naked eye, they are called *capillary vessels*. Such minute branches of veins may also be called capillary vessels. Hence, not to say a word about the lymphatics and lacteals, we have too grand divisions of capillary vessels—those of the arterial and those of the venous system.

As the aorta divides into branches, its capacity increases, that is, the calibres of all the branches into which any branch or trunk may divide, taken together, exceed the calibre of such branch or trunk. The same holds true with respect to the veins. Hence we may compare the sanguineons system to a cone, the apex of which is the heart, and the base of which is composed of the arterial and venous capillaries, or, indeed, if we reckon (as we ought) the pulmonary artery and veins as constituting a part of the sanguineous system, we may compare it to two cones, the apexes of which meet at the heart.

It is to be remembered, too, that the smaller the branches, the greater the proportion of contractile or muscular fibres which enter into their structure; this is so much the case, that we may suppose that the amount of muscular fibres possessed by the arterial and venous capillaries, equals, perhaps far exceeds, the quantity of muscular fibres possessed by the heart, and consequently that the muscular power of the capillaries, collectively, equals or exceeds that of the heart.

This supposition, not destitute of support derived from examining the vessels, as John Hunter has shown, will assist us in explaining several phenomena, manifested in many diseases and during the existence of the passions, as we shall see in the course of this work.

It is admitted on all hands that the arterial capillaries terminate in different ways—some of them terminate in the ca-

pillary veins ; some on the surfaces of membranes, as the skin, the inner or mucous membrane of the alimentary canal and urinary passages ; and on the surface of the several serous membranes ; some terminate in the secretory glands, as the salivary glands, the liver, kidnies, pancreas, &c. ; others, again, we must suppose to terminate in the parts in which they deposit the materials of which the parts are formed, and by which they are kept in repair.

As to our being able to determine, by inspection, where the arterial capillaries terminate, and where the venal capillaries commence, we cannot ; but we may say that so long as the fluids continue to move *from* the heart, they are in the arteries ; but when they make such turns as to *approach* the heart, they are in the veins.

All the arterial capillaries that do not terminate in veins, may be called secreting vessels, because they all sort out, as it were, certain materials from the blood. What are commonly called *nutritive* vessels, secrete from the blood the materials of which our organs are formed. Other vessels secrete materials from the blood which are no longer of any use in the animal economy ; such are the materials of the urine and perspirable matter ; others again secrete fluids which serve important purposes in the animal economy,—the bile, the gastric fluid, and many others that might be mentioned, are of this description.—It is true, we talk about the glands secreting ; we say the liver secretes bile, the kidnies urine, the salivary glands saliva or spittle, &c. &c. This way of speaking is sufficiently correct for all common purposes ; but the physiologist tells you that certain capillary vessels belonging to these glands, are the immediate organs of secretion. We do not suppose any of the venal capillaries secrete. However, many veins from the bowels unite in one trunk which enters the liver and there branches out again, and we

have some reason to suppose that these branches secrete some part of the bile ; but admitting that they do so, these branches in the liver have more of the appearance of arteries than of veins, and we would sooner call them arteries than admit that veins secrete.

As some capillaries secrete one kind of fluid, and some another, and as they all secrete their fluids from one common fountain, the blood,—the phenomena of secretion have given rise to much speculation. It has not only been a question how any one set of vessels secrete any one particular kind of fluid, but wherein different sets of vessels differ, so as to be able to secrete *different* kinds of fluids. I shall not notice all these speculations, but proceed to offer what I consider the most rational hypothesis concerning secretion.

I might advance this hypothesis to better advantage after treating of the relation between the nervous and muscular systems ; for I must here take certain positions as granted which I shall labor to support in treating of this relation :—nevertheless, I shall offer the hypothesis in this place.

I hold that all secreting vessels may be excited to contract by their contents, and of course possess the property of contractility, and may be called contractile or muscular organs. But in order that they may be contractile, they must receive something, by way of their nerves, from the nervous system ; which something is an invisible fluid, whether you call it such, or whether you call it "nervous energy" or "nervous influence." I hold, too, that different vessels are differently *tempered*—that they receive different proportions of nervous energy ; and partly or wholly on this account their contractility is different, that is, the same materials will not excite the same degree of contraction in all of them.

Again—*different* materials will not excite the same degree of action in the *same* vessels ; hence we know that different

materials, or, if you please, different stimuli, possess different stimulating qualities, and for convenience sake, we shall call the stimulating quality of a stimulus, its *stimability*.—Be it remembered, then, that the *stimulus* of any hollow muscular organ is the matter which such organ contains, but *stimability* is a property of such matter or stimulus.*

We have seen that the contents of the alimentary canal excite in it a sort of contraction by which they are moved along; we have seen that some indigestible substances in the stomach excite such a contraction of the pylorus as prevents their passing this orifice, and we might have added, that some substances excite such a contraction of the intestines as to prevent their passage, giving rise to a species of colic which may be called constrictive, or spasmodic colic. Now we suppose that something analogous takes place in those little hollow muscular organs called the capillaries—we suppose that, in order that these vessels may circulate any materials, there must be a certain due relation between the contractility of the vessels and the stimability of such materials.

If the stimability be too high for the contractility, or, what is the same thing, if the contractility be too low for the stimability, a sort of constrictive spasm will be excited in the vessels, which will prevent the materials from passing; and

* I trust the reader will not be led to think that we make new *things* when we only invent new words to express relations between agents. A vessel and the material which it contains, are two agents; and because the material gives rise to an action of the vessel, we say the material possesses a property of exciting this action, and the vessel possesses a property of being excited—we say that one possesses stimability, the other *contractility*; but altho' our language would seem to imply that stimability and contractility are something distinct from the agents which are said to possess them, still it is not so—they are, in fact, when we come to the nicety of the case, nothing but words of relation. Yet what a mighty fuss has been made in the world about a few *thingless* names!

such material, in order to get along, must take some other route—some other vascular branch—which is so *tempered* as to receive it and be duly excited by it. If it have already passed by such other vessel, it may be worked back by the vessel in which it is, to the branching off of such vessel, as the stomach works back indigestible substances from the pylorus ; or it may, after much *teasing*, gain admittance along the vessel in which it is, the vessel becoming *habituated* to it, as the pylorus becomes habituated to the stimulus of indigestible substances in the stomach ; or it may be removed by absorbents ; or, lastly, it may prove a more permanent obstruction, giving rise to disease. On the other hand—

If the stimability be too low for the contractility, or what is the same thing, if the contractility be too high for the stimability, a propelling action will not be excited.—What then becomes of the material ? Why, it may be absorbed by some minute absorbent, penetrating the walls of the vessel ; or it may be pushed on by the *vis a tergo* of the heart and arteries until it come to the opening of some branch capable of receiving it, and of being duly excited by it ; or, thirdly, it may be pushed through the whole length of the secretory vessel, and constitute a bland, aqueous part of the secretion, which will soon be removed by neighboring absorbents ; or, fourthly, it may clog up the vessel, giving rise to another kind of obstruction.

Of these four *may-bes*, I think the third the most plausible : we say the *vis a tergo* of the heart and arteries may push along materials in remote vessels, which materials are not capable of exciting a propelling action of the vessels ;—this may be granted ; but if there were no such *vis a tergo*, these materials might, perhaps, be worked along, mixed with other materials capable of exciting an action of the vessels ; hence, as some *mild* materials may, in one way and another, get

worked along through vessels not calculated to circulate them, and thus constitute a part of a secreted fluid, I am inclined to think that the sole use of those absorbents which open into cavities that contain secreted fluids, is to remove those parts of the fluid that are secreted, as we may say, by accident.

We would not maintain that each secreting capillary of any organ secretes some of *all* the kinds of materials that enter into the secreted fluid of such organ; that is, we would not maintain that each secreting capillary of the liver, for instance, secretes a portion of perfect bile, but that one vessel secretes one constituent principle of bile, another another principle, and so on, and that these different principles coming together, unite according to their chemical affinities, and form the bile.

If we say that each vessel pours out a portion of perfect bile, we must admit such bile is formed before it is poured out, and it would be more difficult to offer any plausible conjecture how it is formed in individual vessels, than to admit that different vessels secrete different principles, which, coming together in little cavities, unite according to their chemical affinities.

According to the view of secretion now offered, we see why one set of vessels secrete one kind of fluid, and another another kind; it is not because their calibres are different, and the particles of matter, secreted by different vessels, are of different sizes, so as just to fit the calibres of the vessels by which they are secreted; but it is because different sets of vessels are endowed, as we may say, with different degrees of contractility, and hence are excited into due action by different materials. From this view of secretion we also not only see the use of the nerves of the minute vessels, but we shall be enabled to show how secretion is influenced by affections of

the nervous system ; how anger promotes the secretion of bile, how fear gives rise to the secretion of a large quantity of a limpid urine, &c. &c.

We have now given a brief, and consequently, imperfect sketch of the anatomy and functions of the *involuntary muscular system.* It will be remembered, that what we call the muscles of this system are *hollow*, contractile organs ; that they are not under the control of the will—not excited to contract by the *cerebral stimulus*, but that their natural stimulus is their contents ; that they do not, like the voluntary muscles, receive their nerves directly from the nervous system of animal life, but from the nervous system of organic life ; that they are endowed with but a very low degree of sensibility, and that they are organs, not of *relation*, but of growth and nutrition.

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CHAPTER XI.

On the Relation which subsists between the Muscular and Nervous Systems.

We are now about to enter upon a subject which has interested physiologists more, perhaps, than any other one, and which is of more importance than one would at first apprehend. It is relative to a point which the learned Dr. Bostock says may be stated thus :—" When a stimulant acts upon a muscular fibre, so as to produce contraction, does it act *immediately* upon the fibre itself, or does it always act through the intervention of a nerve ? The nerves are the organs of sensation ; when, therefore, a muscle receives the impression of a stimulant, is not this impression always, in the first in-

stance, received upon the nervous matter distributed through the muscle, and the impression then transferred from the nerve to the muscular fibre ?"

To say that the stimulant or impression acts *immediately* upon the muscular fibre, would be the same, according to former writers, as to answer the following question in the affirmative :—Is the power of the muscular system independent of the nervous system ? But to say that stimulants always act upon the muscular fibres *through the intervention of their nerves*, would be the same, according to these writers, as to say that the power of the muscular system is *dependent* on the nervous system.

From what is here said, we learn what those who have meddled with this subject, mean by the question,—Is the power, i. e. the contractility of the muscular system, independent of the nervous system ? They mean,—Does a stimulant, when it produces contraction, always act *directly* upon the muscular fibre, or *indirectly*, as through the medium of nerves ?

Now the question which we shall put, and the negative side of which we shall endeavor to establish, we shall put in the same words, to wit : Is the power of the muscular system independent of the nervous system ? Still this is not the question about which physiologists have written so much, for we do not mean the same by it that they do by theirs, though asked in the same words. We do not mean to ask *in what way* a stimulus excites a contraction ; whether it act *directly* upon the texture which contracts, or through the medium of nerves, and of course *indirectly ;* but we mean by our question this :—*Do not the muscles receive something from the nervous system by way of their nerves, as they do from the sanguineous system by way of their arteries—which something is essential in making out and sustaining that organization on*

which their ability to contract depends? We have said that we shall endeavor to establish the negative of this question, that is, that they *do* receive something from the nervous system, or what is the same thing, that their power is *not* independent of the nervous system.

It appears that physiologists have been unable to settle the question,—Is the power of the muscular system independent of the nervous system? because this question has been asked and understood in a wrong sense—in such a sense that if we answer it in the affirmative or in the negative, we do not state the truth of the matter, for as it respects one part of the muscular system, (the voluntary,) stimulants do act upon the muscular fibres through the intervention of nerves; but as it respects the involuntary part, they act immediately upon the muscular fibres. It seems, also, that they would inquire whether nerves are in all cases necessary to muscular *contraction;* and that they take it for granted, that if they be, they act in a certain way; but on thinking over facts, some physiologists conclude that they do not act in this certain way, and of course conclude that nerves are not necessary to muscular contraction in all cases. I say it seems that physiologists would inquire thus; but nothing is more obvious than that nerves are always necessary in the production of *voluntary* contractions. Hence some physiologists have inquired whether nerves are necessary to *contractility*, which is quite a different thing from contraction: contractility is a *property*, and may exist without contraction, which is an *action.*

But how does this question comport with what Bostock says is the grand question at issue? He says (and I believe he states the question in the sense in which it is understood even by those who query whether *contractility* is independent of the nervous system,) that the question is this: "When a stimulant acts upon a muscular fibre so as to produce contraction,

does it act immediately upon the fibre itself, or does it always act through the intervention of a nerve ?" Is this questioning whether *contractility* is independent of the nervous system ? May not a muscular fibre be contractile, and may it not receive something from the nervous system which enables it to be so, even if a stimulant act *immediately* upon the muscular fibre ? If it may, then *contractility* may be *dependent* on the nervous system, although a stimulus act *immediately* upon the muscular fibre.

The truth is, those who inquire whether *contractility*, and not contraction, is independent of the nervous system, would be understood to inquire whether a stimulant acts *immediately* upon the muscular fibre, when it excites contraction. Of course, if you prove that it does, then you prove to these physiologists that contractility is independent of the nervous system ; but if you prove that it always acts through the intervention of a nerve, then you prove to these physiologists that contractility is dependent on the nervous system.

Now, as we have said, our question, though asked in the same words, is altogether different from this. When we ask whether contractility is independent of the nervous system, we do not query whether a stimulant always acts immediately upon the muscular fibre in exciting contraction, and not through the intervention of a nerve ; but we query whether muscular fibres receive something from the nervous system by way of their nerves, as they do from the sanguineous system by way of their arteries, which is essential in making out and maintaining that organization on which their ability to contract depends. That they do, is what we shall endeavor to prove.

We need not labor to show that all contractile organs, in sentient organized beings, are well supplied with nerves. But it is doubtful whether the involuntary muscles receive more

or less than the voluntary, in proportion to the quantity of their muscular fibres, and the force with which they contract. Should it be proved that the voluntary receive the most, in proportion to their power and quantity of muscular fibres, we might suppose that this arrangement is necessary, because, not only the *power* of the voluntary muscles is dependent on the nervons system, but their *stimulus* comes from this system by way of nerves, whereas the stimulus of the involuntary or hollow muscles, is their contents.

We need not labor to show that the nervous organs, the brain, spinal cord, &c. from which the nerves proceed, are secreting organs, *in all probability*, and that the nerves conduct off whatever they secrete. Nor need we labor to make physiologists believe that all natural parts of any magnitude in the animal economy are of some use. They will not deny but that the nerves going to the involuntary muscles, as the heart and circulating vessels, the stomach and bowels, are of some use. But as these muscles are not under the control of the will—as they are not excited to contract by a stimulus brought to them by their nerves, their stimulus being their contents, of what use are the nerves going to these muscles ?

This is what we believe : We believe that the muscular system, that is, the *whole* muscular system, the voluntary part as well as the involuntary, is *continually* receiving something from the nervous system by way of its nerves, as it is from the sanguineous system by way of its arteries, which is essentially necessary in making out and in maintaining that organization on which their contractility depends. This being the case, the use of the nerves to the heart, &c. is obvious.

That which the nervous *glands* secrete, and which the nerves are pretty much *continually* conveying to the muscles, we call the *nervous fluid ;* but shall not at present query about its nature.

We do not suppose, however, but that when a muscle is once organized so as to be contractile, it may remain contractile for a short time, after its connexion with the nervous and sanguineous system, one or both is destroyed. There is nothing strange in this, and we marvel not at all to see a voluntary or involuntary muscle contract, on the application of a stimulus, even hours after separation from the body ; and its doing so no more proves that contractility is independent of the nervous or sanguineous system, than a store of nuts remaining after the squirrel is dead, proves that it was not accumulated by the squirrel. Nay, nor so much so : the store of nuts will remain indefinitely, after the squirrel is dead, though no special pains be taken to preserve it ; but contractility will not remain long after the nervous or sanguineous system is destroyed, take what pains you can to preserve it. Nevertheless, whatever interrupts the regular flow of the nervous or sanguineous fluids to the muscles, *affects*, but not *instantly destroys*, their contractility. Hence what are commonly called the *passions*, may influence the powers and actions of the involuntary and voluntary muscles, in a way which we shall presently point out.

I know that Dr. Philip, in his " Experimental Inquiry into the Laws of the Vital Functions," relates an experiment which he thinks shows that the contractility which a muscle retains after being separated from the nervous system, is not owing to the nervous " influence," as he calls it, which it received prior to the separation. Philip wished to make this out, for he was writing a book to prove that contractility is an inherent property of the muscular fibre, and of course not dependent on the nervous system. But it appears very clear to us, that the experiment shows no such thing ; indeed, although his principles are quite different from ours, still, believing our principles correct, we should expect, *a priori*, the

very phenomenon which he considers as evidence of the correctness of his principles. Such are the errors we are liable to fall into by not thinking of *all* that relates to any question concerning which we judge. We shall soon advert to this experiment.

As we maintain that the nervous system secretes a fluid which flows, with the exception of casual interruptions, continually to the muscles, and assists in making out that organization on which their contractility depends, it may be proper for us to state what parts of the nervous system secrete this fluid, and from what parts of it the voluntary and involuntary muscles receive their respective supplies.

The brain, the spinal marrow, and the ganglions, are the parts which we suppose secrete the fluid; and it is from the two former portions that the voluntary muscles receive their portion; but it is highly probable that some of the fluid received by the involuntary muscles is secreted by the brain and spinal marrow, and some of it by the ganglions, or "little brains," as they are sometimes called, of the nervous system of organic life.

Some physiologists are not disposed to admit that these ganglions secrete any fluid; but they have quite as much of the glandular appearance as the brain or spinal marrow; they are well supplied with arterial blood, and what is a still more important consideration, as we descend the scale of animal beings, we find that the ganglionic system bears a greater and greater proportion to the animal nervous system;—indeed, in some organized beings, zoophites, perhaps, this system alone is to be found, their being neither brain nor spinal marrow. Even in the frog this system is of so much more comparative importance than in man, that one may live, that is, its heart may continue to beat, for nine hours or more after its brain and spinal marrow are destroyed; but we

presume the heart of a man would not continue to beat nine minutes after his brain and spinal marrow should be destroyed. These facts, together with many others that might be adduced, not to mention the consideration that the ganglions must undoubtedly perform some office, have led me to conclude that they secrete a portion of nervous fluid. True, some have thought that their office is to unite the nervous fluids coming from the brain and the different parts of the spinal marrow ; but such an object as this might be fulfilled just as well merely by a plexus, for aught we can see ; and more than this, the ganglions give off more nerves than come to them from the brain and spinal marrow. Indeed, we are not sure but it would be as correct to say that the spinal marrow and brain receive nerves from the ganglions, as to say that the ganglions receive them from these organs.

Let us now consider, more particularly, the relation which subsists between the nervous system and the *voluntary* muscles.

If these muscles are almost continually receiving from the nervous system a flow of fluid which is essentially necessary in making out and maintaining that organization on which their power to contract depends, as many facts seem to show that they do, then we can find no difficulty in admitting that although their contractility may eventually be destroyed by dividing their nerves, still this contractility may remain, for a time, after their connexion with the nervous system is destroyed. I know of no fact, with the exception of one, which has been supposed to prove that voluntary muscles do *not* receive something by way of their nerves which is essential to their *contractility ;* this fact is the result of an experiment which was made by Dr. Philip, and which we referred to a page or two back.

Immediately after having shown that the contractility of the

voluntary muscles may be " exhausted," as the common expression is, by stimuli operating upon them by way of their nerves—stimuli which are applied to the brain or spinal marrow,—he relates to us an experiment which he supposes proves that these muscles do not receive any thing from the nervous system on which their contractility depends. We will state the experiment in his own words, as well as some of his remarks relating to it.

" Experiment 32. All the nerves supplying one of the hinder limbs of a frog were divided, so that they became completely paralytic.* The skin was removed from the muscles of the leg, and salt sprinkled upon them, which being renewed from time to time, excited contractions in them for *twelve* minutes ; at the end of which time they were found no longer capable of being excited. The corresponding muscles of the other limb, in which the nerves were entire, and of which consequently the animal had a perfect command, were then laid bare, and the salt sprinkled to them in the same manner. In *ten* minutes they ceased to contract, and the animal had lost the command of them. The nerves of this limb were now divided, as those of the other had been, but the excitability [contractility] of the muscles to which the salt had been applied, was gone : its application excited no contraction in them. *It sometimes happens that while the nerves of the limbs are entire, the voluntary efforts of the animal prevent the contractions usually excited by the application of the salt.* * * *

" It is remarkable, that in this experiment, the excitability of the muscles whose nerves were entire, was soonest exhausted."

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* Not paralytic because their contractility was destroyed, but because the frog could not contract them himself—because they could not be excited by the stimulus of the *will*, as the expression is.

Now what does Dr. Philip infer from this experiment? Why, he infers that the contractility of the muscular system, so far from being dependent on the nervous system, or nervous "influence," is exhausted by it; because, thinks he, if the contractility be dependent on the nervous influence, it ought to hold out longest, under the application of the salt, in those muscles whose nerves were entire; instead of which it was in those muscles soonest exhausted. But our reasoning is this: we say that the nervous fluid and the stimulus of the will, or the cerebral stimulus, are two things; that the first flows more or less continually to the muscles, and assists in making out that organization on which their contractility depends; and that the cerebral stimulus may exhaust this contractility by exciting contractions. Consequently the contractility of those muscles whose nerves were entire, was soonest exhausted, because they were subjected to the operation of two stimuli at the same time—the stimulus of the salt and the cerebral stimulus; whereas those whose nerves were divided, were wrought upon only by the stimulus of the salt.

That the muscles whose nerves were entire, were wrought upon by the cerebral stimulus, we are led to believe, not only from the consideration that an animal would endeavor to move its limb when salt is put upon its bare muscles, but from Dr. Philip's statement,—"It sometimes happens that while the nerves of the limb are entire, the *voluntary* efforts of the animal prevent," &c.

It is said that after a muscle which is separated from the body, has been excited to contract by a mechanical or chemical stimulus, until it can be excited to contract no longer, it may, after being suffered to rest, be excited again by the same stimulus; and this fact has been thought to favor, though not to prove correct, the opinion that contractility is independent of the nervous system. But admitting that such is the fact,

it is quite as difficult for the Hallerian to account for it as for the neurologist, perhaps more so.*

The neurologist may say that the muscular fibres have a natural capacity for nervous fluid, which fluid is, in all probability, the electric fluid, or some modification of it; and when, by the operation of stimulants, they are deprived of that portion for which they have an inherent affinity, if they cannot be supplied by the nervous system, they will attract it from the air or other surrounding substances, and thus become again contractile. Or he may deny that the muscles fail to contract for want of nervous fluid, and say what the Hallerian must say, that by frequently repeated applications of a stimulus, the relation which the particles of the fibres have a tendency to maintain among themselves is destroyed, and that these particles require some time to arrange themselves in their former order, so that the fibres may be again contractile. When water freezes, we suppose that its particles enter into some new arrangement; but if you keep stirring the water so as to give its particles no time to do this, it does not so readily become ice. Nothing is more evident than if it were possible to keep every individual particle of water changing its relations with other particles, the water must remain liquid, let it be ever so cold—its particles must have some time to arrange themselves so as to form ice.

This last method of accounting for the fact, that after a muscle, separated from the body, is exhausted, it will, if permitted to rest, become again, in some small degree, contractile, appears to me much the most rational. Indeed, I am

* As Haller (who was the greatest physiologist that flourished about the middle of the last century) was the first who maintained, with any degree of plausibility, that the power of the muscular system is independent of the nervous system, those who have since adopted the same opinion are called Hallerians; those who maintain the opposite opinion are called Neurologists.

inclined to maintain, that in *all* cases in which a muscle is said to become *exhausted*, it does not part with any one of its principles, oxygen, azote, *nervous fluid*, or any other ; but that by exercise that nice organization on which its contractility depends, suffers an alteration—a sort of mechanical alteration, as we may say, among its particles. And we may suppose that in the living system the lymphatics assist in restoring this nice organization by taking up the misplaced particles, while other particles are placed where they ought to be, by the nutritive capillaries.

Many facts will occur to the physiologist in favor of this opinion. We talk about the old worn out matter of the system ; but suppose a muscle to be well organized—to be very contractile, how in the name of common sense can this contractility be destroyed, so long as every individual atom of matter of which the muscle is composed, retains its precise place and relation with the other atoms. The thing is impossible.

How, too, when you destroy (we will not say *exhaust*) the contractility of the muscles of a limb, merely by touching the end of a nerve that goes to these muscles, with a wire—I say, how do you destroy the contractility by such means ? Do you take any thing from the muscle, or do you communicate any thing but an *action* to it—do you attract the nervous fluid from it, or do you convey electricity to it ? I once entertained such notions, but I found that by touching the nerves going to the muscles of a frog's hinder limbs, with a piece of glass, long, clean and dry, I excited as strong contractions as when I touched them with my pen-knife or any other conductor of electricity. Indeed, if the nervous fluid intimately unite with the other material elements of which the muscular fibre is organized, as we suppose it does, it is not *free*, and

cannot be taken from it without giving rise to an alteration in some of its *physical* properties, say its cohesiveness.

Matter is *immortal!* At least, matter never wears out ;—there is just as much matter now as there ever was ; and when we talk about the worn-out matter of the system, we mean the *misplaced* matter—misplaced by exercise—by the system's own "wear and tear." And the office of the absorbents is to remove the misplaced matter of our organs. Observe, no chemical changes can take place among the constituent particles of organs without such particles changing their places or relations with each other. Observe, too, the more you exercise the more are the absorbents quickened, and the more nourishment do you require.

Are not the absorbents principally found opening into those cavities or upon those surfaces where secreted fluids are pointed out, and in those organs which are liable to suffer displacement of particles while performing their functions ? Are they not abundant in the contractile part of a muscle ? but can you find even any in a tendon or a bone ? Certainly, they are not so plentiful in these last mentioned parts, and we see why their office is not so much required. Finally, we may venture to lay it down as a principle, that when the contractility of muscles is destroyed by exercise, it is because that nice organization on which their contractility depends suffers a derangement, and not because any one of their elementary principles is exhausted or displaced, more than another.

We have now been laboring, for a few pages, to remove what have appeared to some as objections to the opinion, that the involuntary muscles receive something from the nervous system, but for which they would not be contractile. But it may be asked if this opinion is to be considered as established when it can be shown that there are no facts oppos-

ed to it? It may be replied, that if this be done, physiologists will admit the opinion as correct, for they know of many considerations which are directly in favor of it, as well as many difficulties that attend the opposite opinion. Some of these considerations we will advance in this place.

When the muscles about one side of the mouth are paralytic, the muscles of the opposite side draw the lips towards the sound side. This paralysis is generally, perhaps always, caused by some misaffection of that part of the nervous system from which, or by which, the palsied muscles receive their nervous fluid, when they receive it at all. It may be said that this fact does not prove that these muscles have lost their contractility, but only their *tone*. But this would be saying something which is not proved, nor can it be proved, but by applying mechanical or chemical stimuli to the palsied muscles, and finding them contractile; whereas it is very difficult for the physiologist to admit that a muscle may lose its tone, or cohesiveness, and still be contractile. That the muscles should be found contractile, even in those cases of apoplexy in which all power of volition is absent, we wonder not at all. In these cases, volition is lost, not because the nervous fluid ceases to be secreted, but because the disease of the brain prevents the cerebral stimulus (be this stimulus a fluid or an action,) from being communicated to the muscles. No *voluntary* contraction can take place without the cerebral stimulus.

Nor do we doubt that in many cases, even of long standing, of paralysis of the muscles which receive nerves from the spinal marrow, they may be found contractile on the application of stimuli: an affection of the brain or even of nerves may prevent the communication of the cerebral stimulus, but not the secretion and flow of the nervous fluid. But in the case of the paralysis of the muscles of one side of the face,

in which the antagonist muscles of the sound side keep the mouth constantly drawn towards this side, we are very confident that these muscles would be found to possess little or no contractility.

Another consideration is, that many affections of the nervous system, among which we may reckon some of the passions, evidently weaken or otherwise affect the muscles themselves, and not the power by which they are excited. In cases of death by lightning, the muscles are found to have lost their contractility. Perhaps this is to be accounted for, by supposing that the shock of lightning so deranges the nervous system as to destroy at once the nervous secretion; whereas, in death from ordinary causes, the nervous secretion may go on for a time, after the cessation of the conscient and motive actions of the nervous system.

Again—it is admitted by those who maintain that contractility is independent of the nervous system, that the nervous fluid has an important part to perform in the production of secreted fluids. Now can there be any such thing as growth or nutrition without secretion? Is it not strictly correct to say that the nutritive capillaries *secrete* the materials of which the muscles are formed? and can we suppose that the nervous influence is essential to the secretion of fluids, and not to the growth or organization of the solids? Is not the embryo furnished with nervous influence from the maternal system, until it have a nervous system of its own? Do not the muscles of a youth's limb cease to grow after the nerves going to them are destroyed, or perhaps only injured by disease or accident? In short, do we not have abundant reason to believe that the nutrition, growth, or *organization* of a muscle, is immediately dependent on the nervous system? If this be admitted, it would be a mere play upon words to say that contractility is not immediately dependent on the

nervous system. Need I repeat that the contractility of a muscle is nothing distinct from the muscle itself, although our language would seem to represent that it is? For a muscle to be organized in a certain manner, or to be contractile, or to *possess* contractility, are all one and the same thing. If you merely compress an organ, you affect its organization; and nothing is more true than that there never is an alteration of property without an alteration of organization.

It is well known that whatever affects the nervous system in any great degree, affects the *contraction* of the voluntary muscles; but the Hallerians assert that in these cases, the affection of the nervous system does not produce this effect by increasing or diminishing their *contractility*, but by increasing, diminishing, accelerating, retarding, or in some way or other affecting the cerebral stimulus; and they demand of the neurologists to prove that it is not so.

Now this is not so easily proved, directly and conclusively, in the case of the volvntary muscles, as in that of the involuntary. But if it should appear, as I think it will, that the nerves of the *involuntary* muscles do not, *at any time*, convey any thing to them which *excites* them, but are at all times conveying something to them which serves to render them *excitable* or contractile; I say, if this should appear to be the fact, it will be a very rational inference that the *voluntary* muscles, also, receive something from the nervous system, which renders them contractile. Hence, I think it will appear still more evident, before we get through this chapter, that the contractility of the voluntary muscles is dependent on the nervous system, than it now does; although we may not labor directly in support of this point.

Of the cerebral stimulus. Concerning the nature of what we have called the cerebral stimulus, we have thought not a little. The time was when we supposed it to be of the same

nature as the nervous fluid: we supposed that the nervous fluid flowing into and uniting with the particles of the muscular fibre, gives these particles a disposition to approach each other more closely than what the attachments of the muscles will admit of; but that, when these particles receive an additional flow of this fluid, reserved in the brain for the purpose, (which reserved portion we denominated the cerebral stimulus,) their disposition to approach each other is so much increased that they do so, notwithstanding the powers they must overcome in so doing;—this approaching together of the particles of the muscular fibres, constituting muscular contraction.

We entertained this opinion relative to the cerebral stimulus, while writing the chapter on the muscular system, as may be inferred from a few words there dropped: but although it appeared to us more plausible than any other notion that we have ever seen advanced relative to voluntary contraction, still we were not entirely satisfied with it: it naturally gave rise to many difficult questions. We were therefore led to reflect more maturely upon the subject, and the facts that have occurred to us, have brought us to the conclusion, that the voluntary muscles are not excited to contract by any nervous fluid or "influence," as some call it, brought to them by their nerves; and, consequently, that the term *cerebral stimulus*, is no more the name of an *agent* than the word sensation or the word motion.

We suppose that when any one contracts his muscles voluntarily, an *action*, not a fluid—not an *agent*, proceeds along the nerves from the brain to the muscles. We will now advance some of our reasons for supposing so.

First. It is just as conceivable how a *conscient action of the brain*, that is, a thought, should excite [be immediately succeeded by] a *motive* action of the brain, and that this action

should continue along down some nervous tract into the muscles, and be immediately followed by a contraction of the muscles, as it is how a conscient action of the brain, or a *willing*, if you please, should throw or let off, or cause to be left off, a portion of fluid which, keeping its right course, goes to the muscles, and causes them to contract.

Second. We know that by irritating the lower part of the brain, or the spinal marrow, or the nerves going to certain muscles, with any hard substance, as a wire or bit of glass, we excite contractions. We can excite as many contractions by irritating the nerves that go to certain muscles, as we can by irritating the spinal marrow from which the nerves proceed. Now what fluid do we throw upon, or cause to be thrown upon, the muscles, in these cases ? Do you say that we cause a fluid contained by the brain, the spinal marrow and the nerves, to move along into the muscles ? I say, prove your assertion, and show us why you cannot excite more contractions in the same muscles, when you irritate the brain or the spinal marrow, than you can merely by irritating the nerves—the brain and spinal marrow, with all their supposed *stimulus*, being removed.

Third. If a man apply his ear to the end of a sound stick of timber, supported from the ground, (it matters little how large or long the stick may be.) while another person very slightly scratches the other end as with a pin, the man who applies his ear will instantly hear the scratching. This he will do, let him apply his ear to what part of the end of the log he may. Now what are we to suppose in this case ? Can we do otherwise than admit that a very slight degree of mechanical force gives rise to an action throughout the whole stick of timber ? It either must excite an action among the particles that compose the solid matter of the stick, causing them, of course, to change their relations, more or less, with

each other ; or it must excite an action of the air which the pores of the stick may be supposed to contain. Some might at first think it most probable that the scratching excites an action of the air only ; but we have sufficient reason to conclude, notwithstanding, that the atoms of matter which compose the stick itself, are put in action.

This fact shows us what an exceedingly slight degree of mechanical force is required to excite atomic actions throughout solid bodies ; and it enables us to admit that a certain change in some part of the brain may be followed, as an effect, by a change or action of some other part, and this again by a change all along down a nerve into a muscle, and then be followed by a contraction of the muscle.

It is maintained, and generally, perhaps universally, admitted by philosophers, that the grosser atoms of the most dense, hard and compact bodies, do not absolutely touch each other, but that space, or some very subtile fluid, as caloric or electricity, intervenes. And this opinion appears to be countenanced by the fact, that in many bodies atomic actions may be excited without much more mechanical force being communicated to the body than what would seem necessary to move one of its separate particles.

It appears that what we call a body of matter, is a little world of atoms, and that, in many instances, if you communicate force enough to one or more of these atoms to move them, these atoms communicate it to others, and so on, something as *bodies* act upon bodies. This being the case, we need not marvel that such slight force is necessary to excite atomic actions in some bodies.

Now we cannot tell by the appearances of bodies, whether their atoms be so arranged that they will communicate actions among themselves or not ? nor indeed do we know but that an imperceptible atomic action takes place in all bodies

when any thing touches them. If facts seem to show that an atomic action takes place in any body, it becomes us to admit that it does, although we might judge from the appearances of such bodies, that it would not.

Who would judge, on looking upon a stick of timber, that an atomic action may be excited throughout its whole extent, merely by a very slight scratch of a common dressing pin? Who would judge, on examining the optic nerves and brain, that an atomic action may be excited in them by a few rays of light falling upon the retinæ? Who would judge that an inconceivably slight action of the brain may give rise to an action all along down the spinal marrow? Yet such appear to be the facts. However, in order that atomic actions may take place in bodies, it is necessary that the atoms be in certain relations with each other; if they be too far apart or too near together, these actions will not take place, at least, not exactly as they otherwise would. If you crack a bell, it will not sound as before; divide the nerves going to a voluntary muscle, and the atomic action of the upper portion will not continue on into the lower portion; hence the muscle is no longer under the control of the will. On the other hand, if you compress a nerve so as to bring its atoms too near together, you interrupt the atomic actions of the nerve, and in this way destroy volition. Nevertheless, if I mistake not, there are some pathological facts which seem to show that the *nervous fluid* may pass along a divided nerve, if the divided ends be in apparent contact.*

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* Since writing the above, I have discovered the following passage in Bostock's Physiology, vol. 1, p 202. "Does not the curious fact which has been established in the late controversy respecting the effect of dividing the eighth pair of nerves, that the nervous influence may be transmitted along a divided nerve, even when the parts are *one-fourth* of an inch asunder, afford a direct argument

It must be remembered, that when one event *immediately* follows another, we cannot explain *how* or *why;* for, to explain the connexion between two events, or to explain why one event follows another, is but to point out intervening events, showing in what order these intervening events occur. But when two events occur in immediate succession, there are no intervening events to be pointed out, and we can only say that the one follows the other, because such is the law of nature. Supposing the moving body A strike against the body B, and put B in motion—we cannot explain why A should put B in motion by striking against it ; but if B move on and knock down the body C, and it be asked why the motion of A is followed by the falling of C, the answer, the explanation, is, because A put B in motion, and B struck C. Here we see that between the motion of A, which is one event, and the motion of C, which is another event, there is an intervening event, the motion of B, to be pointed out ; of course an *explanatory* answer to the question, why is the motion of A followed by the fall of C ? may be given. So if a certain action of the brain be *immediately* succeeded by an-

against the idea of this influence depending upon the passage of a subtile fluid ? See Quart. Journ. v xi p. 325. and v. xi. p. 17."

We may remark, that it has not been shown that the *cerebral stimulus* may pass along a divided nerve ; but that the power of the stomach to digest—to secrete a proper gastric fluid—is destroyed by dividing the nerves which go to it, and placing the divided ends at considerable distance from each other ; but that if the divided ends are placed not over one-fourth of an inch asunder, this power is not destroyed. We may furthermore remark that this fact is an argument for, and not against the idea, that the *nervous influence* (not the cerebral stimulus,) is a fluid instead of an action —We have good reason to suppose that the nervous influence or fluid, is the electric, or some modification of it ; and we know that the electric fluid will pass along a divided conductor, if the divided ends be one-fourth of an inch asunder ; but as Bostock says, the solution of continuity of a nerve, " must certainly put an effectual barrier to the propagation of the vibratory or oscillatory action.

other action of the brain, we cannot explain why ; and if an action of the brain be immediaiely followed by an action of a nerve, as its effect, we cannot explain why ; and if a certain action of a nerve be immediately succeeded by a contraction of the muscle to which it is distributed, we cannot explain why. And if any one ask why ? he shows at once that he does not suppose these actions to follow in immediate succession, but that there are some intervening events to be sought after. But if it be asked why a certain action of the brain is followed by a contraction of a muscle, we can say that the action of the brain gives rise to an action of a nerve, and the action of the nerve excites an action of the muscle. This would be explaining the phenomenon or contraction as well as the present state of our knowledge enables us to do ; and it is, perhaps, as complete an explanation as we give to the question, why is the motion of A succeeded by the fall of C?

It is true that in cases of muscular contraction, there is, as we may say, a generation of force ; but this is owing to the contractility of the muscle. Were there no such generation of force, we should have no reason to say a muscle is contractile, nor should we call that a *stimulus*, which might *force* the ends of a muscle nearer to each other, any more than we call that a stimulus which may force the ends of a piece of caoutchouc nearer to each other.

We do not suppose that nerves vibrate when they communicate actions from one part to another, any more than we suppose that a stick of timber vibrates when one end is slightly scratched with a pin ; but that the particles or atoms of the nerves change more or less their relations with each other. We prefer calling this action of the atoms an *atomic action*, to calling it a *vibratory action*, for we would express no conjecture of the way and manner in which the atoms act,

whether they move to and fro, up and down, or turn on their own axis.

Fourth. Most of those who apparently believe that an agent passes from the brain to the muscles in case of voluntary contraction, suppose this agent to be the common electric fluid, or some modification of it. Now it is well known that the electric and galvanic fluids pass through the most compact bodies with quite as much facility as the more porous; but only compress a nerve a little, and the muscle to which the nerve is distributed cannot be excited by the will. This fact favors the opinion that it is an action, and not an agent, that passes from the brain to the muscles when voluntary contractions are excited; for this compression is much more likely to arrest an imperceptible atomic action of the nervous trunk than to arrest a fluid any thing like the electric. And should the experiment be tried, we doubt not but that it would be found that the electric or galvanic fluid will pass a compressed or divided nerve as readily as one that is not divided or compressed.

Fifth. After the brain and upper part of the spinal marrow have been removed or destroyed, you may, by wounding the muscles of one of the hinder limbs of the animal, excite contractions of the muscles of the other hinder limb. In this case it appears to us much more reasonable to suppose that you excite an action of the nerves of the muscles which you wound, and that this action runs along up the nerves into the spinal marrow, and from thence down the nerves of the other limb, than it does to suppose that you cause any portion of fluid to run up the nerves of one limb and down the nerves of the other. It is no uncommon thing for a nervous action to continue up some nervous tract and excite an action in, or communicate an action to, some other nervous tract which may run either up or down. Some instances of what physi-

cians call sympathy, are to be accounted for in this way.—When muscles are contractile, all that seems necessary to cause them to contract, is a certain action (no matter by what means excited.) of the nerves that go to them. Thoughts and sensations are as far from being *essentially* necessary to muscular contraction, as a galvanic trough.

It is well known that the electric and galvanic fluids are the best chemical (or perhaps we may as well say *mechanical*) agents that we can use for exciting contractions of the voluntary muscles. This fact is one that I thought of when I concluded that the cerebral stimulus is a fluid ; but it only proves that the electric and galvanic fluids are powerful excitants of that action of the nerves which is excited by certain conscient actions of the brain, and by many chemical and mechanical agents.

Perhaps mechanical and chemical agents may excite contractions by operating directly upon the muscular fibre ; we can only say we *know* that they may excite contractions by operating through the medium of nerves.

The reader will remember that the question, whether or no these agents ever excite contractions by operating directly upon the muscular fibre, is the one about which physiologists have disputed so much ; supposing all the while, that they were disputing whether the contractility or power of the muscular system is independent of the nervous system.

Sixth. We cannot believe that any invisible fluid or "influence" passes into the very texture of the involuntary muscles, and causes them to contract, when they are excited, as we say, by their contents.

The preceding are some of the considerations which lead us to conclude that the cerebral stimulus is not a fluid, but an action.

Whether the nerves going to the voluntary muscles contain

a fluid which does not move along in them, when these muscles are excited to contract ; but which is the immediate seat of the atomic actions about which we have been speaking, we would not stop to inquire. For, if they do, such fixed fluid is as much a part of the nerve itself, as any other, and the question no more concerns us, than it does whether the nerves contain any sulphur, azote, oxygen, or any other particular material. We may remark, however, that there is nothing in favor of the opinion that the nerves possess any such fixed fluid, which is the medium by which actions are transmitted from the brain to the muscles.

If the *cerebral stimulus* be nothing other than an action of the nervous system, we may be asked why we give the action this name ? We answer, it is for convenience sake—the only reason we have for giving any thing a name. It is convenient to have a name to distinguish that which is the cause of *voluntary contractions* from those agents or actions which are causes of involuntary contractions. And as the immediate and invariable antecedent, or cause of *voluntary contractions*, (we do not say *contractions of voluntary muscles*,) is a nervous action which undoubtedly commences in the brain—perhaps in that part of it called cerebrum ; and as all physiologists agree to call every thing a stimulus which excites muscular contractions, we call the cause of voluntary contractions the cerebral stimulus.

It must be remembered that we do not say the nervous system is sensible because those actions take place in it which *immediately* and invariably precede voluntary contractions. We suppose that two kinds of actions, essentially different from each other, take place in the nervous system—*conscient* actions and *motive* actions ; and that the conscient actions constitute our sensations and thoughts, whereas the motive actions, though often excited by the conscient, may occur

without any consciousness whatever. These are the actions which immediately precede voluntary contractions.

It is true, a sensation generally attends voluntary contractions, but we consider this a *consequence* of the contraction, and not a necessary or invariable antecedent.—We suppose that the motive actions of the nervous system give rise to muscular contractions, and as there are sentient nerves in or about the muscles, the contractions excite conscient actions in such sentient nerves. The muscles would contract if there were no sentient nerves distributed to them.

I would add, in this place, that all the spinal nerves have a double origin, a posterior and anterior root, and that, by direct experiment, it is proved that the muscles to which these nerves are sent, are rendered paralytic and insensible respectively, according as the anterior or posterior roots are divided. Hence it is proved that the voluntary muscles receive two kinds of nervous fibrils, motive and sentient. The motive nerves communicate actions from the brain to the muscles which are the immediate and invariable antecedents of voluntary contractions. The sentient are those in which conscient actions are excited by impressions upon their organic extremities.

We now proceed to a more particular consideration of the relation which subsists between the involuntary muscles and the nervous system.

Our opinion is that, like the voluntary, the involuntary muscles receive a fluid from the nervous system which is one thing essential to that organization, which is but another word for their power, or contractility.

The following are some of the principal considerations directly in favor of this opinion.

First. The involuntary muscles are well supplied with nerves which must be supposed to have some office to per-

form in the *ordinary* operations of the animal machine ; and it is pretty clear that they do not communicate a stimulus to these muscles, for these muscles are not under the control of the will, but are excited by their contents.

Second. It is probable that the brain. spinal marrow and ganglions, secrete a fluid which is conducted off by the nerves, but which is not a stimulus, either to the voluntary or involuntary muscles.

Third. Affections of the nervous system influence the involuntary, as well as voluntary muscles, as indicated by an alteration of their actions. Every body knows how the action of the heart, for instance, is influenced by the passions.

Fourth. By destroying the connection between these muscles and the nervous system, you destroy, though not instantly, their contractility.

Fifth. Secretion is undoubtedly a function of minute muscular organs, and this function is destroyed in proportion as you destroy the connection between their organs and the *nervous glands*, or in proportion as you destroy these glands themselves.

Sixth. It is proved that what goes from the nervous system to the stomach and enables its capillary vessels to secrete the gastric fluid, is not an action, and as we know it is not a solid nor a liquid, it must of course be a fluid.

Lastly. We know of no fact opposed to this opinion.

We know, however that physiologists have disputed whether nerves, or nervous influence, are essentially necessary to muscular *contraction*, thinking all the time that they were disputing whether muscular *contractility* is independent of the nervous system. To such physiologists there are some facts which appear to be opposed to the opinion that the power of the muscular system is dependent on the nervous system : and there may be some facts which will appear, to

some, to be opposed to *our* opinion of the relation between the involuntary muscles and the nervous system. But—

The fact that muscles remain in some degree contractile, for some time after separated from the nervous system, does not militate against our opinion in the least, as we have before said.*

The fact that fœtuses have been born with hearts beating, but without a brain or spinal marrow, weighs very little indeed against us, until two things be shown: first, that such fœtuses have no nervous system of organic life; second, that the fœtus, which is as much a part of the maternal system as any other, until separated from it, does not receive a nervous fluid from this system —Pretty certain it is, notwithstanding all that has been said to the contrary, that *some* of the marks and deformities of fœtuses are caused by affections of the mother's nervous system; and this fact is no more inexplicable than the fact that children often resemble their parents, or the fact that animals propagate their own species instead of some other species.—By the by, I wonder some of our profound thinkers have not denied that animals propagate their species, for the good reason that they cannot explain the fact!

The fact that the involuntary muscles are not very sensible, argues nothing against our opinion; it only shows that they possess but few sentient nerves. It is rather in favor of our opinion, for if they were very sensible, it might, with the more propriety, be said that the use of their nerves is to render them sensible.

The fact that the contractile texture is to be found in some zoophites and some vegetables, in which no traces of a nervous system can be seen, proves nothing, only "that the

* See page 101.

great Author of nature is the lord, and not the slave, of his own laws." The question is not, what *may be*, but what *is*; the question is not whether a contractile texture may be organized without the intervention of a nervous system; but whether, in animals (in which, for good and wise purposes, the several parts are so intimately united that what affects one part affects another,) this texture is organized and kept in repair without the intervention of the nervous system.

Dr. Philip, a writer well known to gentlemen of the medical profession, has performed many experiments on rabbits and frogs, to determine the relation which subsists between the nervous and muscular systems, and the ultimate conclusion to which he arrives, is, that the power of voluntary and involuntary muscles is independent of the nervous system; but that these muscles may be influenced through, or by, the nervous system.

Now we know that the voluntary muscles are under the direct influence of the nervous system; it is from this system that they derive their stimulus; and it is conceivable (though not probable) that the voluntary muscles may be independent of the nervous system, as respects their power, and yet be influenced through this system. But as to the involuntary muscles, which are excited by their contents, which are not under the control of the will, and which cannot be excited to contract by mechanical or chemical agents applied to their nerves, it is very difficult to admit that they are independent of the nervous system, and yet influenced through it. It is what no man will admit, if the facts which led Dr. Philip to this conclusion can be rationally accounted for upon some other principle.

Dr. Philip himself appears to have been aware of this difficulty. After relating two sets of experiments, the first of which he thinks "proves that the power of the heart and ves-

sels of circulation is independent of the brain and spinal marrow; and the second, "that the action of the heart and vessels of circulation may be influenced by agents applied either to the brain or spinal marrow,"—he remarks:—

"If it be said that the results of these experiments imply a contradiction, that we cannot suppose the power of the heart and vessels to be wholly independent of the brain and spinal marrow, and yet influenced by stimuli applied to them, the reply is, such are the facts, of the truth of which any one may easily satisfy himself.

"On a closer examination of the phenomena of the nervous system, we shall find other similar DIFFICULTIES."*

We will endeavor to show how unsatisfactory is the conclusion, that the involuntary muscles are independent of, but may be influenced through, the nervous system.

First. The power of these muscles being independent of the nervous system, and their *usual*, if not their *only*, stimulus being also independent of this system, we would ask, how their actions can be influenced by affections of the nervous system? How, for instance, can fear increase the action of the heart? Does it stimulate the heart, extraordinarily, by exciting an action which thrills along the nerves into the heart? Does it cause a portion of nervous fluid to be thrown upon the heart? It would appear that Dr. Philip supposes a portion of fluid, or "influence," as he calls it, is thrown upon the heart. But if the nerves which go to the heart are capable of conducting off the nervous fluid, during the existence of fear, what prevents the fluid from flowing to the heart at any time? We presume that Dr. Philip would not admit that the nervous fluid is continually flowing to the heart, for, according to his principles, it can, in ordinary cases, have nothing to do after arriving there.

* Philip's "Inquiry into the Laws," &c. p. 92.

Second. It is admitted on all hands, that the proper stimulus of the heart is the blood; now can we admit that the heart or any other muscular organ has two natural stimuli, so different as the blood and nervous fluid apparently are—stimuli, too, which excite only one and the same kind of action?

Third. If that action constituting fear may throw a portion of nervous fluid upon the heart, why may not that action which constitutes a *willing*, do the same. Dr. Philip has attempted to show why the involuntary muscles, are involuntary; but what he says appears to us to amount to no more than this:—The voluntary muscles are involuntary because they are involuntary.

Fourth. According to Philip's conclusion, about which we are now speaking, the grand question which weighs so heavily against the opinion of the independent power of the heart, does not appear to be satisfactorily answered. Of what use are the nerves of the heart? This is the question, and Dr. Philip finds no use for them except on extraordinary occasions, except during the existence of the passions. His words are:—"The heart is supplied with nerves, and subject to the influence of the passions, because, although independent of the nervous system it is capable of being influenced through it."*

This is the sum and substance of all he has to offer in any place in answer to the question, of what use are the nerves of the heart? But is this satisfactory? The sense of the sentence may be expressed as follows:

The heart is independent of the nervous system; but is subject to the influence of the passions, because it is supplied with nerves.

The clause, "it is capable of being influenced through it,"

*Philip's "Inquiry," p. 247.

i. e. through the nervous system, may be omitted without any injury to the sense of the sentence ; for if the heart be " subject to the influence of the passions," it must of course be " capable of being influenced through the nervous system." And we may further add, that the passions are the only instances in which the nerves of the heart perform any function, according to Dr. Philip.

It is true that the action of the heart may be influenced by mechanical or chemical stimuli applied to the nervous system ; but no one will pretend that it is a *function* of the nerves of the heart, to influence its action, in these cases.

On the whole, Dr. Philip tells us that the heart is influenced by the passions, because it is supplied with nerves ; but he does not show that the nerves of the heart are of any use but to subject this organ to the influence of the passions. As to there being any use in this, so far as we can see, there is none at all :—it appears to be one of those incidental circumstances which, in many instances, occur under the present order of nature, and which men call evil.

Furthermore, it is contrary to all reason and analogy to suppose that we have organs which perform no office in the ordinary operations of our systems—organs, too, which, when they do perform their supposed functions, bring about nothing new, but only accelerate or retard accustomed actions, which are frequently accelerated or retarded by other means.—It is well known that the action of the heart is increased by exercise as well as by the passions ; but who would think of ascribing the increased action of the heart, in this case, to any action of the nerves of the heart ? Is it not owing to an increased flow of blood towards the heart, or to some obstruction (in the lungs) to the free circulation of the blood from the lungs—one or both ?

Passing strange it must be, that the heart and muscular

coat of the intestines are supplied with nerves, that a man may have a little bit of a palpitation, or a little bit of a diarrhœa in case he chance to be frightened!

We have now offered several considerations in favor of the opinion that the contractility of the involuntary muscles is dependent on the nervous system. We have also endeavored to remove what might appear to some as objections to this opinion; and we have shown how unsatisfactory is the conclusion, that the involuntary muscles are independent of, but may be influenced through, the nervous system.

We now proceed to show *in what way* the action of the heart and other involuntary muscular organs may be influenced by the passions; admitting that the contractility of these organs is *dependent* on the nervous system, and that they receive NO STIMULUS by way of their nerves.

We suppose that the nervous glands secrete a fluid which flows to *all* the involuntary muscular organs—not excepting the minutest capillary vessels; and that the contractility of these organs depends on this nervous fluid. Hence whatever interrupts the secretion of the nervous fluid, *lowers*, as we may say, the contractility of these organs. This being done, the stimability of their contents proves too high for their contractility; they are stimulated by such contents to a higher degree than they can bear without increased action; (we all know that a frequent pulse is a sign of weakness); the capillaries are excited to contract, (and the sum of all their capacities is very great); this contraction of the capillaries forces the fluids upon the heart, and thus we have a triple cause for the increased action of the heart; first, an increased discrepancy between its contractility and the stimability of the blood; second, an increased quantity of blood (its proper stimulus) forced upon it by the contraction of the capillaries, which may, with much propriety, be called the heart's antag-

onist; third, obstruction to the free circulation of the blood, through the lungs, out of the heart's way, "as a body may say."

But what, it is time to ask, suppresses the secretion of the nervous fluid, in the sound state of the system, and thus destroys the proper balance between the contractility of the circulating vessels and the stimability of their contents? We answer, the passions, or at least, *some* of the passions. Fear, for instance, is a peculiar, intense, conscient action of the brain, which is incompatible, as we may say, with the secretory action of this organ, and as the several parts of the nervous system act in concurrence, fear, by suppressing the secretory action of the brain, suppresses it throughout the whole nervons system. Hence, in case of fear, the man is weak, his countenance is pale, his heart flutters, and often much limpid urine is secreted.

Much limpid urine is secreted, because the contractility of the secreting capillaries of the kidnies is brought down to a due relation with the stimability of such urinary matter. The countenance is pale, because the contractility of many of the capillaries of the face, which usually admit the red globules of the blood, is so much reduced, that these globules prove too stimulating for them—they cause the vessels to contract upon them, and shut them out.

Anger, on the other hand, is a peculiar, intense, conscient action of the nervous system, which appears to increase the nervous secretion. There is no sense of weakness about a man in anger; the contractility of his capillary vessels is so raised that many of them stand in due relation with the red blood, which, before, circulated only colourless fluids; hence the countenance is flushed in anger; but we presume that the action of the heart is never increased *immediately* and *directly* by this passion *alone*. Yet we may find, perhaps, that

in most cases of anger, the action of the heart is somewhat accelerated ; but we may find that in these cases, the action of the heart was quickened by some cause, previous to the anger, or that it is increased by *exercise* during the anger, or, what is still more probable, we may find that fear, or some such like passion, accompanies the anger. Men when angry often think of taking revenge, but they *fear* the consequences--they *fear* to grapple ; they turn pale and tremble ; then, undoubtedly, the heart flutters.

In order to prove that anger, alone, does, in a direct manner,, accelerate the action of the heart, it must be shown that this unmingled passion excites the heart independent of the exercise of him in whom the anger occurs. We all know that a man sitting still, with a calm circulation, may have the action of his heart accelerated by some noise, or visible object, which may excite sudden and intense fear, or fright, as it is sometimes called ; but I am inclined to think that the action of the heart is never accelerated by pure anger, under such circumstances.

But supposing it should be found that the unmingled passion, anger, may accelerate the action of the heart in as direct a manner as the passion called fear ; it would not destroy our hypothesis to its lowest foundation.--We say that the contractility is *increased*, *diminished*, *lowered*, &c. but we use these terms for the want of better. It would be as well, perhaps, not to spin out our hypothesis any further than to say—the passions influence the actions of the circulating organs, by destroying the due relation, or proper balance, between their contractility and the stimability of their contents.

This view of the subject reconciles many difficulties ; it shows us how the heart, the countenance, the secretions, &c. may be influenced by the passions, although the hollow muscles are not under the control of the will—although they re-

ceive *no stimulus* by way of the nervous system. But Philip has not shown, satisfactorily, how this can be—he has not even shown, satisfactorily, why the involuntary muscles are involuntary. He says :—

"We can surely be at no loss to account for the action of these muscles being involuntary, when we know that they are all exposed to the constant or constantly renewed action of stimuli, over which the will has no power. Besides, the action of these muscles produces no sensible effect. We will to move a limb, not to excite a muscle. We wish to handle, for example, and on trial find that we can move our fingers; but what act of volition can we perform through the medium of the heart or blood vessels? If we had no wish to handle, the muscles of the fingers of course would never become subject to the will. It deserves to be remarked, that the will influences the rectum and bladder, the only internal organs which can assist in accomplishing an end desired."*

We here see that Dr. Philip gives us two reasons for the hollow muscles being involuntary; first, "they are exposed to the constant or constantly renewed action of *stimuli*, over which the will has no power." Second—"the action of these muscles produces no sensible effect." Let us first examine his first reason.

The hollow muscles are involuntary, because "they are all exposed to the constant or constantly renewed action of stimuli, over which the will has no power." This is as much as to say: the will has no power over the *stimuli* of the hollow muscles; therefore, it has no power over the muscles themselves. This being true, we might expect that if a man's stomach, heart, blood vessels, &c. should only be empty at any time, every thing else remaining the same, he might con-

* Inquiry, p. 198.

tract them at pleasure! for—Philip's *second* reason is a false statement. It is this: "The action of these organs produces no sensible effect."

We all know that the action of the heart does produce a "sensible effect," in the common sense of the expression; but it may be said, that the Doctor would attach some peculiar meaning to the expression. Hence it is necessary to examine attentively what follows the expression in the place it is used. On doing this we find, that if the Doctor would attach any peculiar meaning to the expression, "sensible effect," he would be understood to mean the same by it as by "an end desired."

But suppose I wish my pulse to beat 130 strokes in a minute, or only 30 strokes in the same length of time, that my physician may think me a very sick man, requiring his best attention—would not this be "an end desired?" And could I accomplish it, would it not be a "sensible effect?" as strictly so as any other?

"We will," says the Doctor, 'to move a limb, and not to excite a muscle." But why this talk?—If an anatomist should will to contract his *orbicularis oris* muscle, instead of willing to pucker his lips, could he not do it? But in this case the wish would be "to excite a muscle," and not "to move a limb."

The Doctor says—"If we had no wish to handle, the muscles of the fingers of course would never become subject to the will." Does the Doctor mean by this as much as to say, the *make* of a man depends upon the wishes he may chance to have after he is made!

Finally, the Doctor's reasons for the heart and blood vessels being involuntary, amount to this:—We can perform no act of volition, that is, no voluntary act, with the heart or

blood vessels, because, forsooth, " what act of volition can we perform by the heart or blood vessels?"

But it may be asked, what reasons *we* have to offer for the involuntary muscles being involuntary? Two or three very rational, yea, very probable, suppositions may be offered.

We may suppose that the nerves of these organs do not, like nerves of the voluntary muscles, have that direct connexion with the sensorium [that part of the brain which thinks,] which is necessary in order that motive actions may be excited in them, by conscient actions of this part of the brain.

Second. Anatomists know that the par vagum and all other nerves distributed to the hollow muscles, " differ from the other nerves in the disposition of their fibres, which, instead of being straight and parallel, are irregularly connected to each other and twisted together."* Hence it is probable that they are not in themselves capable of communicating such actions from the brain to the muscles, as the nerves of the voluntary muscles are. We know that we cannot cause the hollow muscles to contract by irritating, by mechanical or chemical agents, the nerves which go to them.

Third. The organization of the hollow muscles is sufficiently different from that of the voluntary, to account for their not being excitable by the same means. The voluntary muscles are excited by the cerebral stimulus; the heart is excited by the blood; and if the cerebral stimulus should be communicated to the heart, and a contraction of the heart should not follow, we should no more wonder than we should if the voluntary muscles should contract on having a few ounces of blood poured upon them.

We have now shown in *what way* we suppose the passions influence the actions of the hollow muscular organs, and why

* Bostock's Physiology, vol. 1, p. 169; Boston edit. 1825.

these organs cannot be excited by those conscient actions of the brain which constitute what we call a desire, or willing. But something more must be said in defence of the opinion, that the passions influence the action of the heart, &c. in the way and manner which we have pointed out.

Perhaps, in point of weight, the first seeming objection to this opinion that may be brought, is the short space of time that passes between the commencement of the passion and its apparent influence on the hollow muscles. We have maintained that the nervous influence enters into the organization of the muscular fibre, and is one of its essential principles, as much so, as any thing brought to it by the arteries; and that the muscular fibre being once organized so as to be contractile, may, as we know, remain, in some degree, contractile even for hours after separated from the nervous system. Now if the ordinary actions of the minute vessels and other muscular organs, are so dependent on a punctilious supply of nervous fluid, that these actions are altered when this supply is withheld for a few moments; some may wonder that these organs remain *at all* contractile, for hours, after cut off from this supply.—We will now endeavor to remove all doubts arising from this score.

In the first place, a man does not turn pale, and the action of his heart is not accelerated the instant the passion fear, for instance, is excited.—Fright is an intense fear, suddenly and unexpectedly excited. Now I know (for I have thought to notice immediately the occasion,) that I am often frightened, and the fright is all over, without any increased action of the heart. But it may be said that such persons as are called nervous, feel a sort of thrilling sensation throughout the system the very instant they are frightened, and that many a one experiences this sensation when a horse trips which he is

riding, and which he has learnt by experience is apt to stumble.

This we grant, but this instant sensation does not prove that the person instantly turns pale, or that the action of his heart is instantly accelerated ; nor does it in any degree prove that in other cases of passion, the action of the heart, &c. is altered by means of a conscient action extending along certain nervous tracts. Consciousness (by which I mean as much as any one does by thoughts and sensations,) has nothing to do with muscular contraction, as its *immediate* cause or antecedent,—not, indeed, in case of voluntary contraction. That conscient action of the brain called a willing, is not the immediate antecedent of voluntary contractions ; but this conscient action excites a motive action of the nervous system, and this is the immediate antecedent of voluntary contractions. All this will appear more clearly in the chapter on *Volition*.

But after all, it must be admitted that in many cases the action of the heart is very soon altered after the commencement of a passion. And we are now about to offer some considerations tending to reconcile this fact, with the fact that muscular organs often remain in some degree contractile, even for hours after they cannot be supposed to receive any nervous fluid from the brain and spinal marrow.

The reader must remember, that in man the brain bears a greater proportion to the rest of the nervous system, than in any other animal ; and that as we descend the scale of animal beings, the brain becomes, as we may say, of less and less consequence. In rabbits, and particularly in frogs, so great a proportion of the nervous fluid, which their hollow muscles receive, is secreted by the ganglions (as we suppose) that these muscles will remain contractile much longer after the brain and spinal marrow are destroyed, than they would in man after the destruction of the brain and spinal marrow.

In the case of frogs, Dr. Philip has shown, that after the brain and spinal marrow are destroyed, the capillary vessels remain contractile, so as to circulate their contents, "many minutes;" and that the heart generally remains contractile an hour or two. But in man we doubt if the heart or capillary vessels would continue to act one minute after being treated as the frogs were treated. We presume that if the brain and spinal marrow of a man were destroyed, his muscular organs would not be found to be contractile so long after, as they are after death from strangulation, or some other cause which may not prevent the nervous secretion from going on, a little, after what we call death. In some instances, fear so completely suppresses the nervous system, and keeps it locked up, as it were, for such a length of time, as to destroy life; in such cases it is found that the muscles have lost, or quickly lose, all contractile power. Be it remembered, also, that according to our principles, the passions influence the action of the heart *chiefly* through the medium of the capillary vessels; and as the contractile texture of these vessels is exceedingly delicate, we need not wonder that a momentary increase or momentary suspension of the nervous secretion, so destroys the proper balance between the contractility of these vessels and the stimability of their contents, as to cause an alteration of their actions. Finally, when we consider all the differences between a bull-frog and a man, we need not wonder that in the latter, the passions may, in a few seconds of time, influence the capillary vessels, and consequently the heart, in the way we have supposed; although a frog's heart may remain contractile a few hours, and his capillary vessels "a few minutes," after the brain and spinal marrow are destroyed.

I am aware that Dr. Philip has performed certain experi-

ments, the results of which I must show to be reconcilable with the principles I have been endeavoring to maintain.

With mallets, knives, wires, and hot pokers, he has crushed, mangled, pierced and singed the brain and spinal marrow of rabbits and frogs and has also poured upon them spirits of wine, laudanum, and infusions of tobacco. And what were the general results? Why, the more he injured the nervous system—the more he slashed it, and the more alcohol he poured upon it, so much the more he quickened the action of the heart. Hence the Doctor supposed, that by these means he *stimulated* the heart; whereas, we suppose he deranged the nervous secretion—impaired the contractility of the heart and blood vessels, and caused the heart to beat more frequently, in much the same way that fear does. The spirits of wine did not excite the heart in the same way that they do when drunk: in this case, it may excite the nervous secretion somewhat, (perhaps, however, by exciting the circulation,) but it enters into the blood and raises its stimability *more* than it raises the contractility of the heart; and in this way gives rise to an increased action of the heart.* When

* Magendie informs us, in his "Summary of Physiology," p. 257, that by opening the thoracic duct where it forms a junction with the left subclavian vein we shall find that the chyle is poured out rather slowly, and of course the rapidity with which it runs along the duct is not very great. This may lead some to think that spirits, when drunk, do not get into the circulating system so soon as we find the action of the heart to be accelerated. On this I have to remark, that by opening the thoracic duct as Magendie did, you destroy the influence of the heart's suction on the motion of the chyle; and again, I would ask if any one has found out how quickly the heart is influenced after drinking spirits the man remaining so still as not to accelerate its action by exercise?

We do not deny but that spirits may make an impression upon the nerves of the stomach, and give rise to a change in one's feelings—perhaps increase the nervous secretion, before they reach the circulating system; but we are inclined to think that the action of the heart is not accelerated until they enter the circulation.

the contractility of a man's heart is reduced by disease, a spirituous potation accelerates its action more than when its contractility is in a high state, as in health.

When Philip crushed the brain with a hammer, he gave the nervous system such a shock as completely to arrest, for a time, the nervous secretion. This so reduced the power of the heart and the contractility of the capillaries, that the capillaries could not withstand the stimulation of their contents —they were excited into a sort of constrictive spasm, by which means the blood was so crouded into the enfeebled heart, that it could not contract so as to free itself of its load ; yet its *disposition* to contract was great, that is, the discrepancy between its contractility and the stimability of its contents, was great. But presently the shock of the nervous system passes off—the contractility of the heart and capillaries begins to be restored—the capillaries give more room for the blood—the heart begins to struggle ; and finally, for a time, again supports the circulation, though more feebly than before the brain was crushed. Now what does Dr. Philip conclude from this ? He concludes that so far from the power of the heart being dependent on the nervous system it may, of its own self, recover its power, "precisely as a muscle of voluntary motion will by rest recover its excitability, although all its nerves are divided." Surely ! this is explaining a mystery, merely by comparing it with a greater, which greater he nowhere attempts to explain.

Now we do not think the two cases are alike. It is natural for a voluntary muscle to contract but a few times in immediate succession ; but it is natural for the heart to contract once a second or oftener, *continually ;* the heart is not *fatigued*, when it stops after the crushing of the brain ; and if the power of the heart and circulating vessels be in de-

pendent of the nervous system, we wish the Doctor would just show us why it ceases to act after crushing the brain.

Dr. Philip found that he did not stop the action of the heart by removing the brain or spinal marrow, as he did by crushing these organs; but *why*, he does not explain.—We will attempt it. You cannot remove the brain and spinal marrow without some loss of blood; this prevents the heart from being so completely overloaded that it cannot act. True, Philip sometimes contrived it, so as to *snip* off a frog's head without much loss of blood; but then, he left the spinal marrow and the ganglions which, with the nerves, form the chief part of a frog's nervous system; and in snipping off the head, which, by the by, contains a pretty good share of the blood of the animal, he did not give the nervous system such a shock, as when he crushed the brain.

Dr. Philip found that when he mangled the brain but little, or poured alcohol upon only a small part of it, he altered the action of the heart little or none. This fact he does not *explain*—he only refers it to a law which he is endeavoring to establish; but we suppose it is because he did not destroy the nervous secretion to any great degree. He found, also, that his application to the outer parts of the brain did not cause any contraction of the voluntary muscles; but that when he got down to the lower part of the brain, where the conscient actions go on, he did. Why? Because he then got down to, and excited motive actions in, that part of the brain in which the motive actions are excited by the "will," as the expression is.

Again—Dr. Philip states that when he took out the back part of the brain, and afterwards poured alcohol upon the anterior part; he found the action of the heart as much quickened as if he had left the nervous system entire. Why so? Why, I suspect he did the nervous system as much injury, and

deranged the nervous secretion as much, as if he had not taken out any part of the brain. Should he tell me that the action of the heart was not increased until he applied the alcohol, I should begin to think it is pretty queer if you may catch a frog and fall to mangling it, without exciting an increased action of the heart,—I should think that frogs are so unlike men, that experiments made on them will never give us much correct information concerning the economy of human beings.

Another fact which Dr. Philip does not explain, but which, so far from causing us to wonder, is what our principles would lead us, *a priori*, to expect, is this: A transverse division of the spinal marrow renders the voluntary muscles below, paralytic, (in one sense of the word,) but does not influence the powers or actions of the hollow muscles. Need we show why this is? Does not the reader see that the division of the spinal marrow prevents the communication of the motive actions of the brain to the muscles below, but that it does not in the least destroy the nervous secretion, either in the parts above or below the division?

Dr. Philip has shown that liquid preparations of opium and tobacco applied to the nervous system, cause the heart to beat less frequently. This fact led him to make a statement which appears to us quite irrational.

On reviewing the inferences from his experiments, he says, (p. 234): "The nervous influence is capable of acting as a *stimulus* both to the heart and vessels of circulation." And in the lines next immediately following, he says: "The nervous influence is capable of acting as a *sedative* both to the heart and vessels of circulation, even to such a degree as to destroy their power." He then refers us to the experiments which lead him to this conclusion, and on turning to them we find them to be the experiments in which the *hammer*, the

opium, and the tobacco, suppressed or retarded the action of the heart.—I wonder if the Doctor supposes that hammers and opium operate on the same principle !—We do not suppose the nervous influence, directly, either accelerates or retards the action of the heart, but if it did either, it would appear irrational to suppose it does both.

Now although Dr. Philip has given us no explanation of the fact, that preparations of opium and tobacco, applied to the nervous system, cause the heart to beat less frequently; still, in offering opinions opposed to his, it may be thought incumbent on us to explain all things; therefore, we shall, at least, attempt to explain this fact. But in confirmation of what we have said about the detrimental action of alcohol on the nervous system, and of what we are about to say concerning the modus operandi of opium, &c.; we will first quote a passage from Philip.

"Mr. Hastings had found, that immersing the hind legs of a frog in tincture of opium, [laudanum] in less than a minute, deprives it of sensibility. This does not arise from any action of the opium; a watery solution of opium, we found, however strong, does not produce the effect. It is immediately produced by simple spirit of wine, and arises from the action of the spirit on the nerves of the part to which it is applied. It is remarkable, that if simple spirit of wine is used, the animal expresses severe pain; if tincture of opium, very little."

From this passage we learn that alcohol makes such racking work with the delicate nervous texture, even when not applied immediately to it, as to destroy its sensibility, whereas opium does not. Knowing this, we may the more readily admit that alcohol, applied to the nervous glands, may derange the nervous secretion, and yet, that liquid preparations

of opium and tobacco may *promote* it, which is the position that we shall maintain.

We suppose that opium is a real and powerful promoter, not of muscular contractions, but of the nervous secretion, and that when laudanum is applied to a considerable part of the nervous system, and the animal gets a little over the shock of the operation, it moderates the action of the heart as follows :—It increases the nervous secretion, whereby it raises the contractility of the heart and circulating vessels, and this, so far as it respects the relation between the contractility of these organs and the stimability of their contents, is equivalent to diminishing such stimability. This speculation being admitted, we see in *what way* preparations of opium and tobacco, applied to the nervous system, moderate the action of the heart; we see, also, in what way opium, given to living animals, produces a full, slow pulse. This slow pulse is not, in fact, a sedative effect of the opium, considered in relation to its action on the nervous system ; but it is a sedative effect, considered in relation to its influence on the heart, provided we insist on calling every thing a sedative which moderates the action of this organ.

The *real* sedative effects of opium do not follow its being taken into the stomach, until twelve or fourteen hours after—then the patient begins to feel weak, faint, &c.—then it is that the nervous system is resting from its high action. True, opium may raise the contractility of the capillary vessels so that many of them may admit red blood, which, before, did not ; hence so much blood may be permitted to rush into the brain as to produce some impediment to the recurrence and occurrence of its conscient actions; so we see, that in this way opium may induce sleep ; and yet it may be all the time promoting the nervous secretion.—Surely, there is a wide difference between the modus operandi of opium and *ham-*

mers upon the nervous system; although the one may moderate the action of the heart, and the other destroy it.

Remarks.—It appears to us that very many writers have entertained an erroneous notion relative to the actions of muscular organs: it seems as though they have reasoned something like this: A dead organ acts not at all—a living organ acts some; hence the more life, the more action, and the reverse, the more action, the more life or power. But this sort of mathematical reasoning will not hold in the present case, certainly not as it respects the heart. For a frequent, quick pulse, we are to look to the sickly and enervated; for a slow, full pulse, to the hardy yeomanry. The physician knows that those causes which appear to be calculated to injure the nervous secretion, predispose to spasmodic actions; and he will find, on reviewing all the facts any way related to the subject, that the following is a universal fact, or *law of the animal economy*, if you please to call it such, viz. The lower the contractility of a muscle (until it get to a very reduced point,) the less able is it to withstand the action of a stimulus, or in other words, the more is it excited by the same agent. Nevertheless, we must make a distinction between a frequent, quick, and easily excited action of a muscular organ, and a forcible action; also, between the *disposition* of an organ to act, and its *power* to act. For instance, the stimability of the blood remaining the same, you may increase the disposition of the heart to act, pretty much in the same ratio you diminish its power or contractility.

It is true we sometimes meet with a slow pulse in a debilitated subject; but this slowness is not owing to the atonic state of the circulating organs. It is owing to the reduced stimability of their contents. This stimability is brought so near to a level with the contractility of the organs, that it excites them but moderately. Give such patient a glass of

spirits, or a little stimulating food, and you will quicken his pulse much more than you would by the same means were he well.

In some diseases the contractility of the circulating organs is so much reduced, that the capillary vessels cannot, as we may say, *patiently* bear the stimulation of their contents ; a sort of constrictive spasm is excited in them ; they press the fluids upon, or rather into, the enfeebled heart ; the surface is pale, and the pulse is slow and struggling. Draw a little blood and you remove some of the heart's load, enabling it to act more freely ; hence you raise the frequency of the pulse to the healthy standard. But if you bleed copiously, you take from the nervous system that which is necessary to maintain its secretion ; hence you lower the contractility of the circulating organs to a greater degree than what the disease has done, and the heart flutters, and may soon cease to beat. In such case, nothing will save the patient but the prompt administration of such medicines as will promote and maintain the nervous secretion ;—opium, in regularly repeated doses, is perhaps the very best.

When a robust man is taken down with a common inflammatory fever, you will find that some cause has raised the stimability of his fluids, (spirits may do this, or cold may do it by suppressing the perspiration,) or else that some cause has lowered the contractility of his circulating organs, increasing their disposition to act. Therefore, in such patient you find a frequent and forcible pulse. Bleed him, and give him diluent drinks, and you bring down the stimability of the fluid to a proper relation with the contractility of the organs which contain them ; and thus you moderate the action of the heart. But bleed him very copiously, and you take away that which is necessary to support the nervous secretion, and thus you cause the heart to flutter. Give a little opium, and you pro-

mote the nervous secretion, and again calm the action of the heart.

We might fill pages with pathological evidence in favor of our opinion of the relation between the nervous and muscular systems. But we must proceed to recapitulate the more important principles already advanced; for it is necessary that the reader remember them, as they will enable us to explain the phenomena of the passions, and many other interesting phenomena; by doing which we shall remove much of that mystery which has hung over the phenomena of man; and we shall show immaterialists, that with all their imaginary machinery, they cannot begin with the materialists in explaining the phenomena of man.—Oh for the time when mankind will be no longer deceived by mere verbosity!

Some of the more important principles which we have been laboring to maintain, in this chapter, are the following:

1. That the contractility of the *whole* muscular system is dependent on a nervous fluid.

2. That the immediate antecedent or cause of the contractions of the voluntary muscles, is an *action* of the nervous system, which action we, for convenience sake, call the *cerebral stimulus*. But so much of this action as takes place in the brain, we call a *motive* action, in contradistinction to the *conscient* actions of the brain.

3. That the *only* stimulus of the hollow muscles, is their contents.

4. That the passions influence the actions of these organs, by destroying the proper balance between their contractility and the stimability of their contents.

5. That by diminishing the contractility of a muscle, you render it more *irritable*, in the good old *pathological* sense of the term; but less powerful—for the peculiar *power* of a muscle is nothing other than its contractility.

Concerning the *nature* of the nervous fluid, we shall say but few words. Many are already acquainted with the evidence in favor of its being the electric fluid, or some modification of it ; those who are not, I must refer to Philip's " Inquiry into the Laws of the Vital Functions."

I will just offer two or three considerations which, with the evidence alluded to, convince me that the nervous fluid is the electric fluid, or more probably, that peculiar modification of it called the galvanic. First. There are no elements in man that do not exist out of the animal system. No man will have the hardihood to deny this. Now if we had full liberty to imagine every thing without proving any thing, we could not imagine any agent by which we could any better explain certain phenomena connected with muscular action, than we now can, by supposing the electric fluid to be concerned in the production of these phenomena.

Suppose we admit for the moment, that the nervous fluid is something essentially different from the galvanic, and suppose we give it the name of life ; and if you please, we will suppose another agent, totally different from any thing we have any knowledge of, and give it the name of soul,—now I ask the reader, if there is a single phenomenon of man which he can any more explain, or any better explain, these things admitted, than he can without supposing the existence of any unknown substances. Strange it is that men should think to explain the known by the unknown, and strange it is, that men should think they *explain* phenomena, when they only refer them to some brain-begotten agent.

Second. Chemists can bring many facts in favor of the opinion that bodies have each a certain capacity for electricity as well as for caloric, and that when they yield any share of their fixed electricity, they suffer some change, even in their physical properties ; hence, when substances suffer such

changes as they do, during the processes of digestion, circulation, &c. we may easily suppose that some of them yield a portion of their fixed electricity to those curious galvanic batteries, the nervous glands.

Animal heat undoubtedly arises from a change of capacity for caloric, which materials undergo during the changes that are continually going on in the system. It is more than probable that the electric or nervous fluid has an important part to perform in the production of these changes, consequently in the production of animal heat.

We are now about to treat of the conscient phenomena of man; but before the reader proceeds any further, we wish he would return to, and read, the two first pages of the chapter on Union, and also the note at page 44.

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CHAPTER XII.

On Sensation and Perception.

The five senses have sometimes been called the *external* senses, in contradistinction to the *internal* senses, a class of beings (not very harmless,) begotten by the well organized brain of Mr. Locke. *We*, however, do not speak of the *external* senses, but of the *senses;* and mean by them, those organs upon which impressions immediately operate in exciting conscient actions of the nervous system. As to the internal senses, they are none of our machinery.

It must be remembered, that the nerves are the essential parts of every sense; no organ is an organ of sense, or a sensible organ, unless it possess a sentient nerve.

If we have not, we must now inform the reader, that, by

physiologists, the two extremities of each nerve or nervous tract, are distinguished by the names *cerebral* and *organic*—the first being connected with the brain, and the other with the sensible organs.

Now the nerves are of a different make at their organic (and undoubtedly at their cerebral) extremities, from what they are between the brain and their organic extremities;—at least, we know it is so with the optic and auditory nerves; and not only analogy, but very many phenomena, lead us to conclude it is so, with all other sentient nerves. Indeed, we may add, that microscopical observers pretend to tell us that the nerves of the tongue, skin, &c. terminate in minute eminences, which they call nervous *papillæ*.

We have somewhere said, that a sensation is a conscient action of a nerve and the brain—the action of the brain being one which is *immediately* excited by the nervous action.—This definition is concise, and sufficiently correct for the occasion on which we used it; but we shall now treat of sensation more fully, and, as soon as we get ready, show more precisely what it consists in.

Sensations are generally excited by impressions. By an impression, we mean any agent acting upon any organ so as to excite a conscient action of the nervous system—all parts concerned, being in a healthy state.

An impression never reaches the brain. It does not proceed along a nerve any more than a man proceeds along a cord, when, by touching some part of it, he causes it to vibrate throughout its whole length. It is the action which the impression excites, that proceeds along the nerve; and if this action continue on so as to excite an action of the brain, it cannot be said, strictly, that the brain receives the impression, nor, indeed, that the impression excites the brain; for it is not the *immediate* antecedent of the cerebral action.

But it is the nervous action that excites the cerebral action. Yet, when we do not attempt to speak with precision, we may speak of impressions exciting the brain, of impressions passing to the brain, &c. ; but our meaning will now be understood.

Between the brain and the nerves there is this important difference : when a conscient action has been excited one or more times in the brain, there is produced in it such a tendency to act after the same manner again, that it may thus act without the re-application of the impression to the senses which first excited the action ; but in the nerves this reaction, or action without impression, seldom takes place—it takes place so seldomly, that when it does occur, it is considered a morbid action. The brain, then, is much more influenced by habit than the nerves.

Now the results of experiments, and the effects of diseases and accidents, prove conclusively that conscient actions of the brain are not actions of the whole brain, but only of the lower and central part of it ; the precise part is not fully determined. But that part of the brain which does take on this kind of action, we call the *sensorium commune*. This is that part of the brain which thinks, that is, acts without impression. In this part only one conscient action occurs in the same identical instant. This is admitted on all hands, at least, it is admitted on all hands, that whatever thinks, thinks but one thought at a time.

We now take the liberty to say, that the nerves from all the senses extend into the brain so as to reach the sensorium commune. But in saying this, we would not be understood to maintain, that if our means of dissection were more perfect, we could trace nervous *cords* to the sensorium commune. (though, indeed, this may be the fact.) but we would have the reader understand, that, for convenience sake, we

alter a little the common import of the word *nerve*, so as to include all parts of the nervous system in which a conscient action may be excited, the sensorium excepted. Perhaps we include some part that is commonly considered as a part of the brain itself, and which we, as anatomists, should describe as such—perhaps we do not. Therefore, as it will he very convenient, in treating of the conscient phenomena, to give the name of nerve to the whole tract of nervous matter proceeding from a sensible organ to the sensorium, we take the liberty to do so.

From what we have now said, is is evident that we do not pretend to determine what is sensorium and what is nerve, by any obvious marks of distinction between them. But we say that the sensorium and the sentient nerves constitute the only parts of the animal system in which conscient actions may be excited ; and that the sensorium is the one individual part which easily acquires a habit of acting without impression, and which does not act two actions at the same time, any more than one body exists in two places at the same time. Having premised thus much, we are now ready to state, that a sensation is a conscient action of the organic and cerebral extremities of a nerve—let the action commence in which extremity it may. But in thus stating what constitutes a sensation, we do not say but that if a conscient action be excited in the *trunk* of a nerve and in its cerebral extremity, we should have a sensation.—Every one knows that a blow on a certain part of the elbow joint, may excite a conscient action in the trunk of the ulnar nerve, constituting (with the action in the head) a peculiar pain.

In ordinary cases, however, sensations are excited by impressions upon the organic extremities of nerves ; and when the action excited by the impression continues on, not only to, but *into*, the sensorium, then we have a *perception*.

This, then, is our meaning of the word *perception*. It is something more than a sensation or a thought.

A *sensation* is a conscient action of the two extremities of a nerve; a *perception* is a conscient action of the two extremities of a nerve and the sensorium; a thought, or idea, is this same action of the sensorium alone.

Suppose a clock to be in a room where a man is playing at chess—the clock strikes and excites a conscient action of the man's auditory nerves. This much constitutes a sensation. Now if the sensorium have such a strong disposition to think about the game, that the action of the auditory nerves does not, in the least, change the actions going on in it, then, of course, the man keeps thinking right on, just as he would if the clock had not struck, and the striking of the clock excites in him, not a perception, but a sensation. Ask him if he heard the clock strike, and he will tell you no. But why does not the man remember, as the expression is, that the clock has struck? 'Tis obvious—the clock excited no action in that part of the brain which reacts without impression—no action of the sensorium.

Nevertheless, I am inclined to think that the cases are rather rare in which the actions of the sensorium continue on, when an impression is made upon the senses, just as they would if no such impression had been made. I think it much more frequently happens that the impression excites an action of the sensorium; but owing to its being, as we may say, so much *engaged* about something quite foreign to the impressing agent, the action of the sensorium which the impression excites, does not call on, call up, excite, or cause to occur, any other conscient action of the sensorium in any way related to it; and on this account it will not readily occur again, (without the re-application of the impression,) as no thought or conscient action of the sensorium readily occurs, or, more

properly, *recurs*, except it have previously occurred in connexion with some other thoughts, in some way or other related to it. Indeed, we shall show, that merely to have recur any *one* action of the sensorium relative to any one thing, does not constitute a remembering, but merely an individual thought, notion, idea, or (if the action be one that was originally excited by way of the *optic* nerves, it is often called a) conception.

To remember any thing, is to have more than one conscient action of the sensorium relative to this thing.—No doubt the chess-player might have a notion of the striking of a clock, but this would not constitute a remembering that a certain clock struck at a certain time.

Some may be led to maintain that there never is such a thing as a sensation without a perception—such a thing as a sensation without an act of that which thinks, and which we say is the sensorium. For if there be such a thing as a sensation without perception, then the sensorium is left free to think about any thing it has tendencies to ; and if it should be decided that a man may be the subject of one or more sensations and of thoughts, at the same time—why, such decision would be a death-blow to modern immaterialism. For it is admitted on all hands, that one unextended, and consequently indivisible, thing cannot be the subject, or more properly, the agent, of two acts at the same identical instant. Indeed, nothing can be more absurd than to assert that it can—I say assert, for the thing cannot be believed or conceived—it is inconceivable.

But facts are stubborn things ; and it is a *fact* that a man may have two or more sensations at the same identical instant ; and not only so, but he may have one, two or more sensations at the same identical instant that he is *thinking* of something, even quite foreign to either of them. A man may

see a candle, (or any other object,) hear a noise, and have the toothache at the same identical instant ; or he may see a candle, hear a story, and *think* of the characters and places mentioned, or of other characters and places ever so distant, all at the same identical instant ; but he cannot *think* about the candle, and the characters mentioned in the story, at the same identical instant. If the action of the optic nerves excited by the candle, excite a corresponding action of the sensorium, then the man has a *perception* of the candle ; and if this action of the sensorium call up other actions relative to—suggest other thoughts relative to—the candle, as, *what a fine light that candle gives, what mischief might be done by applying it to* a *cask of gunpowder*, &c. &c. then, to use the, at present, convenient language of the schoolmen, the man *attends* to, or *pays attention* to, the candle. But so long as the actions of the sensorium relate to the candle, there is excited in the man, not perceptions, but only sensations, by him who is telling the story.

To deny that a man may be the subject of two or more sensations, or of sensations and thoughts, at the same time, is to assert, that when a man hears, he instantly turns blind, his eyes being wide open in broad daylight, and when he sees he instantly turns deaf, and when he thinks of absent objects, past events, mathematical problems, &c. he is the subject of no sensation whatever.—What an easy matter to cure the gout, according to such a doctrine !

A man cannot think away the pain of the gout, though he may think of something quite foreign to it, during its continuance. Should it be said, that at the terrible moment when the cold wrenching iron is about to be applied to a painful tooth, the pain ceases ; we shall reply : it is not because there was no pain, absolutely, in the tooth before—because there was, before, no conscient action except in the sensori-

um; but because the intense actions of the sensorium, the *dread*, produce such a change in the system, and of course in the nerve of the tooth, that the irritating cause which previously excited a pain in it, cannot now excite this peculiar conscient action.

Cast your eyes, reader, upon any object that may be before you—the rays of light reflected from the object fall upon the organic extremity of your optic nerve, and excite a conscient action in this and the cerebral extremity, (this is a *sensation*,) perhaps in your sensorium, constituting a *perception* of the object; now make a noise with the heel of your shoe, still keeping your eyes upon the objeet, and observe if you do not hear the noise without the least alteration of your view of the object, at the instant you hear it—Now shut your eyes and make the same noise, observing if it appear any way different from before. Now stop—keep your eyes shut, and try to have an *idea* of the object and of the heel of your shoe, or try to have, at the same instant, an idea of any two things so situated that a man could not see them both at one single view, and see if it is not impossible.

If you grant these things, I may almost venture to put you down as a materialist without ceremony. If you find it difficult to satisfy yourself that you do not have a distinct idea of the object and of the heel of your shoe at the same instant, still you will find no difficulty in satisfying yourself that you may have two or more distinct sensations at the same time; and if you know what the immaterialists hold to, and can see the force of arguments, I may still put you down as a materialist convinced, if not a materialist confessed.

You certainly will find it very difficult to determine by *direct experiment* that you cannot have two thoughts (*different* thoughts, of course,) at the same instant; for this very *determining*, *observing*, *noticing*, &c. supposes an action of that

which thinks, and when this action occurs, no other act or thought can occur; hence this very difficulty is evidence that you cannot have but one thought, idea, notion, or conscient action of the sensorium at the same instant. If we could think *what* we think, *how* we think, &c. at the very instant we *think*, then every man, learned or unlearned, might as easily tell what goes on in his head when he reasons, imagines, &c. as he may now satisfy himself that he may have two sensations at a time, or as easily as he can tell how a machine operates, every part of which is open to his view. But the very instant a man *observes* what goes on in his head when he judges, &c. that very instant does the judging process cease.

We know that two or more sensations, or thoughts and sensations, existing simultaneously, constitute a "*complex state of the mind*," according to the late professor Brown of Edinburg, whose speculations concerning the intellectual or conscient phenomena, are, for the most part, less absurd than those of any other immaterialist with which we are acquainted.

But this "mind" of professor Brown, is one single, unextended, indivisible being, capable of existing in only one state at the same time, and of course, all our sensations. thoughts, and "emotions," are but so many simple states of the mind. When I see a candle, my mind is in one state, according to Dr. Brown, if I hear, feel, taste or smell nothing at the time; so if I hear, my mind is in another state, whether I see any thing or not. These two states are essentially different from each other, as every one will readily grant, *provided* they occur at different times. Now I ask if they are any the less so, when they occur simultaneously. On trying the experiment as above requested, did not the reader find that a seeing and a hearing are two sensations, as distinctly different from each other, when they existed simultaneously, as when they exist-

ed separately ? Surely he did, unless he be constituted entirely different from myself. Now I ask if this single fact alone does not destroy the very foundation of Brown's fine spun speculations ? Would he attempt to get along by using the word complex ? telling us that although a man may see and hear at the same time, and although these two sensations are as distinctly different from each other as when they occur at different times, still the man's mind is not in two states, but in one " simple," " complex" state !

Suppose that one were to maintain that even an *extended* body, as of wax, (which may exist as a sphere at one time, and as a cube at another,) may exist in such a state as to constitute both a sphere and a cube at the same time, and yet be *one* body—would he expect to render his proposition true, or to make people believe him, merely by making use of the word *complex ?* saying, when it exists as a sphere and a cube at the same time, it does not exist in two states, but in a *complex* state ?

If a certain state of the mind constitute a certain hearing—as by Brown maintained—then such state of the mind and such hearing are the same thing : the existence of the mind in such state, is *essential* to the existence of such hearing :—the hearing can never be, except the mind be in such state ; and the mind cannot be in such state without the hearing existing. And if a certain state of the mind constitute a certain seeing, then precisely the same state of the mind is *always* and *essentially* necessary to the existence of the same seeing. Now, a certain hearing and a certain seeing, either of which may exist separately, *may both exist at the same identical instant.* It follows, then, as clearly and as irresistibly as demonstration, that this " mind" consists of parts, and, consequently is extended ; and that when a man hears, a *part* of his mind acts or exists in a certain state ; but when he comes

to see as well as hear, another part of his mind is brought into action ; and when he *thinks* at the same time he sees and hears, (and I am as certain I can do this as I am that I exist,) then three parts of his mind act, or exist in certain states.—Act they must, for a *change of state* supposes action.

This fact, that a man may think, hear, see, &c. at the same instant, is a fact which very well agrees with what we believe to be the truth. But it completely overthrows—we say it dogmatically, for we feel it—this single fact alone completely overthrows modern immaterialism.

All that Brown has written does not touch the case—does not reconcile this fact with his fundamental principles. What he has written about simple and complex states of the mind, when brought over to the side of materialism, can relate only to the phenomena of the sensorium. True, on being asked what state the mind is in when a man thinks, hears, sees, &c. at one time, he would undoubtedly say, it is in a complex state : we cannot conceive what else he could say. But he generally means (indeed, although we have read his whole work on the philosophy of the mind, we cannot turn to a passage which shows that he does not *always* mean) by a *complex* state of the mind, a simple state in which the mind would not have existed had it not previously existed in certain other states—a state too, which is seemingly equivalent to these preceding states ; bearing much the same relation to them that one body bears to the elements of which it is composed. See some of his own words.

" The mind, it must be allowed, is absolutely simple in all its states ; every state or affection of it must, therefore, be absolutely simple ; but in certain cases in which a feeling is the *result* of other feelings *preceding* it, it is its very nature to appear to involve the union of those preceding feelings ; and to distinguish the separate sensations, or thoughts, or emotions,

of which, on reflection, it thus seems to be comprehensive, is to perform an intellectual process, which, though not a real analysis, is an analysis at least relatively to our conception. It may still, indeed, be said with truth, that the different feelings,—the states or affections of the mind which we term *complex*,—are absolutely *simple* and *indivisible*, as much as the feelings or affections of the mind which we term simple. Of this there can be no doubt. But the complexity with which alone we are concerned is not *absolute*, but relative,—a seeming complexity, which is involved in the very feeling of relation of every sort."*

From this passage we learn that Brown means by a complex state of the mind, a state absolutely simple and indivisible, but a state which is "the result of other preceding feelings." We learn, too, that Brown does not use the word "feeling" exclusively to denote one of the five species of sensation, but uses it to denote any thought, emotion, or affection.

Now admitting Brown's leading principles to be correct, in his meaning of the expression *complex state of the mind*, as above expressed, he does not comprehend those cases in which men see, hear, and even think, at the same time; for in those cases the state of the mind is *not* indivisible, in any sense in which we can speak of the divisibility or indivisibility of a state. The state which constitutes the hearing, is independent of the state which constitutes the seeing, and the state which constitutes the seeing, is independent of the state which constitutes the hearing. This is certain, for these two sensations may exist separately. Therefore, when a man sees and hears at the same instant, his mind is not in an indi-

* "Lectures on the Philosophy of the Human Mind," vol. 1. p. 122.

visible state, or rather, his mind is not an indivisible thing, but consists of parts, and is consequently extended.

Should the immaterialists remodel their doctrine, and send it abroad under an *extended* form, we should tell them, if their mind be extended, it is nothing but so much space, unless it possesses some other property; and if it do possess some other property, then it is a *conbination of properties*, i. e. it is matter. Yet we should not expect to refute their doctrine in this way, but in the way in which we expected to refute immaterialism at the time we commenced this work; that is, by giving a more rational explanation of the phenomena of man, without supposing the existence of any mind, than has ever been given by those who have admitted its existence; showing, also, the many insuperable difficulties that attend the immaterial hypothesis, and calling on its advocates to show us one glimpse of evidence in favor of it.

We have said that ordinary sensations consist in a conscient action of the organic and cerebral extremities of a nerve. But what, it may be asked, do we mean by an extraordinary sensation? We mean sensations which consist, in part, of a conscient action of a trunk of a nerve. In ordinary sensations, there is no conscient action of the trunk of a nerve; if there were, when a hot iron is applied to one's hand, there would be a feeling excited, not only in the hand, but all along up the arm.

Now if the nerves distributed to any part, be compressed or divided any where in their course from such part to the sensorium, no sensation is caused by impressions made on such part. This fact seems to prove, that in case of sensation, something passes along the nerves from the part upon which an impression is made to the head.

Now, what is it that passes along the trunk of a nerve in case of sensation? is it an action, or is it a fluid? We believe

it is an action ; and the reader will be very apt to believe so too, if he believe what we have said concerning the cerebral stimulus. But is this action of the same nature with that which immediately precedes voluntary contractions, except it runs towards, instead of from the brain ? and what name shall we give it ?

Concerning the first question, we can go so far as to say, that this action and that which immediately precedes a voluntary contraction, agree in one respect, in that of being inconscient : further than this, we cannot say.

As to naming it,—since it will be convenient to distinguish it from the *cerebral stimulus*, as also from the *conscient actions* of the nervous system,—we will call it a *nervous action*.

Should any one be so little acquainted with the nature of organized beings, as to wonder why a conscient action does not *always* occur in the trunk of a nerve in case of sensation, since it appears that by much force (as a blow on the elbow joint,) this kind of action may be excited in the trunk of a nerve, we will do away this wonder.

It must be remembered that the property of an organ is nothing distinct from the organ itself; that these properties are, in fact, mere words of relation. Because a certain part suffers certain changes under certain circumstances, we say it has a certain property ; and as parts differently organized do not suffer the same changes under the same circumstances, it becomes necessary for us to say, they possess different properties, or one common property in different degrees, as we think most proper—most convenient. And as the trunks of nerves are not organized like their extremities, a stronger impression is required to excite a conscient action in them, than in the extremities ; hence we say, the trunks of nerves possess a lower degree of sensibility than their extremities. This we prove by the same fact which causes us to say it,—

the fact, that it requires a stronger impression to excite a conscient action in them, than in the extremities.

We will now adduce a fact or two, which seems to show, that when impressions are made upon the trunks of nerves so as to excite a conscient action in the part upon which the impression is made, or even so as only to excite a *nervous action* in this part, this *nervous action* extends *down* the nerve as well as up. When a strong impression is made upon the trunk of the ulnar nerve in the elbow joint, a conscient action is excited in this part of the nerve, and a nervous action in the parts continuous, and as there is excited a peculiar feeling in the hand and fingers, we suppose the nervous action continues down the ulnar nerve as well as up, and excites a conscient action in its extremities, these being more sensible than its larger branches. A disease in the vicinity of a nervous trunk may excite a nervous, but not a conscient, action in it. This action may extend down to the extremities of such nerve, and in these more sensible parts excite a conscient action. Hence a man having a disease of the hip joint, which disease is confined to parts nearly or quite insensible, there shall be no pain, or nearly none, in the hip ; but the disease making an impression upon the trunks of those nerves which are distributed to parts below, there may be a pain in these lower parts, causing the patient, and possibly the physician, to believe that the real seat of the disease is in these parts.

If I am not mistaken, it has been maintained that in reality all sensations exist only in the head ; or to express the sentiment in our own language, that there is no conscient action except in the brain. Consequently, when a man has the gout, or the tooth-ache, there is no pain, absolutely, in the diseased part: he may think that there is, but 'tis all a notion ; the pain is absolutely in the head where the soul is, and this deluded thing refers it to the diseased part. What sort

of a thing a pain is, that the part (that *unextended part!* called soul,) in which it exists, may *refer* it to a part in which it does not exist, I do not stop to inquire, but proceed to remark, that this strange doctrine, which men of *common sense* (a term which passes very smoothly if we do not attempt to define it,) will never admit, necessarily follows from the doctrine of mind. The philosopher takes it for granted—for there is no evidence of it—that there is a soul or mind in man, which thinks and feels; this soul he places in the brain; and then says, "as nothing can act where it is not, any more than when it is not," (which is very true,) all thinking and feeling must go on in the head.

You need not be surprised if you hear such philosopher say of a person. "he *imagines* a thousand strange feelings." But unless the word imagine be used in some other sense than its usual one, such talk is absurd. Unless to imagine a feeling mean the same as to *experience* a feeling, the cause of which is not obvious, then it is as absurd to say a man imagines a feeling, as to say he feels as though he feels, which can only mean he feels. If these "strange feelings" may be cured by cheerful company, good news, fright, or by any thing which excites new conscient actions of the nervous system, it is not proved that they are not *real*—it is only proved that they arise from such causes that they may be cured by such means. Certainly, there is no such thing as an unreal feeling, any more than an unreal coughing, or an unreal motion of any kind. It sometimes happens that a conscient action commences in the sensorium, and extends down certain nervous tracts, constituting what some call an emotion, and what we shall call a sensorial passion; and it may be that some of those feelings called imaginary, consist of conscient actions which commence in the sensorium; consequently, as we should suppose, may be cured, or for the time removed, by

any thing which may excite a new train of ideas, a new train of sensorial actions.

When we say that every sensation is a real sensation, and supposes a conscient action of a nerve in which the sensation exists, or as some would say, *seems* to exist, we are aware it may be said, that after a person has had a limb amputated, he often thinks he experiences a sensation in the amputated part. But we account for the fact as follows :—A pain in the left foot, for instance, is a disagreeable sensation, a disagreeable conscient action, commencing in the nerves of this foot, and by the intervention of a nervous action, giving rise to a conscient action of the cerebral extremity of such nerves —perhaps of the sensorium ; if so, it becomes a painful perception, or pain perceived. This action of the sensorium (which, when it occurs without the sensation, constitutes a thought,) may be followed by other sensorial actions [other thoughts] related to it ; and if so, then the person attends to, or thinks about the pain of his foot ; and his thoughts may be such as may be expressed by these words : " pain in my left foot—my left foot—down in my left foot," &c. Now let his left foot be amputated—afterwards a conscient action commences in the stump, and is immediately succeeded by a nervous action extending up to the brain in the *same nervous tract* that formerly conveyed actions from the left foot. Getting up to the brain, a conscient action of the cerebral extremity of this tract and of the sensorium is excited. This action of the sensorium suggests, or, if you please, is followed by, those actions [thoughts] which formerly occurred on the sensorium being excited by an action of the cerebral extremity of this tract—to wit, those actions or thoughts which may be expressed by—" pain in my left foot—left foot—down in my left foot," &c. This we contend is all that constitutes a sensation in the amputated left foot.

We suppose that those who tell of experiencing a sensation in an amputated part, have frequently and recently experienced a sensation in such part, and thought much about the part; and after the part is removed, some irritating cause, operating upon the same nervous tract which before connected this part with the brain, gives rise to a conscient action of the cerebral extremity of this tract, and of the sensorium, which action of the sensorium is associated with ideas relative to the removed part; and that all this constitutes what passes for a sensation in such removed part. But let the person consider, for a moment, that he now possesses no such part, and he will tell you, if honest, *that he does not absolutely experience precisely the same consciousness that he did before the part was amputated;* but that it seems to him, somehow or other, as though there was a sort of feeling somewhere in that quarter.

A perception consists in a conscient action of the organic and cerebral extremities of a nerve [a sensation] and a *corresponding* action of the sensorium. We now proceed to show what we mean by a corresponding action of the sensorium. It is that action of the sensorium which *immediately* succeeds a conscient action of the cerebral extremity of a nerve—immediately succeeds a sensation—not by virtue of a tendency of the sensorium to act such action, but as the effect of the conscient action of the nerve. It is a conscient action of the sensorium which, together with the sensation that immediately excites it, constitutes a perception. It is an action which is excited in every person's sensorium on the same impression being made upon his senses, provided the impression excite a perception, and not merely a sensation. Conscient actions of the sensorium are continually taking place when the person is awake; and in this state, too, there is perhaps always an impression operating upon some one of his senses,

exciting a sensation ; which sensation must of course be immediately succeeded by *some* action of the sensorium ; but if the action of the sensorium be one that occurs by virtue of one of its tendencies, and not one that is excited by the sensation —not an action that corresponds with the sensation—then it is not a *perception* that takes place in the man, but *a sensation and a thought.*

The sensorial actions or thoughts which follow a certain perception—but neither of which constitutes any part of a perception *at the time it occurs*—may be very different in different persons. The reason of this is, because different men possess different sensorial tendencies—as will appear more clearly hereafter.

I must be permitted to dwell a little upon the subject of perception, even if I repeat very nearly the same sentiments over and over again ; for I wish to have the reader think just as I do concerning it.

There is no such thing as a perfect perception without a sensation, but as we use the word perception, there may be a perception without attention ; this we say is possible in the nature of things—it is conceivable. But I think that when a man has a perception of any object, he generally attends to it more or less.—A thought or an idea is an action of that which thinks, and which we say is the sensorium. Now, although an action of the sensorium that is *immediately* excited by a sensation, is not what I call a thought *when it is thus excited*, but a part of a perception ; (yet it is a thought when it recurs without the sensation ;) still it may be followed by other actions of the sensorium which are related to it, and of course, related to the object which excites the perception ; and if it be so, then the person *thinks about* the object or *attends* to it. And to attend to any thing, is the same as to *pay attention* to it ; and ATTENTION consists in nothing other than *attending*

to or *paying attention*. The *faculty* of attention can only mean that but for which a man would not attend—would not attend to his perceptions, or what is the same thing in other words, would not attend to the objects which excite his perceptions. Now this something but for which a man would not attend to—would not think about—an object perceived, is his sensorial tendencies; which tendencies are nothing original in his constitution, but something *acquired*, and something which he never possesses until after he has perceived —as we shall presently proceed to show.

I am inclined to think that the organic and cerebral extremities of the optic and auditory nerves, are so near to each other, that a conscient action of the sensorium, together with a corresponding action of *only the cerebral extremity* of one of these nerves, is a consciousness so nearly like that of a *perfect* perception, that one who is not in the habit of attending to his perceptions might mistake it for a perfect perception—*mistake* it, I say, that is, he might talk, act and believe, just as though it were a perfect perception. For illustration, a certain man is before your open eyes—rays of light are reflected from him, and strike upon the organic extremity of your optic nerves in such a manner as to excite a certain conscient action in the organic and cerebral extremities of your optic nerves, and in your sensorium. This is a *perfect* perception of the man. At another time, your brain being in a morbid state, not only this action of your sensorium may arise, but it may immediately give rise to the action of the *cerebral extremity* of your optic nerves; which action of the sensorium and the cerebral extremity of your optic nerves is a consciousness so nearly like a perfect perception of said man, that you would say the man or his ghost is before you. You would say you have something more than a mere idea or conception of the man. You would believe him to be pre-

sent until, putting forth your hands, you could not feel him; or until something else should cause you to believe that you experience a "delusion of the senses."

The reader is already aware that we use the word sensation as a sort of generic term, including five species, as seeing, hearing, feeling, &c.; which last mentioned species has several varieties, as hunger, thirst, &c. Now we have as many different species of perceptions and ideas, as we have of sensations. We may have perceptions by way of the optic, auditory, olfactory, and gustatory nerves, and by way of the nerves of feeling; which last are very widely distributed, going not only to the skin, but to many internal parts. And as that action of the sensorium which, existing together with the sensation which immediately excites it, constitutes a part of a perception, does, when it occurs independent of such sensation, constitute a thought or idea, we see that we have five sorts of ideas, as well as five sorts of sensations and perceptions. But metaphysical writers have generally very little regarded only one sort of our perceptions and ideas, and these are our *optical* ideas and perceptions. In the present work, most of our observations relative to perceptions and ideas, will be confined to those which come by way of the eye and the ear, or, if you please, by way of the optic and auditory nerves. But as we shall often have occasion to distinguish these two sorts of perceptions and ideas from each other, we propose to call those which come by way of the optic nerves, *optical* perceptions and ideas, and those which come by way of the auditory nerves, *audial* perceptions and ideas.

CHAPTER XIII.

On Ideas, and Sensorial Tendencies.

Excepting sensations and perceptions, all the conscient or intellectual phenomena of man consist in nothing other than in having conscient actions of the sensorium, one after another. And all these actions are such as have sometime or other been excited by impressions upon the senses, or sentient nerves. When they were first excited, (and at all times when they are *immediately* re-excited by a sensation, or, if you please, by an impression upon the senses,) each one constituted an essential part of a perception ; but when any one of these actions of the sensorium occurs without being immediately excited by a corresponding action of a nerve—when it does not constitute a part of a perception—then it constitutes what we call a thought, or idea.

But why does the sensorium react without the reapplication of the impression to the senses, which first excited the action ? This is a question about an ultimate fact, and of course admits of no explanation. We know that it is a law of the animal economy, that when an action has been excited one or more times in a nervous or muscular organ, such organ is more or less disposed to act after the same manner again. It is on this account we say animals are influenced by habit ; and on this account we might say animals possess the property of *hability*, with the same propriety that we say they possess sensibility, or any other property which arises from organization.

Now there is not, perhaps, in the whole kingdom of organized beings, any animal, organ, or part of an organ, which is more influenced by habit, or in other words, possesses a great-

er degree of hability, than that part of the human brain which is called the sensorium. This is so much or so readily influenced by habit, that when a conscient action has been excited in it one or more times by an impression upon the senses, it acquires such a strong disposition or *tendency* to act after the same manner again, that it does thus act without the reapplication of the impression to the senses, which first excited the action.

We now proceed to maintain one of the important positions laid down in the first paragraph of this chapter, which is, in amount, this : No man ever has an idea which is not in the first instance excited by an impression upon one of his senses.

Of the truth of this position we are most firmly convinced; yet, owing to the abstruse nature of the subject, and more especially to the language which we must use in treating of it, we shall not be able to convince our readers of its truth without some effort on their part. They must remember in what sense we use certain important words, especially the word idea, and as they read along, they must frequently "turn their thoughts inward," as Locke would say, and attempt the difficult task of determining if what we say be true or false.

We begin by telling the reader, that with the exception of the ideas of words, (which ideas he never much regarded,) he never had a quarter so many ideas as he thinks he has—we mean *real* ideas, and not *substituted* ideas. He may have ideas—real ideas—of things which have impressed his senses; and he may call these ideas, ideas of things which he has never seen, felt, tasted, &c. ; but they are only substituted ideas of such things. If he never saw London, he cannot have an idea of that place, though he may have read ever so much about it. To be sure, he may have what he calls an idea of London, but his idea of London is only a substituted

one. He has seen a populous city where houses stand thick, where glittering spires extend into the air, and where there are streets thronged with men, horses, carriages, &c. ; of *this* city he may have a real idea, and when he reads of London, this idea may recur, and he may call it an idea of London. But if he should be carried to London while sleeping, he might be much at a loss in determining what place he is in ; whereas, if carried to a place of which he may have a real idea, he would know on waking what place he is in.

Should you tell me, reader, that you have never seen London, but that you have an idea of that place which is different from any idea of any city you have seen—that what you call your idea of London, is an idea of a larger city than the largest you have ever seen, I should suspect that you have never been much in the habit of " turning your thoughts inward," and that, as like as any way, you have no idea of any city at the time you say so. Think closely, I trust you will have the luck to satisfy yourself that you can not have one distinct, and instantaneous idea of a bigger cluster of buildings than the biggest you have ever seen. But you may have an idea of one cluster, and then of another to the right or left of it, and then of a third, and so on, and when you get through you may *say* you have had an idea of a very large city. Yet we will venture to tell you that you never did have *one* distinct, and consequently, instantaneous idea, real or substituted, of a larger cluster of buildings than you have ever seen at one single view.

Now if we admit that you may have ideas of objects which you have never seen, you must remember that you do not have what we call real ideas of such objects, and that by calling a real idea of one thing, an idea of another thing, you do not increase your store of ideas. You will remember, too, that the number of ideas which you may have, never can ex-

ceed as we maintain, the number of sensorial tendencies you possess, which tendencies are all acquired by the exercise of your senses.

You cannot have an idea, not even a substituted idea, of a golden mountain. You may talk about such a thing and you may have an idea of a large hill, for you have seen one; but to have an instantaneous idea of a *large hill all over yellow* you cannot. I once thought that I could, but I am now satisfied that my ideal *mountain all over yellow* is not larger than the largest yellow, convex or globular body I have ever seen. If you have any doubts whether you can have an idea of a hill some miles in circumferance all over yellow, make the attempt, and then have an idea of a yellow ball a few inches in diameter, and see how much more distinct and satisfactory is your idea of the yellow ball than of the yellow mountain, think of the blossom of a dandelion on the side of a large hill, and extend if you can, this yellowness all over the mountain, so as to have one distinct idea or thinking view of all the sides of a yellow mountain. I trust you will find that you have first an idea of one part of the mountain, and then of another, and that you cannot have an idea of a larger yellow surface, than the largest yellow surface, you have ever seen.

Putting colour aside, I doubt if you can have an idea of *all* the sides of a mountain, at the same instant. You may, indeed, have an idea of all the sides of an eminence at one instant; but on second thought, this eminence instead of being a rough hill, miles over, is about as smooth and about as large, as an upturned potash kettle.

Can a man have an idea of something before him and of something behind him, at the same instant? I cannot, and the good reason is, I never saw something before me and something behind me, at the same instant. But although I cannot have an instantaneous idea of a man before me and a

man behind me, yet I can have an idea of a great number of men standing so that I could see them at a single glance ; for before now I have seen at one glance, many men standing thus.

Can a man have any idea of the things (not of the words) honor, glory, pride, industry, soul, belief, truth, sensibility, the, therefore, yes, and thousands of such like things, if things they may be called ? To be sure a man may have what he calls an idea of honor, for instance, but putting aside the idea of the name, or word, what is it ? Can he even satisfy himself ?

For my own part, an optical or audial perception of the word honor, is not invariably followed by any *one* idea which I can call my idea of honor ; but an optical or audial perception of the word *cow* is generally followed by *one* idea, which I may in truth call my idea of the thing cow. I would not say my idea of the thing cow, is a four-leged idea, possessing two white horns, and a bag with four teats ; neither would I say my idea of an extended object is an extended idea—by the by, no man ever had an idea of extension ; he may have ideas extended objects, but strictly speaking no idea of extension,—what passes for an idea of space, is a substituted idea, it is that sensorial action which is excited when a man looks off into the air. An idea is nothing more nor less than a conscient action of the sensorium, occurring without the sensation which first excited it, and which may excite it again, though whenever it be excited by its sensation, it is not *then* an idea, but a part of a perception. In the sense in which I use the word idea, I have no idea of honor—my optical and audial ideas of the word itself excepted. An idea is *one* idea, and one idea is one conscient action of the sensorium . it is an action which was originally excited by one sensation—by one impression. Several sensorial actions oc-

curring together, that is in immediate succession, constitute what is called an idea of honor; but this is using the word in its popular sense, we should say they constitute a *notion* of honor.

We would say that a man may have a *notion* of honor, of glory, of goodness, of charity, and such like thingless names, but these notions are composed, as it were, of several ideas or sensorial actions. Hence different men may have different notions of honor, glory, charity &c. So far as I can determine, my notion of honor generally consists of ideas of a man equipped in the style of our highest military officers, upon an elegant horse, at the head of a body of armed men. Nevertheless those ideas which arise when I see or hear the word honor, and which constitute the notion of honor I then have, are not always the same, but depend somewhat on the other words which I see or hear in connexion with the word honor.

A man's idea of an action is but an idea of an agent acting; and the same may be said with respect to his idea of an event.—An event is nothing other than one or more agents acting; and putting aside both the optical and audial idea of the *word*, a man has no other idea of an event than that of one or more agents acting.

When a man goes to church and hears what his preacher has to say, let him cease paying attention, and instantly consider what thoughts have been running through his brain; he will find that he has had nothing but a chain of real or substituted (mostly substituted) ideas, of real or supposed entities; he will find, that as much as may have been said about heaven, Deity, glory, spirit, charity, &c. &c. he has had no idea of any thing which he has never witnessed.

Finally, if any man will point out to us any idea which he can have, and which he supposes he did not acquire, *directly*, by way of his senses, we will engage to show him that such

idea is, in fact, nothing other than a number of simple and real ideas, occurring in close succession, and is more properly a sentiment, opinion, or *notion*, than an idea ; or else that it is merely a substituted idea, as is that man's idea of London who has never seen that city.

The truth is, as a few material elements combined together in different ways and proportions, constitute the infinite variety of material bodies which we behold ; so the few ideas which a man may have (I do not say *has*, for a man never has but one idea at a time,) by occurring, different numbers in different orders, constitute all his opinions, rememberings, judgings, imaginings, &c. And we will just add in this place, that the succession of one's ideas is not regulated by any "willing" principle existing in one's head ; but they occur according to their relations with each other, and according to the strength of their respective sensorial tendencies.—An idea is a conscient action of the sensorium, and the stronger the disposition or tendency of the sensorium to act any action, the more likely is this action to occur.

But if our ideas, after excepting ideas of words, are so very few, it may be asked why we have so many words, it being generally admitted that words are but signs or representatives of ideas. Perhaps several reasons might be given, but it seems to us that the two following are the principal ones :—First, because our ideas, what few we have, may occur in different orders or relations with each other, constituting different sentiments ; second, because we substitute an idea of one thing for an idea of another thing, perhaps for a third or fourth, and so on—and thus we have what we *call* ideas of thousands of things which we never saw, and which, perhaps, never existed.

Finally, the brain is a very active organ, and when one is awake, thoughts are occurring in all sorts of others, and we

cannot let our fellow beings know what goes on in our heads, without using more words than what we have ideas, if we except our ideas of the words themselves.

Association of Ideas. The sensorium not only has tendencies to act individual actions, but it is disposed to act, in immediate succession, those actions that are, in some way or other, related, especially those that are related in respect to the time in which they have before occurred, or been excited. If two ideas have occurred in immediate connexion, they have occurred at the same time, according to the common manner of speaking; and in this respect, if in no other, they are related.

When we talk about a man's thoughts, ideas, or sensorial actions being related, we use convenient language; but language that is not so strictly correct as language that might be invented.--Since the sensorium acts but one action at the same instant, strictly speaking, these actions, directly and of themselves, can no more be related, than one thing which does exist, can be related to a thing which does not exist, or what is the same thing, no more than a thing which does exist can be related to *nothing*. However, we shall still continue to speak of relations between a man's ideas, and shall now endeavor to show in what respect ideas are related, so as to run together or associate in families, or trains.

First. They are related in respect to time. When two or more actions or ideas have occurred in connexion, they have occurred nearly in the same time; and the sensorium is more or less disposed to act after the same manner again, that is, to act these actions in connexion again: it is more disposed to do this, than it is to act in connexion those actions which never yet occurred in connexion, other things being equal. All actions or ideas that have occurred in immediate succession are said to be related, as to time.

Second. When objects are in any way related, our ideas of these objects are related. A giant is a very large man, a dwarf a very small man: they are both men of *uncommon size;* in this respect they are related. And when a man sees or thinks of a dwarf, he may soon think of a very large man; he may think, *how much smaller this man is than some of the large men we read of.*

A man's portrait has some resemblance to the man himself; in this respect they are related; and a sight or thought of the portrait is very likely to be followed by an idea of the man. Objects of a similar appearance excite similar actions of the sensorium; and it is not strange that the sensorium should act similar actions in connexion, instead of dissimilar, all other things being equal. The sensorium has many strong tendencies to act, and when it is in a good condition to act, some action or other is continually taking place; but when it becomes tired, as the expression is, it ceases to act, and becomes recruited by sleep.

Those ideas which are related on account of some relation between their objects, may be said to be related by way of their objects; and we cannot see as there would be any impropriety in calling this sort of relation between ideas, *objective* relation.

As some objects are related by way of their names, the written or spoken name of one object may be followed by an idea of another object, though this name and this object are as dissimilar as boots and butter. The word *hook* may be succeeded by an idea not only of the word but of the thing *book.*

When a man acquires two or more sensorial tendencies in the same *place*, I do not think these tendencies or their corresponding actions are related, barely on account of his having acquired them in the same place. To be sure, they may

be related, but it is because they were acquired at the same time. Or if time intervene—if the man acquire one tendency on one day, and remaining in the same place, acquire another tendency on another day, these tendencies are linked together, as it were, by intervening tendencies, that is, by tendencies acquired between the two days.

Nevertheless, a man may be in a certain place, and there see a carriage turn over ; but this carriage is not all he sees; he sees something which remains there for years ; and all he sees at a single glance, excites but *one* action of his sensorium ; and when the man returns to the place years after, he may, for aught we know, think of the carriage, not solely because he saw it at the *time* he saw the place, but because a *part* of the scene which excited this *one* action still remains, and is enough to re-excite, or call up, this *one* action which *includes*, as we may say, an idea of the carriage.

Perhaps it will be said that we have now done as good as to give up what we have just been contending for, viz. that sensorial tendencies acquired in the same place are none the more related, barely on this account ; but we believe that we have not. The second view of the place does not call up, immediately and directly, an idea of the carriage *alone*, but it excites an action, which is much like that excited by the first view ; the sensorial action excited by the first view of course recurs, and includes, as we may say, an idea of the carriage—in other words, the second sight of the place does not suggest an idea of the carriage alone, but an idea which includes an idea of the carriage. This, however, is a nice distinction between matters and things, and we have written this, and the preceding paragraph, chiefly for the purpose of showing what may be said, being all the while pretty positive that the second view of the place calls up the idea of the carriage, *solely* because the man had previously seen the

place and the carriage at the same *time*. To enable our readers the better to decide concerning this matter, we put the following question:

Suppose a man goes to a certain strange place, and there acquires a sensorial tendency by seeing a very deformed man; this tendency he retains, but every other one acquired at the place soon dies away, so that he can have no notion of the place, the name of the man, nor of any thing which he witnessed at the place, the bare conception of the deformed man excepted. Now let the man go to the same place again, and acquire one more tendency, and only one which he retains; the man has now two sensorial tendencies acquired at the same place. But do you think they are any more likely to become operative together—do you think their corresponding actions or ideas are any more likely to occur in connexion on this account? If you answer no, then you decide that ideas are none the more related and none the more apt to occur in connexion, barely because they were excited when the man was in the same place; and that if such ideas are disposed to run together, it is owing to some other cause.

Putting aside all things without the skull, and going into the sensorium, we shall find but two kinds of relations between its tendencies, *objective* and *timal*.*

It is true, that two or more tendencies may be equally strong; in this respect they *agree;* but they are not on this account *related*. A man may have an hundred sensorial tendencies of equal strength; but if the tenth become operative, the corresponding action of the eleventh is no more likely to follow than that of the thirtieth, fortieth, or any other, provi-

* We can offer no apology for using these two words, only that they appear to be very convenient. The reader cannot mistake their meaning. When ideas are related because they have occurred together one or more times, their relation is *timal;* when related by way of their objects, their relation is *objective*.

ded there be no relation between these hundred tendencies, except their being of equal strength.

Suppose all the sensorial tendencies which a man possesses were of equal strength, but there is nothing of what we call relation between them ; then his thoughts would occur promiscuously—the particular thought, A, would just as likely be succeeded by the thought L, F, X, or any other thought, as by the thought B, or any other particular thought. But when we say sensorial tendencies are not related, merely on account of their agreeing as to strength, it must not be supposed that the succession of a man's thoughts is no ways influenced by the strength of his tendencies ; for, putting aside impressions upon the senses, the succession of a man's thoughts is governed by two things only, and strength of tendencies is one of them : their relations with each other is the other.—Let us suppose there are three thoughts, A, B, C, equally related, (related by way of their tendencies,) but that the strength of their respective tendencies is different, that of A being equal to 2, as we will say ; that of B equal to 3, and that of C equal to 4. Now if any thing suggest the thought A, the thought C will immediately follow in preference to the thought B, because, although no more closely related to the thought A than is the thought B, there is a stronger tendency of the sensorium to think this thought, or to act this action, than there is to act that action which constitutes the thought B.

If the sensorium were not disposed to think those thoughts in connection which are in some way or other related, or rather, if our thoughts were not related (for indeed, we should not say our thoughts are related only that we find they occur in some kind of order) we should not be intelligent beings,—we might be sentient, preceptive, and even thinking beings ; but our thinking would consist in having incongruous thoughts occur, without any kind of order.—The sensorium having a

few tendencies stronger than the rest, these tendencies, only, would be continually giving rise to actions *just as it happens*.

It is owing to the disposition of the sensorium to act those actions in connexion, which it has previously acted thus, that we are enabled to make use of language, or signs. The written or spoken word, *John*, may excite a notion of a man, a certain man because that sensorial action which constitutes (in part) a *perception* of the word John, has before been excited, or has before occurred, in connexion with the sensorial action which constitutes, in part, a perception of a man, a certain man. If these two sensorial actions were not disposed to occur in connexion the seeing or hearing of the word *John*, might be immediately succeeded by a notion of a triangle, or of any thing else you may please to mention.

Were it not for this disposition of the sensorium, neither of those modes of thinking which we call, remembering, judging, and imagining, would be found in us. We should have no *substituted* ideas. The word *London* would not call up an idea of a cluster of buildings. We should be as much below beasts in point of intelligence as beasts are now below us— When we get through with the intellectual phenomena the reader will be prepared to agree with us, when we say, it is probable that so far as the functions of the sensorium alone are concerned, beasts differ from men in the *strength* or *perfection* (neither word suits us) of their *associating principle*, by which ambiguous expression we mean, the disposition or tendency of the sensorium to think those thoughts in connexion, which are in any way related.

This disposition of the sensorium is also a sourse of pleasure as well as of pain to us. We have painful and pleasurable thoughts, as well as painful and pleasurable sensations ; that is, we have conscient actions of the sensorium *alone* which we call painful or pleasurable, as the case may be, as well as

actions of the nerves and the sensorium, or of the nerves alone, which we call pleasurable or painful. Besides these actions of the sensorium we have many of an intermediate nature, which we may call neutral, as to pleasure or pain, since, of themselves they constitute neither the one nor the other. Now if a pleasurable or painful action occur in connexion with one of these neutral actions, a timal relation is formed between them, and all that may afterwards be necessary, to produce the painful or pleasurable action or thought, is to excite the neutral action.

Some neutral thoughts may be related both to pleasurable and painful, or if you please, agreeable and disagreeable ones; and when such neutral thoughts are excited or suggested, the agreeable and disagreeable ones may succeed so intermingled, as to constitute emotions which, taken as a whole, one can scarcely call agreeable or disagreeable.

There is a cane which I have often seen or thought of, at the same time I have seen or thought of my friend,—my friend is now dead, and when I see or think of the cane sorrowful thoughts relative to my friend and his death occur. There is a lady whose company has pleased me much; and whatever excites a notion of this lady gives rise to agreeable thoughts, or recollections, I care not which you call them, since every body knows that by giving one thing two names, you do not make two things of one.

It is ill manners to cause to occur, disagreeable thoughts or emotions, in any one in company with you; hence, owing to the disposition of the sensorium, to think those thoughts in connexion which are any way related, it is ill manners to mention any thing which has any relation to a subject which any one present cannot think of but with disagreeable emotions.

A man of thought and civility, in company with a lady who has been unfortunate, or with a person whose near relative

has been hung for a heinous crime, will never say or do any thing, in any way calculated to call up an idea of her misfortune. or any thing calculated to excite an idea of the halter or even of hemp.

Owing to this disposition of the brain, also, it may be considered slanderous for one man to say of another, "he ought to be carried out of town upon two chips!"

A knowledge of the sensorial tendencies shows the housekeeper that no woman can be called neat who sets a filthy mess of matter by the side of any kind of food, even if it be known that nothing can be communicated from the filthy mess to the food; for whoever sees these two things in the same place, sees them at the same time, and hence acquires a tendency to think of them at the same time, and it is not agreeable to think of filthy matter when one is eating.

It does not appear very strange to us, that actions of the sensorium, which are somewhat alike, (alike, I say, for like impressions—like objects, to appearance, excite like actions,) should occur in connexion; and not at all strange that the sensorium should be disposed to act in connexion those actions which it has previously acted in connexion; for this fact appears to be much akin to many other facts with which we are familiar. Still the fact admits of no explanation. To refer it to the influence of habit, is not to explain it—to refer it to a law of the animal economy, is not to explain it;—this law is only an ultimate, inexplicable, and general fact, of which the fact in question is an instance. And if we call any thing mysterious, this fact is mysterious; it is just as mysterious, *and no more so*, as it is that one body in motion should put another in motion by striking against it. But what we would more particularly impress at this time, is this: That thought which is immediately succeeded by another thought, is as much a cause of the occurrence of this other thought, as

the motion of one body is the cause of the motion of another body against which it strikes.

It is sometimes said that one thought *suggests* another, is the *occasion* of another, &c. ; this is all well enough ; it is but saying in other words, that one thought is the *cause* of another. A thought is an act of that which thinks, be it what it may ; it is an event ;—but we have no events without causes since the Deity organized the universe, and every event (every thought, of course,) which does occur, must as necessarily occur as an effect must follow its cause. This is a fact which the immaterialist cannot deny, admitting his fundamental principles to be true ; unless he first refute the principle, universally admitted, that there are no events without causes.

The sensorial tendencies are strengthened by intensity, and by repetition of actions—We believe that actions of the sensorium may be of different degrees of intensity, as well as the actions of other agents, and the more intense any action of the sensorium may be, the stronger tendency does it produce towards its recurrence. As to frequency of action or repetition of action, every body knows that the more frequently, or the more times, be thinks any thought, or chain of thoughts, the more apt is he to think such thoughts again.

The sensorial tendencies may be weakened or even destroyed by whatever may impair the healthy condition of the brain. Diseases, accidents, intemperance, and old age, may do this, and are said to weaken, impair, or destroy the "memory."

But it is not to be forgotten, that there is a wide difference between weakening or destroying the sensorial tendencies, and *choking* them.—A man receives an injury of his head; some piece of bone or some effusion of blood compresses the brain, (consequently the sensorium,) so that the thoughts or conscient actions of the sensorium cannot take place ; the

man is in a comatose or sleeping state, and for the time being he is dead as to all perception or thinking as he ever will be; but after a time, either by an artificial or natural process, this pressure is removed, and the brain begins to think again, and to think the same thoughts too, and the same chains or trains of thoughts that it did before the injury. This proves that the sensorial tendencies were not destroyed by the injury, but only choked or counteracted;—the sensorium was so compressed that it could not act, though it still possessed its tendencies to act.

In some instances, an injury of the brain is partly but not entirely removed. In such cases the man may see, but not hear, or may hear and not see; he may be insane, that is, his thoughts may occur in odd, unnatural relations, or he may not be able to think at all until his sensorium have acquired new tendencies. If we mistake not, there are instances on record of persons recovering (in part) from diseases and injuries, who could not think a single thought until they had acquired new tendencies by impressions upon the senses, and yet succeed very well in acquiring a new education. In such cases we should be pretty positive that all old tendencies were *destroyed*, were it not for the fact, that old tendencies have been choked by some lurking clog in the brain, for years, and yet become operative after such clog is removed.

We have somewhere read of a man who learnt two languages, and being taken sick, he could not, on recovery, recollect but one of them for several years; but at length he began to have notions of the words of the other language, and these notions were succeeded by notions or ideas of the things which these words represented, or in other words, the man began to *remember* the other language. Now the reason why the man, on recovery, could remember one language and not the other, was undoubtedly this:—The tendencies

relative to the language which he could recollect, were stronger than the tendencies relative to the other language; and *all* the tendencies of his sensorium were so far choked, obstructed, or counteracted, (neither word exactly suits,) that the weaker could not give rise to actions.

A fall, a blow upon the head, or a fright, sometimes removes the *lurking clog* in one's brain, enabling it to perform all its intellectual functions as before it received any injury.

There are many facts which seem to show that the brain may suffer a greater degree of injury in what we may call its *physical* organization, without destroying its functions, if such injury be produced gradually, than it may if the same apparent injury be produced suddenly.

As to old age, it is probable that it operates, not so much by destroying old tendencies as by disenabling the brain for acquiring new ones; for those tendencies which were acquired in youth, and which have been strengthened by repetition of action through a long series of years, may become operative, when the impressions of yesterday produced such weak tendencies; that they will not become operative to-day, on any occasion whatever, short of the reapplication of the impressions, and then, indeed, it is not the tendencies of the sensorium that give rise to the sensorial actions, but the impressions which excited these same actions yesterday.

The sensorial tendencies are nothing distinct from that part of the brain which we call the sensorium. If the sensorium be removed or destroyed, these tendencies go along with it. When all the tendencies produced by witnessing an event are annihilated, the person can no longer recollect the event.

Now it is generally supposed that all parts of our bodies undergo changes, the old matter of the system being very gradually taken up by absorbents, and new matter as gradually deposited in its stead; so that in the course of seven, ten,

or fifteen years, (no one pretends to state the time exactly,) the old matter of one's system is all changed for new.

If this supposition be correct, it follows that none of the particles of matter which composed my sensorium fifteen years ago, constitute any part of it at the present time ; but I can remember events which I witnessed more than fifteen years ago. Some may think this fact argues against our principles, but we think not.

We will admit, for the present, that the sensorium undergoes such changes as to be constituted entirely of new matter as often as once in seven years ;—we shall be under the necessity of making no irrational suppositions to reconcile the fact, that an old man may remember the events of his youth, with our principles. All that is necessary to produce a tendency of the sensorium to act any action, is to have this action occur one or more times ; no matter by what means or in what way it is caused to occur. Now suppose the sensorium have a tendency to act a certain action, and now suppose again, that a few of the particles which enter its structure are removed ;—the tendency to act this action is not destroyed—to say the most, it is only weakened, and the action may again recur, renewing the strength of the tendency towards its recurrence ; and in this way the tendencies of the sensorium may be kept good, although the old particles of which it is organized are gradually changed for others.

The fact that an old man may remember an event of his youth, argues nothing against our principles, until two things be established. First, that the sensorium does undergo such changes as we have admitted, as often, we will say, as once in seven years. Second, that during these seven years (or we will even say three of them,) the old man who remembers an event of his youth, did not think of this event.

But neither of these things can ever be proved, and, in

deed, there is not the least shadow of evidence in favor of one of them, and very little in favor of the other. There is no evidence that a man does not think of those events of his youth which he remembers when old, as often as once every three years from the period of his youth to that of his old age.

Not a day passes in which we do not think of hundreds of events without being able, at night, to say that we have or have not thought of such events. A man may think of an event of his youth a thousand times a year, and not be able to say at the year's end, that he has thought of it once. He is not likely to remember that he has thought of it, unless he thought of it on some momentous occasion, as for instance, when one of his old friends and playmates called on him, and talked over the scenes which they witnessed while young.

As to the sensorium undergoing such changes as are brought about by the processes of absorption and nutrition, there is no proof of it.

The reader knows that lymphatic absorbents are found in most, if not all, parts of the body, except the brain, and these absorbents are supposed to take up and carry off the old materials of our organs. Now the chief evidence (if evidence it may be called) in favour of the brain having lymphatic absorbents, is merely analogical—most parts of the body possess such absorbents, and it is infered that the brain does. But the acutest anatomists of every age that has gone before us, with all their nice instruments and magnifying glasses, have not been able to discover a single lymphatic vessel of the brain; and as the brain is a large viscus which receives a great proportion of blood, and as its lymphatic absorbents (if it had any) would probably be collected into considerable trunks so as to pass out at some of the few outlets of the skull;

this inability to discover any proper absorbents of the brain, is very strong evidence that the brain has no such absorbents.

It is true that the *veins* may, and do absorb *liquids* from various parts of the body ;—the veins of the brain may absorb water from the ventricles. The veins may absorb adventitious fluids applied to a wounded surface, or even to the sound integuments ; at least, we will admit so much ; but there is not a single fact, pathological or experimental, that tends to show that the veins eat down, as it were, and carry off the solid fabric of our bodies—This is undoubtedly a peculiar function of the lymphatics. The brain never pines away during sickness.

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CHAPTER XIV.

On Remembering.

To have conscient actions of the sensorium recur without impressions, is to think, and to think is essentially the same as to remember.

To remember any thing, is to think more than one thought relative to this thing.

I see a man ; this supposes one action of my sensorium, (that is, if my seeing is not a mere sensation, but a perception) ; I think of his name, his home, his father, his occupation, &c. ; this supposes other actions of my sensorium. Sometime after, in a distant land, this man again presents himself before my eyes, and excites the same single action of my sensorium that was excited when I before saw the man—excites that action which, if it recur without impression, that is, when the man is absent, constitutes what the school-

men call a *conception* of the man; but to have this action excited, is not to remember the man. The man says to me, "my name is *Bartlett*;" but if the action excited in my brain by his pronouncing this word, not the action excited by seeing the man, do not call up some other action, such as constitutes a notion of his home, or of his father, or of something else relative to him, it cannot properly be said that I remember the man. So, on the other hand, if a certain man's name be *John*, it cannot properly be said that I remember *this* man's name, when I merely have occur that sensorial action which is excited when I see, or that which is excited when I hear, the word *John*. This would be but to have an optical or audial idea of the word; but to remember his man's name, these ideas must be connected with others, such as an idea of this man: of some place in which I have seen him, &c.

To remember an event *which I have witnessed*, I must have something more than merely an idea of an agent acting—merely this would be nothing more than a conception. I must have an idea of the place in which the event occurred, and of myself being there. But to remember an event which I have heard of, it is not necessary that I have a notion of myself being at the place where the event is said to have transpired.

I do not think it is essential to the remembering of a past event, that I have what is called a "sense of the past;" yet when one remembers an event which he has witnessed, certain conscient actions of the sensorium will always occur, which constitute what we call a sense of the past; and we shall presently attempt to show what these actions are, or in other words, by what impressions they are excited.

It is true, that in order to remember the *time* in which a particular event took place, one must have something more than notions of agents acting, and of places. Suppose an

event happened on the 10th of June, 1824 ; in order to remember this particular time, one must have a notion of a day and of the marks or words, 10TH OF JUNE, 1824.

As to what constitutes a notion of a day, (not of the *word* day,) so far as I can judge, when I have a notion of the sun in the east, over my head, in the west, and of going to breakfast, dinner, &c. I have what I call a notion of a day. Nevertheless, I presume that different actions of the sensorium, at different times, constitute what goes for a notion of a day.—When I endeavor to determine what constitutes my notion of a day, putting aside all ideas of the word, I find that it is something that comes and goes pretty quick ; and I am not sure as it is, in these cases, any more than one action of my sensorium,—perhaps that action which is excited when I go out in the morning and take a glance at things around—the arched heavens, the sun in the east, and the terrestrial objects that may fall within my sphere of vision.

I generally have a peculiar idea of an afternoon. It is that action of my sensorium which has been many times excited, when I have been in my father's west room, and seen the sun shining in at the windows.—When I undertake to determine what is my idea of an afternoon, I find that this action or idea always occurs ; and I cannot find that I have any other idea which can be more properly called an idea of an afternoon than this ; therefore I call this my idea of an afternoon. Perhaps some will determine that their idea of an afternoon, is an idea of that part of the arching heavens which extends from the meridian to the western horizon. But as for our having any thing but a substituted idea or notion of an afternoon, or of any thing else that has never excited an action in our brains, we cannot.

But what constitutes a " sense of the past ?" When a man remembers an event which he witnessed last fall, he has a sense

of past; now what constitutes this sense? It is certain actions of the sensorium that have been excited since last fall; such, for instance, as constitute notions of a winter or spring. One's notion of a winter consists of such actions as are excited by looking at white fields, by seeing cutters run by—by hearing sleigh-bells, &c.

If a man witness an event and instantly become perfectly senseless, and remain so, I don't care if you say, ten thousand years, and then come instantly into the same thinking state in which he was the instant before he became senseless, he will tell you that he saw this event, but an instant ago; he will have no sense of any time having passed, from the moment he saw the event, to the moment he tells you so. This will be admitted, and it is proof that when a man remembers an event which he has seen and has a sense of past, this sense consists in having recur at the time, certain sensorial actions that have occurred between his witnessing the event, and his remembering it.

Perhaps it may be determined that we have not mentioned every thing which must take place in one's head to constitute a remembering a man, a remembering an event, &c. But if we have said enough to show that our definition of *remembering* is correct, we care for nothing more. We think we are advancing new principles, but do not pretend to follow out all the fine-spun speculations that may be connected with these principles. We only aim to convince that we are right in the main.

CHAPTER XV.

On Imagining.

We are too apt to think that every word must have some peculiar meaning. The word, *imagination* and the word *imagining*, are so incorporated, as we may say, into our language that we cannot conveniently do without them ; and it would appear rather presumptuous in any one to say that they mean nothing. Yet we will venture to say this, with respect to the word imagination ; and as to the word, imagining, it will puzzle any one to give it a satisfactory definition. It can mean nothing more than a mode of thinking which is not *essentially* different from any other mode. When a man imagines, nothing more can take place in his sensorium, than one conscient action after another, (it is admitted on all hands that whatever thinks, thinks but one thought at a time.) and this is what takes place when a man thinks, or remembers, or judges.

We would have every reader endeavour to determine for himself, what goes on in his head when he does that which he calls imagining. He will probably find that he has nothing but real or substituted ideas of things, one after another ; but he may find that a very great proportion of his ideas are substituted ; and perhaps we cannot define imagining in a less objectionable way than by saying it consists in substituting ideas. But there are objections to this definition, as well as to every one that we can think of, one objection is this :— We often substitute ideas when it would not generally be said that we imagine. To avoid this, we must alter the common meaning of the word, (if any body know what this is,) and say that whenever a man substitutes an idea of one thing for

an idea of another, he imagines. Let us now see what goes on in the sensorium when a man substitutes one idea for another.

We begin by remarking that every substituted idea is, in itself, a real idea ; it is a real action of the sensorium excited by some object, which action constitutes a real idea of *this* object, but when this idea occurs in connexion with an idea of the name of some other object, it becomes a *substituted* idea of such other object, and is not a real idea *of such object*, and yet it is a real idea. I have seen a cluster of buildings ; of course I can have a *real* idea of this cluster of buildings ; and if this idea occur when I read of London or when I think of the name, *London*, I have a substituted idea of London.

When I say that, *I substitute one idea for another*, I use such language as I am obliged to—it is the language of a false philosophy, and is calculated to deceive. The reader must know from what has been said, that *I*, as a free agent, do nothing,—*I* don't "will" an idea, *I* don't substitute one idea for another ; but rather, an idea of one thing occurs in me, in connexion with an idea of the *name* of another thing; and this is all that constitutes a substituting of an idea of one thing for an idea of another thing—this is all that constitutes an *imagining* how this other thing looks. Our metaphysical vocabulary is full of nonsensical words and expressions. Let every man "turn his thoughts inward" and not be deceived.

A man may say that he can imagine *a horse standing upon the top of a house*, although he never saw such a sight. Let us examine this matter.

In the first place we may put aside the word *imagine*, without any prejudice to the sense of the sentence, and say :—"he can have an *idea* of a horse standing upon the top of a house." Now if this man have any knack at examining his

ideas, he will find that he does not have an idea of a horse, at the same instant he has an idea of the house. He may have one single instantaneous idea of *something large at the bottom and little at the top*, for he has seen many such things, he has seen houses with chimnies extending out above the roof, and he has seen several other things upon the top of houses ; but he cannot have a real, and of course *distinct*, idea of a horse upon the top of a house and such idea of the house at the same time. However it is the easiest thing in the world, to talk and write about a horse upon the top of a house, and while a man is doing this he has time to have real and distinct ideas of a good many things. But this talking and writing are something more than what goes on in the brain,—we are only endeavouring to show what goes on in a man's sensorium when he is said to imagine. And we do not hesitate to give it as our opinion, that when a man has what he calls an idea of a horse upon the top of a house, no individual action of his sensorium occurs, which has not, sometime or other, been excited by an impression upon the senses.

Perhaps some may say that imagining consists in discovering *new* relations between things ; but by this expression they can mean nothing more than that the imagining person *thinks* of some relation between things which no one ever thought of before—the relation itself is as *old* as those that were thought of years before. I never thought of any relation between a homely girl and a blacksmith's leather apron, until somebody said they both keep the *sparks* off. Now he that first thought this, *discovered a new relation*, as the expression is, between a homely girl and a blacksmith's leather apron—he imagined. But what took place in his sensorium ? Surely, no new action, no new thought ; but old actions in a new order. This is all. And these actions did not take place in this order, because the man *willed* them to, (surely no man can will a

thought until he know what thought to will, and by this time the thought is already present.) but because his sensorial tendencies were such as to give rise to them in this order.

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CHAPTER XVI.

On Signs.

By signs, we here mean such motions, marks, noises, and bodies, as excite in us ideas of something besides themselves.*

This is the best *brief* definition of signs that *we* can give; but it may be said, in opposition to this definition, that if, in any man, at any time, the word *dun* give rise to an idea of the *thing* gun, then, according to this definition, the word *dun* is, in this instance, a sign of the thing gun. This we cannot deny; but the mark or word *dun* does not *generally* excite, and is not *generally intended* to excite, the idea of a gun; therefore we do not call the word *dun*, a sign of the thing gun. Yet the word dun is a sign—it is the sign of a written or verbal request to a man to pay a debt.

The *motions* which we had referrence to, above, are, for the most part, those of a person's head, lips, eye-lids, and superior extremities. The *marks*, chiefly those which we see upon paper, whether letters, words, arithmetical figures, or hieroglyphicks. The *noises*, such as one makes when he talks. And the *bodies*, carved images or any other bodies that are used as representatives of something besides themselves.

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*We sometimes speak of ideas as being excited, but it is not strictly correct; sensations and perceptions are excited, but ideas are called up or *suggested*.

In treating of signs, we shall chiefly confine our remarks to words written or spoken. We scarcely need tell the reader, that by *written* words we not only mean words made by a pen, but printed words.

We shall first attempt to show *how* or *why* it is that words excite, or more properly, call up, ideas of things distinct from themselves, and even absent from him, in whom such ideas occur. After this we shall show in what way we suppose words first got into use—in what way Adam and Eve came by their language.

The reader knows already, that with us a thought, idea, and a conscient action, or simply an *action* of the sensorium, are all synonymous terms or expressions. He knows, too, that the sensorium is disposed to, or in other words, *does* think those thoughts in connexion, which are in some way or other, related ; and furthermore, that nothing relates thoughts more closely, than their occurring in connexion, that is, in immediate succession.

Now if I hear the word, *rattle-box*,* at the time the thing, rattle-box, is presented to my view, two actions are excited in my head, one by hearing the word and one by seeing the thing ; and as these actions are excited in connexion, nothing more may afterwards be necessary to call up that sensorial action which constitutes an idea of the thing than the noise or sound, which is made by pronouncing the word. So on the other hand, nothing more is wanting to call up that *audial* action of the sensorium which was excited by this sound, than a sight of the thing rattle-box. Again : The written word rattle-box is as much a visible thing or object as the box itself, and if this word be pointed out to me, at a time when I

*I shall frequently use the expression "hear a word," instead of "hear a word pronounced," as it is shorter and more convenient.

hear it pronounced, on *optical* action of my sensorium is excited in connexion with an audial, which optical action is different from the one excited when I saw the *thing* rattle-box. And it may now be said that my sensorium possesses three rattle-box tendencies, which are very closely related. One tendency is to act that action which constitutes an idea of the *thing* rattle-box; another tendency is to act that action which constitutes an audial idea of the *word* rattle-box; and the third is a tendency to act that action which constitutes an optical idea of the word rattle-box—an idea, thought, conception, or *thinking view*, of the marks, RATTLE BOX, as they here stand.

The first tendency is related to the second, and by *way of the second*, to the third, inasmuch as, by supposition, I never *saw* the word rattle-box, until I had *heard* the word and seen the thing rattle-box.

Now as these three tendencies are related, when either of them gives rise to its action, the other two may instantly do the same; hence an impression which *excites*, or a thought which *suggests* that sensorial action which constitutes, in the first case, a part of a *perception*, and in the latter, an idea of a rattle-box, may cause to occur two other sensorial actions relative to a rattle-box; the one such as is excited by hearing, the other, such as is excited by seeing, the *word* rattle-box. So on the other hand, whatever may cause to occur, either of these two sensorial actions, may be followed by an idea of the *thing* rattle-box.

From what has now been said, we see that if A be a sign of B, then is B, also a sign of A; and if B is a sign of C, then is A an *indirect* sign of C. The thing ox is a sign of the word ox, as well as this word, a sign of the thing ox, that is, in the broad sense of the word sign; but as the thing ox, is not *generally intended* to represent the word ox, it is not a sign of this word, in the restricted sense in which we generally

use the word sign. If the thing ox be a sign of a yoke, then is the word ox, an indirect sign of a yoke.

Any one thing becomes the sign of another, in the broad sense of the word, when these two things have often excited actions of the sensorium, at the same time; or when these two things have often been *thought of*, at the same time. Hence it is easy to see and admit, that what is a sign of one thing to one man may not be a sign of the same thing to another man.

I may have sometime dug a certain well, in doing which I used a pick-axe, day after day, and tho't of the pick-axe and the well together, time after time, so that now I cannot see, hear of, or think of, a pick-axe without having an idea of this well.

There is not, perhaps, a man in this country who, if he were to plough up a tomahawk, would not instantly think of Indians; but there may be thousands of men in other parts of the world who would not instantly think of Indians on seeing a tomahawk. If there be not, it is only because there are no people who have not thought of a tomahawk and Indians, at the same time.

The same word may at different times be a sign of different things, to the same person; this is owing to its connexion with other words, and to several other circumstances, that might be mentioned. If a man should say to me, "Do you recollect that *John* whom you saw at York?" I should have an idea of large, dark complexioned man; but if he should say, "Do you recollect that *John* who made your boots?" I should have an idea of a short, light complexioned, blue-eyed fellow.

We scarcely need mention that signs call up sensorial actions only, and not nervous actions—thoughts, and not sensations. If they called up, or re-excited nervous actions, then the sight or sound of the word *Gout*, would produce excruci-

ating pain in the great toe of him who has had the gout! The reader will be careful that he do not here misunderstand us. When we say that signs do not recall nervous actions; when we say the sight or sound of the word *gout* does not re-excite that nervous action which constitutes the pain of gout, we do not mean that this sight or sound excites no action of the optic or auditory *nerves*, as the case may be. Altho' a view of the word ox does not excite that action of the optic nerves which is excited when we see an ox, we do not say it excites *no* action of the optic nerves.

As we much more frequently hear words than see them, we believe that the *optical* action of the sensorium which is excited by *seeing* a word, and which occurring alone [without a sensation] constitutes a conception of a word, never occurs without being *immediately* succeeded by that audial action of the sensorium, which is excited when we hear this word spoken. Yet when we hear words spoken, as in common discourse, we seldom have conceptions of these words—seldom *think how they look on paper:* the sound of each word excites its own peculiar action of the auditory nerves (perhaps of the sensorium also, constituting a perception) and this action is followed by an action of the sensorium which constitutes a notion of some object, and not by an action which constitutes a conception of such word written on paper. We think that no person will find much difficulty in satisfying himself, that the opinions we have here advanced, are true.

He will find that when he reads to himself, making no noise with his lips, he has audial ideas of the words which he looks at: he will find that when he reads along and comes to the word *John*, he does not experience the same that he does when he hears this word—no, not so; but he will find that he experiences the same that he does when he has what he calls an idea of the *voice* of one whom he has

heard speak the word *John*. He will find that what he experiences does not more widely differ from a *hearing* of the word John, than his optical idea or conception of John himself differs from a *seeing* of John. He will find, also, that the *audial* actions of the sensorium which take place in him while perusing a book, are *immediately*, and of course very instantaneously succeeded by *optical* notions of objects mentioned in the book.

But every person may find that when he listens to him who is telling a story, he does not generally have conceptions of the words which the story teller uses; but that all his conceptions are of objects mentioned or suggested by the story teller; which conceptions may be real or substituted.

We lay it down, then, as a general fact, that the *seeing* of a word is almost invariably succeeded by that sensorial action which constitutes an idea of the sound of such word; but that the *hearing* of a word is not generally succeeded by that sensorial action which constitutes a conception of it. Why it is so, we do not certainly know, but *guess* it is this; When we first went to school, and began to learn our letters, and to read and spell, we seldom saw a word without hearing it pronounced at the time; and furthermore, no word was then a sign of a thing to us, until we had heard it pronounced; but before, during, and after our first going to school, we have very frequently heard words pronounced, and at the same time seen the things of which they are names, when we did not *see* these words.

We are now about to offer an opinion, which may at first appear irrational, but which we believe will, sometime or other, be generally admitted as true. It is this:

When a person *who is familiar with the words*, reads a book or hears a story, *perceptions* are very rarely excited in him.

The reader must have a correct notion of what we mean

by a perception. He must conceive of the sensorium as an active little organ, situated somewhere about the centre of the brain, possessing many tendencies to act, and continually at it, when the man is awake; and that it is the organ which *thinks*. He must remember, too, that five kinds of nerves extend to, and unite with, this organ; that an action of any one of these nerves is a sensation, and that if this *same kind* of nervous action continue along into the sensorium, then we have a perception; but if this particular nervous action, instead of continuing along into the sensorium, only continue up to it, and cause the sensorium to act some other action, which it otherwise would not, we do not have a *perception*, but a *sensation* and a *thought*.

For a more particular illustration, if I look at the word *John*, an action will be excited in my optic nerves, which we call an *optical* action, and I shall have a sensation, a seeing of this word, if this optical action extend no further; but if it continue along into the sensorium, then I shall have a *perception*, an *optical perception*, of the word *John*. If this optical action, instead of continuing into the sensorium, only extend up to it, and the sensorium, on this occasion, owing to its tendencies, take on that action which constitutes an *audial* idea of the word John, I do not have a *perception* of the word John; but I have a sensation and a thought. Now we believe that this is what frequently, if not generally, takes place when one is reading a book which much interests him, and which is written in an easy style and familiar language. He dont attend to the words themselves; he dont think of them; his sensorium is continually and uninterruptedly thinking about something else: it appears to act, as we may say, according to the knocks which it receives upon the outside, and not according to any gentlemen which come into the house. Yet when this reading man comes across a new and singular

word, or a word printed in large capitals, he has a perception of such word, and may, therefore, have a conception of it when he gets through with the page and closes the book.

However, it is a mere matter of judgment whether, when one reads an interesting book, every word excites its own peculiar action of the sensorium, and always must remain so; for the instant we attempt to determine the question by observing what goes on in ourselves, that very instant shall we have perceptions, and not sensations of words, or at least, that very instant do actions cease to go on in our brains, as they did before. And we must confess that we are nowise sure that one has audial ideas of words when he peruses a book, except when he stops to consider whether he has or not, and even then, some may perhaps decide that they have, and others that they have not.

But if we cannot determine whether a man always *perceives* words when he reads, except by considering [thinking of] facts, it may be asked what facts we think of when we come to the conclusion that he does not. Some of the facts, or more properly considerations, are the following:

First. We know it is not impossible nor uncommon for a man to think and sense at the same instant;—we know that we can see an object, hear a noise, and think of something quite foreign to either of them, at the same instant;—if we dont know this, then we dont know that we exist.

Second. When *perceptions* of words have been instantly succeeded by ideas of objects, many times, it is not difficult to admit that these ideas may be caused to occur by mere sensations of such words; and if we admit this, then we have the sensorium free to think of objects, without being every moment interrupted when one peruses a book. And it frees us from the necessity of admitting that the sensorium acts so exceedingly lively as it does upon the supposition, that when

one reads and understands an author, every word of the author must be *perceived* before it can suggest an idea of a thing.

However, there are many words which are not the signs of any particular entities, and when a person reads a string of such words, a great proportion of his sensorial actions are mere audial ideas, or ideas of sounds, and a large share of the remainder, substituted, instead of real ideas. If the sight of the words *the*, *on*, *yes*, *truth*, *honor*, *gratitude*, &c. excite any thing but mere audial ideas, such other ideas must be such as we call *substituted* ; for, surely, there are no such *things* as the, on, truth, &c. in existence ; and it would be absurd to say a man can have a real idea of a thing which never existed ; we might as well say a man has been to Jingo, when there is not, and never was, any Jingo for a man to go to.

As we have now been showing why it is that a perception or a thought of one thing may call up a thought of another thing, or in other words, why one thing may be, to us, a sign of another, it is a fit place to offer a few remarks concerning brutes. We believe that, *so far as the sensorium alone is concerned*, the chief, if not the only reason, why brutes cannot use one thing as the sign of another, is because this organ in them does not acquire sufficiently strong tendencies to act, in *immediate succession*, those actions which it has previously acted in such succession ; or, to use more convenient, but figurative language, because their *suggesting principle* is so *weak*.

But although the sensorial tendencies of a brute may not much the more readily become operative together, merely on account of their corresponding actions having before occurred in immediate succession ; still it does not follow that their tendencies to individual actions are uot as strong as those of men.

But whether a brute's sensorial tendencies do as readily become as strong as those of men,* it is very difficult to determine ; for if the sensorial tendencies of a brute, to individual actions, should be as strong as those of men, still they might not become operative on such slight occasions, as those of men, owing to the weakness of the brute's suggesting principle.

That brutes possess a suggesting principle, or in more correct language, that those sensorial actions which have occurred in close succession, in them, are more or less disposed to occur so again, is true beyond a doubt. Many an old experienced ox has been known to loll on a cold winter's morning, on seeing the yoke about to be put upon his neck ; but why does the ox loll ? It is not because he is warm, but because the sight of the yoke &c. excites, or more properly suggests, former ideas. It causes him to think of his labouring in the field or on the road, and to think that his master has often ceased to drive him when he has breathed quick and short, and suffered his tongue to hang out.

It is true that the ox's sensorial actions on this occasion, are quite different from the actions that would be excited by hearing or seeing the words which we have used in stating what the ox thinks ; but these words are such as we are under the necessity of using.

There are some men who are already aware that we should be very far from being such rational, intelligent, and conversive beings as we now are, if our suggesting principle were

*To understand the expression, 'as *readily* become as strong as those of man" let the reader suppose that an action of the sensorium of a brute and of a man, is excited or suggested, in each, just six times ; now if, after this, one sensorium is just as much disposed to act this sensorial action again as the other, then we say the sensorium of the brute, as *readily* acquires a strong tendency as the sensorium of the man.

only a little more deffective than what it now is. Such men see, already, how a little difference in this principle may give rise to the striking differences between a stupid fellow and a man of wit, or a man of judgment. Such men, too, are now ready to admit that the *original* difference between the intellectual powers of Adam, and the brutes around him, might be almost, perhaps altogether, owing to the difference between his and their *suggesting principle*; by which short and convenient expression, I trust I shall not be understood to mean any thing more than the disposition of the brain to think in connexion those thoughts which are in any way related; and by this disposition, we mean nothing more than simply the fact, that the brain *does* think such thoughts in connexion. Should there be any who cannot conceive how a little difference in the suggesting principle should be one of the grand, original, or as we may say, fundamental, causes of the intellectual difference between a man of wit and a stupid fellow, or between a man and a beast; they will, perhaps, be enabled to do so, by reading the chapter on Judging, to which they will soon come.

It is generally said that words are marks, signs, or representatives of ideas. This saying has not been strictly examined. Concerning it much might be said. We shall merely remark that:—Many words are more properly the signs of objects, actions, qualities, and of relations between these things, than they are of ideas; that many other words are not the signs of any thing, putting aside the ideas of these words themselves—the word, *Soul*, we class among this number. And on the whole, as we use words more particularly for the purpose of making our fellow beings think of something besides our *ideas* (which, by the by, are things that no man can have an idea of) and as they answer the purpose for which they are used, we conclude that there is no great pro-

priety in saying, without any reserve, that words are the signs of ideas. They are more properly signs of things without the skull.

We now proceed to offer a supposition of the way and manner in which Adam and Eve came by their language, and to offer a few remarks concerning the way in which children acquire a use of the signs, the words, already in use.

Suppose that the first time Adam saw Eve, he met her with a large red apple in his hand: Eve had eaten such looking apples, and found that they were pleasant; she therefore wishes to obtain this one: She approaches Adam, and puts out her hand to take it from him. Adam seeing he is about to lose his apple, withdraws his hand. Eve, at first, knows not that this motion has any particular meaning; but after making several attempts to take the apple, and finding that Adam always withdraws it from her, she is led to think that Adam intends not to let her have the apple. She, however, makes one more attempt; Adam now withdraws his hand, holding the apple, and *at the same time* makes a noise with his vocal organs. This noise is at first an insignificant sound to Eve; but again attempting to take the apple, or something else, and finding that this sound always attends the act of refusal, she at length thinks, as a child would, that Adam would have her to understand by the noise, the same that he does by the gesture. To satisfy herself as to this, she again attempts to take the apple; Adam only makes the noise; Eve is not yet satisfied; Adam sees she is not, by her still persisting; he therefore speaks louder, perhaps repeats his sound, and at the same time repulses Eve. By this time Eve is satisfied that Adam means by his sound the same that we now express by these words—*you shall not have it.*

Presently Eve finds something which Adam wishes to obtain. He approaches Eve as Eve had approached him; but

Eve makes the same noise that Adam did ; and Adam knows full well what she means by it ; he knows that she means the same that he did. They are now agreed as to the use of one sound ; and this may aid them in acquiring the use of others.

Adam and Eve now walk about together, and when they come to a tree, rock, brook, or any other object, one points at it, and *at the same time* makes a noise, which noise, of course, becomes to them a sign of such object.—The object excites one action of the sensorium, the sound or noise another ; and these two actions having been excited together, all that is necessary to suggest an idea of the object, when absent from it, is to make the noise.

At one time Adam jumps over a log, and *at the same time* makes a certain noise. Here is an action, an event, and a sign to denote this action, and henceforth, this noise may be followed by an idea of the event.

Suppose, now, that Adam and Eve had pen, ink and paper, or what would answer the purposes of these materials, Adam makes a mark, but to Eve it has no meaning, until Adam, pointing at it, makes a noise; it is now to Eve a sign of this noise ; and if the noise be the same which Adam made when he pointed out a tree, it is also a sign of a tree, and of course, of the same use to Adam and Eve that the mark TREE now is to us. In this way could Adam and Eve go on and form, for themselves, a sort of language, which might, as we can easily perceive, be improved by succeeding generations, so as to become as perfect as any language now is.

If this supposition of the way and manner in which our first parents acquired a use of signs be correct, we see that they were enabled to do so, because that when two or more actions are excited in the sensorium at the same time, it becomes disposed to act these actions in close succession ; hence, if one of them be excited or suggested, the others immediately fol-

low. Now let us suppose that our sensoria or sensoriums had been organized a little different, so that they would not acquire any disposition to act two or more actions in close succession, merely by having these actions excited at the same time. What stupid and defenceless creatures we should have been! Even if our ideas of similar looking objects had still suggested each other as they now do, we could have had no signs that would have been of much use to us; we could have had no language. The discoveries of one generation, if indeed they could make any, could not be recorded, or in any way handed down from generation to generation; our race could make no improvements in any thing, the hundreth generation being no wiser than the first, and instead of bringing every other species of animal under our subjection, we should have been a defenceless prey to every beast of equal strength and better claws than ourselves. It is truly wonderful how much depends on a little, in the works of nature.

If we observe what takes place in children we shall find that they obtain a use of signs much in the same way that we have supposed Adam and Eve did. To pass over what takes place in the nursery for the three or four first years of the child's life, let us follow the little urchin to school. Here the teacher calls him to him, takes his pen-knife, points to the first letter of the alphabet, tells him to look at it, and sounds in his ears, *A*, he then points out B, and sounds this letter; and thus the teacher proceeds with all the letters, commanding the little fellow to make the same sounds that he does. This task the teacher performs many times, before such tendencies are produced in the child's sensorium, that an *optical* idea of the letters, may occur without impression and be connected with those *audial* actions of the sensorium which are in the first place excited by the pronunciation of these letters.

When a child is learning the letters of the alphabet, two kinds of actions are excited in his sensorium; one by way of the optic nerves, the other by way of the auditory; the first, as the reader knows, we call *optical* actions of the sensorium, to distinguish them from the latter, which we call *audial* actions of the sensorium. Now when a child has thoroughly learnt a letter, the optical action of this (by which I mean, *excited by* this) letter will be immediately succeeded by the audial action of this letter; or the audial action will (perhaps) be immediately succeeded by the optical, should the audial chance to occur first. It matters not whether the optical or the audial action be *excited* or *suggested*, in either case the one will be followed by the other.

The child having learnt the letters of the alphabet, the teacher turns to words. Let us suppose him to turn to the word MAN; what does the teacher do, and what goes on in the child's head when he is said to learn to read the word *man?*

The teacher points to the first letter and says: What is that? The child says, M. What is that? A. What is that? N. "Very well," says the teacher, "pronounce it." But the child knows not what the teacher means by "pronounce it;" however, it sounds to him like a command to do something, and he looks the teacher in the face, to know what. The teacher now pronounces the word, and the child soon learns what he means by "pronounce." He will now tell off the letters and pronounce the word. After a time, the teacher shuts the book, and tells the child to spell *man*. But the child knows not the meaning of the word "spell," and must learn it in the same way that he learnt the meaning of the word pronounce. After this the child can spell *man*, for the action excited in his sensorium when the teacher puts out the word to him to spell, suggests a notion of the three letters MAN, standing together, and to spell man, he has nothing

to do, but to tell off these three letter as he sees them in his "mind's eye," and then say, *man*, as he has often done before, immediately after telling off the three letters MAN.

From this we see, that the action of the sensorium, excited by way of the auditory nerves, when a word is put out to spell, calls up that action of the sensorium which has before been excited by *seeing* such word; just as the sight of a word calls up that audial action of the sensorium which has been excited by hearing such word pronounced.

Our little urchin has now learnt his letters and learnt to read and spell the word man; but if this is all that he has learnt concerning this word, then it is to him, no sign of a being which talks, laughs, and walks upright, upon two legs, and it never will be until such being be pointed out to him, *at the same time* he is told, "this is a man;" or, until he be told "that was a *man* which you saw pass by just now;" or, until he have learnt the meaning of the words. *talk*, *laugh*, *walk upright*, *two legs*, &c. and found by a dictionary that a MAN is a being that talks, laughs, and walks upright upon two legs."

Before closing this chapter, it may be well to say a little concerning the origin of the word *soul;* in doing which we shall give the reader a clue for accounting for the origin of many thingless names.

To be brief, we will at once say, that men learnt by experience (the only way, in the broad sense of the term, that they come to know any thing) that there is an essential difference between animals and inorganic bodies; and a wide, if not an *essential* difference between men and other animals. Now it is the same thing in different words expressed, for a man to learn that there is an essential difference between two things, as it is, to learn that there is *something* in one of these things, which there is not in the other. And having learnt that there

is *something* in a man which there is not in a block, or any other inorganic body, it is the easiest thing in the world to give this something a name; hence the name soul, or mind, to denote a something in man which is not to be found in a block. And as *every* man learns that there is something in man and other animals, which does not exist in any other beings, it is not at all strange that men should so generally believe in the existence of a soul, or of souls, as they have formerly done; for having learnt that this something exists, all that was necessary for them to do, that they might be said to believe in the existence of a soul, was to consent to use this word as the name of the peculiar something, which every body knew to exist in the animal kingdom. So far, so good; but presently men begin to speculate about the nature of this something, this soul; and instead of considering it the *nervous system*, possessing properties by virtue of its organization, and tendencies acquired by exercise,—they considered it as something superadded to, and *distinct* from, the brain and nerves. Then comes the error—then comes the *whim*, or hypothesis without a shadow of evidence. And as there was not, in ancient days, one man in ten hundred thousand, who was not too lazy or too ignorant to examine into the truth of this whim, and expose its falsity, it is not strange that it was so generally believed that the peculiar something, the soul, which exists in animals, is something *distinct* from the material body which we behold. And as this belief has given rise to language which can but serve to aid and perpetuate it, among people who do not examine the subject; and as it is incorporated with almost all religious creeds, in support of which creeds, millions are yearly expended; and as every man must now, as formerly, be convinced that there is a peculiar something within the skull which is not to be found out of it,—it is far from being astonishing that so many do, even

in the present enlightened age, believe in the existence of souls or minds, as distinct things from the animal system.

As every body knows that there is something peculiar in animals, and as this something is said, by those who pass for learned, to be a being distinct from the body—to be a soul; it is as natural for the unlearned to believe in the existence of a soul, as it is for them to believe that the earth stands still, while the sun moves round the earth. And as astronomy alone has taught us the motions of the heavenly bodies, so must physiology alone, teach us the constitution of man;—neither the one nor the other is to be learnt in any book written by the ancients. And as materialism must, and will be established, the prudent religionist will no more think of opposing it with his Bible, or his Koran, than he does of opposing the present system of astronomy by the same book—it would be like bringing an egg against a rock. As christians, we would no sooner admit that materialism is opposed to christianity, than we would admit that christianity is false.

As to showing how we come to have an *idea* of a soul, we shall leave the task to such notable brains as that of Mr. Locke, (who has charged us not to believe in the existence of things of which we cannot form distinct ideas,) since we know that, putting aside our optical and audial ideas of the word itself, an idea of a soul never yet existed in our heads.

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CHAPTER XVII.

On Judging.

That the reader may at once know the most important positions which we are about to maintain in this chapter, we

here state them. They are the two following :—First. That judging consists in nothing other than in thinking over all thoughts (that chance to occur) relative to the subject or question concerning which we are said to judge. Second. That to " compare one idea with another," is an absurd expression, and means nothing, unless it mean the same as, *to have these ideas occur in immediate succession.*

There is a penknife stamped with the figures 1776. One man believes this penknife was made in the year 1776. This is his opinion, because he has seen many articles which were stamped with the figures denoting the year in which he knew they were made. Another man judges that it was not made in the year 1776, because, first, it is now 1828, and penknives are generally sold, and worn out or lost, in less than fifty-two years from the time they are made. Second—the year 1776 was an important year with the United States of America, as their independence was that year declared, and to keep it in remembrance, the Americans stamp, even at the present day, many articles which they manufacture, with the figures 1776. Third—this penknife, not being well finished, appears to be of American manufacture.

Here we see that two men have judged differently, have come to different conclusions, as the expression is, concerning the age of a penknife, or the time when it was made. The reason why they come to different conclusions is obvious ; it is because different thoughts relative to the subject occur to them. The grand question now is, what goes on in either man's brain ? Does any thing more or less occur than this : The sensorium thinks over those thoughts relative to the subject, to the thinking of which it has tendencies sufficiently strong to become operative on the occasion ? Let no man be deceived by ambiguous words, or the authority of great men ; let him remember that his opinion concerning this

matter, is as good as that of a learned professor of Glasgow or of Edinburg. The field is before him ; he can examine for himself ; let him turn his thoughts inward, as Locke would say, and decide whether, when he judges concerning any subject, any thing more or less occurs in him, than all the thoughts relative to the subject which may chance to occur.

If any one say that any thing more occur, we hope he will be so very obliging as to inform us what it is ; but in doing this, let him beware that he make no tatements which will not stand the test of inquiry ; and be so good as to express himself in plain and definite terms, and not suppose a term is definite because it is very common, because it is familiar to every one.

We will venture to offer it as an opinion, that if precisely the same thoughts occur, it makes no more odds, as it respects the conclusion, in what order they occur, than it does in what order you add together the figures of a single column, as it respects the amount—whether you say that 7 and 3 is 10, and 4 is 14, and 5 is 19 ; or that 5 and 3 is 8, and 7 is 15, and 4 is 19, or whether you think these numbers over in some other order. If we take the example of the man who judged that the penknife above mentioned was not made in the year 1776, what odds can it make in his conclusion, whether his thoughts occur to him in the order above expressed, or whether he first think that such looking knives are made by Americans, that the Americans, even now-a-days, stamp many things which they make, with the figures 1776, and that penknives are generally sold, and lost or worn out, in less than fifty-two years ; or whether these thoughts occur in some other order ?

It may perhaps be said, in opposition to this opinion, that it often happens that one man makes certain statements to

another, who does not understand him, who does not conclude that what the man states is true ; and yet these same statements being made to him in a different order, he then understands and believes. But it never must be forgotten, that when you state any thing to a man, and he judges whether, what you tell him, be true or false, he thinks over a great many more thoughts than those marked by the words which you speak ; and it is quite likely that by stating facts or falsehoods to a man in one order, you may not cause the same thoughts to occur in his sensorium, that you would had you stated the same facts or falsehoods in some other order. So we are still inclined to the opinion, that all men come to the same conclusion on thinking over the same thoughts, let these thoughts occur in what order they may.

But although it is not essential as to the conclusion, in what order the facts of data are thought of, or if you rather, in what order ones thoughts occur ; still it is probable that different men's sensoriums are disposed to think over the facts relative to any subject, pretty much in the same order. This arises from the nature of things—from the way and order in which these facts were made known to them—there is some similarity between the courses by which men acquire their knowledge or sensorial tendencies, relative to matters and things.

It is important, however, to correct judging, that the sensorium have tendencies to think of all the important data that have any relation to the subject or question, cogitated about ; or in other words, it is important that the man have a pretty perfect knowledge of what relates to the subject under consideration. With respect to the knife before mentioned, one man judged that it was made in the year 1776, because it had these figures upon it, and because he had seen many articles which he knew were stamped with figures, denoting the year

in which they were made ; but his conclusion would have been different, had his sensorium thought :—It is now fifty two years since 1776, and knives are generally disposed of in less time than this :—many articles manufactured by the americans since 1776, are stamped with these figures, &c. &c. But as we will suppose, there were no sensorial tendencies in him, to think thus, he being entirely ignorant of the declaration of American Independence, the liability of penknives to be lost or destroyed, &c. &c.

If a man's sensorial tendencies relative to any subject or question, be, some of them, so weak as not to give rise to their respective actions when the man is called upon for his opinion concerning such subject or question, his conclusion which he will give, will be the same as though he had no such tendencies ; for a man's tendencies avail him nothing except they give rise to action. An ignorant man's opinion or conclusion, concerning any question, is as likely to be correct, as the judgment of him who does not think, let his sensorium be ever so full of tendencies or knowledge.

Although we say it is a matter of little if any importance, in what order one's thoughts occur, as it respects the conclusion ; we do not mean that it is a matter of indifference whether all the thoughts relative to a subject, occur in a *connected* order, or whether *incongruous* thoughts are here and there intermixed ; that is, thoughts that have no relation to the subject under consideration. On the contrary, we believe that if a judging process be any thing different, as we think it is, from what may be called simple apprehension, or simple, every day thinking, it consists in thinking over all thoughts that may occur concerning a question, in a *connected* order, it mattering little in what order as to priority or posteriority, if it only be a *connected* order.

Nevertheless, in stating those facts and considerations,

which have led us to a certain conclusion, we generally prefer some one arrangement to another ; but this arises from the fact, that by different arrangements of the same words and sentences, we may suggest different thoughts in others. We endeavor to arrange our remarks in such order that the true force and meaning of one may not fail of being understood for want of some knowledge that ought to have previously been given. It will never answer to begin in the middle of a story, unless we suppose our reader or hearer to be already acquainted with the first part.

And if there be any difference between judging and reasoning, the difference is this :—When we reason we not only judge, not only think over thoughts relative to a question, but we express our thoughts in an order, and for the purpose of convincing others. But in admitting this difference, still it is essentially the same to reason as to judge, so far as it respects what goes on in the brain, bating its *motive* actions.

It appears to us that the only consideration which any one will even think of bringing forward in opposition to the opinion that when a man judges, it matters little in what order his thoughts occur, is this : if different men knowing the same facts concerning any opinion, undertake to convince others that this opinion is true, or that it is false, they begin and bring forward these facts, much in the same order. But this does not convince us ; on the contrary, we find, so far as we can determine, that when we judge concerning any subject, our thoughts occur, as we may say, all about, just as it happens. They occur much faster than we could express them by speech or by pen and ink, and in such an order as we should not think of expressing them to others.

We are aware that metaphysical writers have said much about comparing ideas, as though judging consisted in comparing ideas one with another, and clearly distinguishing any

difference that may exist between them ; but all this talk is nonsense,—it is worse,—it is absurd.

We think that immaterialists have but two different notions concerning the nature of ideas ; the one that an idea is something *distinct* from the mind ; the other, that an idea is a *state* of the mind. Now it is granted on all hands, that the mind can exist but in one state at a time, or, considering an idea as something distinct from the mind, that there can be but one idea in the " mind's presence-chamber," at the same time.—To be sure, some speak of a " store of ideas," but these very persons themselves know not what they mean, nor does any one else, unless they mean the sensorial tendencies.—Nobody believes that we can have but one *thought*, *idea*, or *act of that which thinks* at the same identical instant. It is certain, also, that every idea is (in itself considered, and not considered in relation to something else, or as the schoolmen would say, *abstractedly* considered,) a *real* idea, and must either exist or not exist ; and as only one idea exists at one time, no other idea exists at the same time. Now, in the name of common sense, how does one state of the mind compare together two other states that do not exist ? or how does one idea compare together two other ideas that do not exist ? or how does one act of that which thinks, compare together two other acts that do not exist ? or how does one state, idea, or act compare *itself* with another state, idea, or act, which does not exist, or what is the same thing, compare itself with *nothing ?*

If we admit, for the sake of argument, that a man may be said to compare two ideas, in any common acceptation of the word compare, we must admit that this comparing is an act of that which compares—of that which thinks ; and if an action of that which thinks be not a thought, pray what is a thought ? He that says it is a *state* of the mind, must also ad-

mit that it is an act of the mind—must admit that when the mind is acting one action, it is in one state, and when it is acting a different action, it is in another state, and so on. He will not be so absurd as to say that, during the existence of all our thoughts, the mind is in an inactive state—that to *change* states, to act, does not constitute a thought, but that to *be* in a state. to be inactive, constitutes a thought.—Can an unextended mind, a mind which has no parts, be in as many *different inactive* states as we have different thoughts!

If then the very act of comparing be a thought, as truly as any other act of that which thinks, what, pray, does comparing thoughts—what, pray, does judging—consist in, but in having actions (or thoughts) one after another, of that which thinks?

But the truth is, when a man is said (very improperly) to compare two thoughts together, and *to be sensible of a difference between them*, no third thought intervenes. To have two *different* thoughts in immediate succession, is to be sensible of a difference between them. This is the very nature of thoughts. If we could not say that we are sensible of a difference between two thoughts, then these two thoughts would be alike; they would, to all intents and purposes, be but *one* thought occurring twice. When we say we are *sensible* of the difference between thoughts, we use such language (bad, to be sure) as we are obliged to; but we must not be deceived; we must not suppose that this *being sensible*, supposes any third act of the sensorium, or, as the immaterialists would say, of the mind. If I have an idea or conception of a sheep, and this idea be immediately succeeded by an idea of a horse, I do not have to *compare* these two ideas together, before I am sensible of a difference between them. An idea of a sheep and an idea of a horse are two different ideas, and I no sooner have them in close succession, than I am sensible

of a difference between them, as the expression is. No intervening action of my sensorium takes place; there is, indeed, no separate or third act, for the expression, 'I am sensible" to signify.

However, by altering the common meaning of words, you can make out any thing you please; you can make out that three times ten is not thirty, if you alter the common meaning of the word *thirty*, and say it is equal to seven times five; and in this way you can make out, that when a man judges, he not only compares together things that exist without the head, but ideas with ideas. And as it is a common way of speaking, to say of a man, he compares ideas, compares one thing with another, &c. when he judges, it may, perhaps, be as well not to discard this form of speech, but to show what the word *compare* must, in truth, signify, in the various instances in which a man is said to compare.

If we compare two bodies that are present for examination, in order to be sensible whether they differ in *appearance;* the act of comparing consists in nothing other than in viewing these bodies on all sides; and if there be any difference of appearance between them, we are immediately sensible of it, without any subsequent action of or re-action of the sensorium. Objects that are different in appearance excite different actions in the optic nerves and sensorium—excite different perceptions; and a *sense of difference* between our perceptions, as between our thoughts, supposes nothing more than that these perceptions are different—if there be no sense of difference between two perceptions, then these perceptions are, in truth, one perception occurring twice. To be sensible of a difference of appearance between a hat and an inkstand, a man has nothing more to do, than to look at them, or to look at the one, at the time he has a notion of the other, or to have an idea (not a sight) of both, at the same time. But

if a man have an idea of an inkstand to-day, and not an idea of a hat until some time after, it cannot be said that he has a sense of the difference between an inkstand and a hat—the very essence of comparing two ideas and of being sensible of a difference between them, consisting in having these two ideas occur in immediate succession.

If a man is to judge whether there be any difference between two sounds, he has only to listen; if the sounds be different, they will excite in him different perceptions; and this is as much as to say the man will be sensible of a difference between the sounds.

To be sensible whether two bodies differ in weight we have only to handle them, to heft them; if they be sensibly different we shall be sensible of it, without any further comparing. It appears, then, from what we have been saying, that to be sensible of any sensible difference between perceptible bodies, nothing more is wanting than to have such bodies act upon our senses in close succession.

However, if we are called upon to say *how much* any two things differ from each other, then something more is necessary than merely to suffer them to act upon our senses. If a cubic inch of gold and a two-inch cube of gold be placed before a man, and the man be requested to say how much the one will weigh more than the other; in order to answer correctly, a little thinking must go on in the man's head. Having learned that both pieces are of the same quality, he must think:—A two inch cube is a body two inches long, two inches broad, and two inches thick, all its angles being right angles, and if the upper half be cut off, and either half be divided in the middle of its length, and cross-divided in the middle of its breadth, it will be cut into four equal pieces, each of which will be a cubic inch, and if one half contain four cubic inches, the other half must contain four cubic inches; and as

twice four is eight, a two inch cube of gold contains as much, weighs as much, and is worth as much as eight cubic inches. We do not say that he who is already a mathematician, must think over all these particulars before he comes to a correct conclusion concerning the relative weights of these two pieces of gold:—The tutoring of his brain may have been such as to give it a ready tendency to think at once:—A two inch cube of gold is eight times as large as a cubic inch, and of course will weigh, and is worth eight times as much.

He that judges of the relative quantities of these two pieces of gold, is said to compare them together; but what, we ask, does he more or less than think over, in a connected order, those thoughts or those data, or those facts, (it matters not which you say) that relate to the subject?

In the above case, the facts which lead to the conclusion that a two inch cube of gold is worth eight times as much as a cubic inch, are, as the expression is, self-evident—there is no dispute about them. men are *universally* agreed as to the meaning of each word used; hence if the judger think of all of them, and not use any word in some new sense, the conclusion which he comes to, and which he expresses, must be of the same certain and indisputable nature. But if there be some error in the data—if the judger take that for true, which is not true; and if there be not two errors that shall counterbalance each other, the conclusion must certainly be false.

Suppose a man who does not know what a two inch cube is, were requested to say what the difference is between an inch cube and a two inch cube; he might think: An inch is one inch, two is twice one, and hence a two inch cube is twice as much as an inch cube. Here would be an error of the judger; it would be an error to think that a two inch cube bears the same relation to an inch cube, that two bears to one. It matters not what the cause of the error be, whether

it be owing to so much *perfect* ignorance, or to a *slip* of the man's sensorium ; or, to speak in intelligible language, whether it be owing to a *want* of those sensorial tendencies which give rise to such thoughts (not to mention others) as we express by these words :—A cube is a body of six equal sides, which join or meet at right angles ; or whether it be owing to the *weakness* of these tendencies, so that the man thinks as he would if he had them not.—As we have said, an ignorant man's opinion is as likely to be correct, as the opinion of him who does not think.

In all cases in which a man thinks erroneous data, the conclusion must be false, unless the errors be such as exactly to counteract, or counterbalance each other.

For illustration, suppose a man is to judge how long it will take a horse to travel from Templeton to Boston. The data are : It is *seventy-two* miles from Templeton to Boston ; a horse can travel six miles an hour :—the conclusion is, *it will take a horse twelve hours to travel from Templeton to Boston.* But this conclusion, though correct according to the data, is in reality erroneous, because one of the data is erroneous ;—it is but sixty miles from Templeton to Boston. Yet as we have said, two errors may be of such a nature as to counteract each other, and the conclusion may still be correct. If, in the above case, the man had not only thought that it is seventy-two miles from Templeton to Boston, but had thought that six is contained in seventy-two just *ten* times, his conclusion would have been, that a horse, travelling at the rate of six miles per hour, will go from Templeton to Boston in ten hours, which, indeed, is the truth of the matter.

As it is more important to determine what judging or reasoning consists in, than some of our readers, perhaps, may think, we will adduce one more case in which it may as properly be said that a man comes to a new conclusion by judg-

ing, reasoning, or by comparing ideas with ideas, as in any other.

A man who believes in free agency, goes to bed where no impressions are made upon his senses, and thinks—"Well, another day is gone, and what good thing have I done to-day? None at all. I ought to have wrought in the field; I have some corn which I wish was hoed; but my desire to go and see the shows was greater than my desire to go to hoeing, so I went to see the shows. When there, I wished to keep my money, but my desire for a glass of spirits was greater, so I took a glass; then that ugly devil called me a thief and a liar—it made me so mad that I could not keep my hands off of him; I struck him and he struck me; and now my face is black and blue from his blows. Could I help all this? I could now; I have learnt something to-day; I am not in all respects the same person that I was yesterday or this morning. I can go to hoeing to-morrow morning, and even advise others not to go to see the shows, and there spend their money; but the question is, could I, in the morning, taking me as I was, and not taking me as I should have been had I had a different mind or different desires, have done otherwise than I did? I cannot see as I could, for it is a law of nature, consequently a stubborn law, that every man act according to his predominant desire—that he do that (possible act) which, on the whole, he chooses, or what is the same thing, has the strongest desire to do. Now all thoughts, all desires, are the children of two parents only, organization and education, and our education depends on the impressions that are made upon our senses. These two things are the parents of all our thoughts and sensations; and nothing is wanting but a little *penetration*, as the expression is, to convince any one that a man has no more absolute control over the impressions made upon his senses, than he has over his original organiza-

tion.—True, a man may think—*I will not go to that house of wickedness where I shall see so much vice—where such peccant desire will be excited in me;* and so not go. But should he think so, these very thoughts owe their existence to sensorial tendencies produced by former impressions; therefore we shall find, by tracing every sensation, thought and emotion to its first origin, that nothing is more true than that man is first acted upon and then acts accordingly; and that every impression which is made upon his senses, must as necessarily be made, as any other effect must follow its cause. This being true, is a man a free agent? I have always been taught that a man is a free agent; and on thinking but little about it, it has appeared to me that it must be so: I will now COMPARE the evidences or arguments for and against this question, that I may see which class best accords with what I know to be facts.

"Well, then, in the first place, from my own experience, I am led to believe, and every body believes, and indeed it is a fact, that there is no event without a cause; that nothing acts nor ceases to act, until it is caused to act, or caused to rest; hence every thought and every other event which does occur, must as necessarily occur as an effect must follow its cause; for indeed it is nothing short of an effect of a cause. Now the assertion that man is a free agent, is *diametrically* opposed to this fact. To be a free agent, is to be something that can act without being acted upon—something in which actions occur without a cause. To be sure, a man may do as he pleases, chooses, or has a mind to; but this is saying nothing at all in favor of a man's free agency. Does he choose to do this or that without a cause? If he do, then we have events without causes; if not, then man is not a free agent. Free agency, I begin to think, is a peculiar attribute of the Omnipotent. However, let me examine what may be

said on the other side of the question. ——————————
——————————— Well, I can't think of any thing that can be said, which has the appearance of being in favor of the doctrine of free agency, except that God Almighty will damn men to all eternity if they don't do so and so, and that a man may do as he pleases, chooses, or has a "mind to." As to the first, I never heard God Almighty say that he should damn any one to all eternity; of course, it must be with me a matter of judgment whether he ever did.* Now I have no doubt but that he will do so, if he said he should; but I should not judge that he will damn any man eternally, when he never did any thing without a cause—never did any thing but what he must as necessarily do, as gunpowder must burn when fire is communicated to it.

"As to saying that a man may do as he pleases, chooses, desires, wishes, or has a mind to, the whole means nothing more than that a man may have a greater desire to do one thing than to do another, and may (must) act according to the predominant desire. But as I was just now thinking, this is saying nothing in favor of man's free agency; for these desires, like every thing else, must occur, whenever they are caused; and to say that a man has control over his desires, is as *truly*

* Excepting self-evident propositions, and what we witness ourselves, every thing is a matter of judgment. If ten men come to me and tell me that there is a cow in my garden, I should no doubt believe them, and proceed to drive her out. But why do I believe them? It is not because of any thing self-evident in the nature of the statement; but because it is most likely—it much more frequently happens, as I have found by experience, that a cow gets into one's garden, than that ten men, or even one man, go to another and tell him that there is a cow in his garden when there is not. If I knew such men to be a set of lying, trickish fellows, disposed to *put upon* me, and if my garden were fenced all around with a strong fence seven feet high, and if I had just come out of it, and locked the only gate, and had the key in my pocket, I should not believe that there is any cow in my garden.

though not as *obviously* absurd, as to say that a man has control over his original organization—as to say a male might have been born a female, or might have grown to be a female after he was born, the power being within himself, and the laws of nature being subject to such power.

"A man has no absolute control over his desires, and none but the shortsighted will say it. To be sure, a man may desire to go to a house of lewdness, and there shall be no mechanical impediment to his going, and yet he does not go; but he that says that such man curbs or controls his desires, does not speak philosophically. The truth is, the man thinks over (not by the "will," but the tendencies of his sensorium are such that he thinks over) all the bad consequences of going, such as disease, self-reproach, loss of character, loss of money, perhaps of life—he thinks how probable it is that some of these evils will attend his going; and on the whole, although his desire to go to said house be great, his desire to avoid the consequences of going is still greater, and so, instead of curbing or controlling his desires, he only acts agreeable to the strongest, as every body else does; for such is the law of volition.

"It appears, then, that it is more agreeable with what I know to be a fact, (*that there are no events without causes,*) to say that man is not a free agent, than to say that he is; therefore I say that man is not a free agent."

We have now supposed a case in which a man retires to his bed, where no impressions of importance are made upon his senses, and by mere cogitation comes to a new conclusion concerning free agency. In this case it may as truly be said that the man judges, reasons, or compares ideas with ideas, as in any other. But what goes on in his head? It appears to us most clearly, that all this judging, reasoning, or comparing of ideas, consists in nothing more or less than in having ideas relative

to the question, (ideas, which are of course disposed to run together, for inasmuch as they relate to the subject they are related to each other.) occur, one after another. And if, by *comparing ideas* the schoolmen mean *having ideas occur in close succession*, there is some truth in the expression; but if they do not mean this, we must continue to say, that they talk nonsense, until they show us, distinctly, what they do mean.

From what has been said, it appears, that those who talk about a judging, a reasoning, a guessing, or an intuitive "principle," meaning by such principle, something superadded to that which thinks, talk about that which has no existence.

When any thing is reported to an assembly of men, some may think the report is true, and some that it is not. In such case it would be no uncommon way of speaking, to say that each man forms his opinion, by comparing the report with his former knowledge; and different men form different opinions, because they are men of different knowledge. Such language as this, though figurative, is not absurd, it means something. Suppose that Asa reports that Ben, of Cork, has murdered David of that place. One man thinks this report is true; because he knows that such reports are generally true; because he has been told that Ben, the murderer, is a vicious drunken fellow and very quarrelsome; because he has been led to believe that Asa, the reporter, will not lie or tell marvellous things merely to excite notice, &c. &c. But another man thinks the report is false; because he knows that Asa is a liar; because he knows that Ben, notwithstanding what has been said of him. is a peaceable and sober man; because he has lately been at Cork, is well acquainted there, and knows of no such inhabitant in town as David.

In the above case, it may be said that the men compare what they hear with what they know, (it matters not whether

they have been taught falsely or truly, it is *know* to them,) and being men of different knowledge, they come to different conclusions. But this comparing consists in nothing other than thinking over one thought after another.

But when men on hearing the *same* statements, conclude, some of them, that the thing stated is false, and others that it is true, it would be unmeaning, or at least, unphilosophical, to say that they do so because they are men of different "judgments." It would, also, be incorrect to say that they come to different conclusions on thinking over the same facts or data.

In the first place, a man's "judgment" can mean nothing other than his opinion, belief, or conclusion; and to say that men believe differently, or have different opinions concerning any matter, because they are men of different judgments, would be as nonsensical as to say that they have different opinions, because they have different opinions. As to saying they form different conclusions from the same data, this is false; unless we use the word data in a certain restricted sense:—they do not come to different conclusions on thinking over the same thoughts. It must never be forgotten, that the statements narrated to any one in any story or bit of news, are very far from being all that such one thinks of in case he judge whether the main story be true or false. Every important consideration, relative to the subject, is likely to occur; and every thing which has any bearing upon the subject, and which the judger thinks of, may, in the broad sense of the word, be considered as *data* to such judger. We believe that all men, on thinking the same thoughts, on thinking of the same facts, always come to the same conclusion.

We have said that judging consists in thinking of every thing which relates to the subject, in a connected order; but we would be understood, that this is important to correct judg-

ing. Whoever comes to a conclusion in this way, will never entertain a different, unless falsehoods have been or shall be imposed on him for facts. We are far from saying that a man cannot judge concerning any question unless he be acquainted with all the facts of importance that relate to the question. But we would say that the more any man knows concerning any question, the more likely is his opinion concerning this question to be correct. When a man thinks of every thing he knows concerning any question, in a clear and uninterrupted order, he judges as well as he ever can concerning *this* question, until he knows more relative to it.

It may be asked if men generally think of every particular fact that relates to a question, before they come to have that consciousness which we call a belief, opinion, conclusion, or conviction, concerning this question—before they feel a conviction that the negative or affirmative of such question is true ? We answer, no.

Men often feel satisfied as to the truth or falsity of any thing stated to them, the moment they hear it ; and it is too frequently the case that they utter their opinion, and blindly insist on its being correct, before they have been at the pains of thinking over every thing that relates to it. The reason they feel satisfied so instantly, is this : they have previously thought of many facts relative to the subject, and in this way have arrived to certain conclusions ; these conclusions they, of course, hold to be true ; (for this is only saying in other words, that they arrive to such conclusions ;) they hold them as principles by which the truth of other sayings are to be tested ; and to test them they have only to think them in connexion with such principles. If the sayings agree with these principles, they are immediately sensible of it, on thinking of them in connexion with the principles ; so if they disagree, they are immediately sensible of it. For illustration : It is

with me an ultimate conclusion, a fundamental principle, that *the brain thinks;* but this conclusion is the result of many years' study. In arriving at it, I may have thought over five thousand particular facts which have some relation to it; in this way I may have first arrived to several minor conclusions, such as,—*Thinking goes on in the head—Whatever affects the lower central part of the brain, affects one's powers to think—Animals whose brains are less perfectly developed, possess inferior thinking abilities, &c. &c.* And as a variety of particular facts may have led to these minor conclusions, so these minor conclusions may have led to the grand conclusion,—*the brain thinks.* Now if any one tell me that an immaterial thing lodged in one's brain, thinks, I no sooner hear him than I am sensible that what he says does not accord with what is with me a fact or principle; hence I can instantly say that what the man tells me is false.

Again. It may be asked, if a man's conclusion may not be correct, if, while he is thinking over the facts that relate to a question, he chance to think, here and there, many thoughts which are foreign to the question? We answer, no; but it will be said, how often does it happen that while a man is judging he is interrupted by questions and the like, which excite thoughts foreign to the subject under consideration; and yet the man arrive to a correct conclusion! All this we grant, but the truth is, after being interrupted in his cogitations, the man begins anew, and thinks all the particular facts over again, or else he had, previous to being interrupted, summed up, as it were, all these particulars into a few minor conclusions, so that after, he has only to think of these conclusions in one single and uninterrupted glance, to come to the same conclusion that he would if he had not been interrupted. Hence a man may cogitate half an hour upon some question and not come to a final determination; (our metaphysical vocabulary cor-

tains a surplus of words;) at this instant he may be interrupted, and afterwards come to a final judgment, in five minutes.

It appears to us pretty clear that in order to judge correctly concerning any subject, a man must think of every thing that has any important bearing on the subject, in one single, and uninterrupted train, or else he must have the numerous individual facts summed up into minor conclusions, and must think over these conclusions in a like uninterrupted succession. Were it not necessary to think every important thought or fact, then a man might be ignorant of an important fact, and yet form just as correct a conclusion; and if he could do this, we should, indeed, cease to call the fact important, as it respects the conclusion. We are led to think that all the important particular facts (or their equivalents) concerning any subject, or question, must occur in an *uninterrupted* order to constitute a judging process, not only from finding (so far as we can determine by "turning our thoughts inward") that this is what takes place in us when we judge; but from the following considerations.

First. That which thinks can think but one thought at a time, and if a man be caused to stop in the middle of a train of thoughts relative to a question, and to think something quite foreign to this question; then his train is divided into two parts; one part of which is past and gone, and the other part of which is still to come. Now if the first part, or some conclusion arrived at by thinking over the first part, do not again recur in connexion with the latter; it seems to us as though the man's conclusion must be the same as if the first part had never occurred at all—must be the same as if the man were so ignorant as not to know the facts which he thought of in the first part of the train.

Second. If we grant, as we do, that what is called a judging or reasoning process is different from what is ordinarily

going on in our heads; it would puzzle us exceedingly to tell what this difference consists in, if we did not say it consists in thinking over every thing related to the subject concerning which we judge, in a connected order. To think of every thing in a disconnected order, would not constitute a judging; if it would, one might think of one thing relative to a certain subject to-day, of another thing to-morrow, and so on, until in the course of a week or fortnight he may have thought of every thing relative to the subject, and then be said to have judged concerning it; although he may have not thought of two things relative the subject, in connexion.

Third. If a man, while reading a book, think of this, that, and the other thing which does not relate to the subject before him, he does not obtain the author's meaning, and in order to do this, must read the page or sentence over again.

What is necessary to constitute a good judger? Several things are necessary to constitute a good judger. We will notice three or four.

First. It is necessary that the brain be a moderately active one; that is, a brain in which one action, or one thought, proves the occasion of another which is pretty nearly related to it; and not a brain which thinks one thought after another, which thoughts bear only very slight and unimportant relations to each other. If the brain be too active, or, to speak figurately, if the *suggesting principle* be too active, thoughts are liable to occur when the man is judging, which bear only some obscure and unimportant relation to each other. Such a brain, instead of thinking over in a connected order, all thoughts that have any important bearing upon the question under consideration, would skip off, as it were, to some other subject; hence incongruous thoughts would, here and there, be popping into existence, dividing the true judging train into several parts. But such thinking as this would not constitute

a clear and *distinct* view of a subject.—Instead of not thinking enough, such a brain thinks too much.

On the other hand, if the brain be not active enough, many important thoughts may not occur, although these thoughts be such as have before occurred in the same brain ; and on this account the conclusion may be as different from what it otherwise would have been, as a chemical compound from what it would have been, had many elements entered into it, which did not.—Wits have very active brains ; reasoners, moderately active ones ; and blockheads, very dull brains.

Second. To be a good judger, it is necessary that the brain, or more strictly, the sensorium, possess such tendencies that, on the occasion, it will think all, or at least a great proportion of the thoughts that have any bearing upon the subject judged of. In other words, knowledge is necessary to a good judger. It is a bad thing to have the sensorium possess false tendencies—tendencies to think of things differently from what they actually are in nature ; as if, for instance, one had been taught, and of course had tendencies to think, what we would express by these words : *Gunpowder, if sown, will come up and bear a new crop of gunpowder.*

Third. It is necessary that the sensorial tendencies be sufficiently strong to become operative on the occasion. The sensorium may be well organized—may be *naturally* active enough, and may possess a good number of tendencies ; but owing to its having acted but few times, these tendencies may be so weak as not to become operative when they ought to ; that is, the thoughts corresponding to these tendencies will not occur, though naturally related to other thoughts which do occur.

We sometimes hear it said that a man's judgment is warped by prejudice. We admit that there is some meaning in this ambiguous expression, and will bring a case in which it

may be said that a man's judgment is warped by prejudice; in doing which we shall give our views of the nature of this prejudice. Suppose the passion of love to have been excited in a man by a lady of fine accomplishments, and in whose company he has enjoyed many pleasurable emotions—suppose him now to travel unto some distant land, and there see a *similar* looking lady, of whose character he knows nothing: this lady, owing to the disposition of his sensorium to act in connexion those actions which are related, re-excites many of those pleasurable emotions which the man experienced while in company with the other lady. He would, on this account, be favorably disposed towards her; and if he were now told of any crime which she had done, he would not so readily believe it, or, at least, if he did believe it, (as he would if he thought over the same thoughts as others who believed it,) he would look upon it, as we may say, with a forgiving temper—he would think whether or no she were not placed under peculiar circumstances, and acted from better motives than is generally supposed. The deed would not appear so heinous to him—would not excite such a lively sense of disapprobation as though she had never awakened any pleasurable emotions in him. The reason is this: even now the thoughts of the evil deed are mingled with the pleasurable emotions, so that what he now experiences is not pleasurable emotions, purely, nor purely a sense of disapprobation.

When a man will not hear or read arguments against doctrines which he believes, or when convinced of his errors, he will not own it; we would not speak so favorably of him as to say he is prejudiced; we would say he is a wilful old hypocrite, determined to adere to his opinions, false or true; and professing to believe that which he does not. Surely, if a man profess to believe that a great proportion of mankind will be forever miserable in a future state, because a woman

eat an apple some thousand years ago, when he does not believe so, why not call him a hypocrite, and say to him, "woe unto thee?"

We are now about to enter on a subject which is rendered rather abstruse by the language which relates to it, and which has so long been in familiar use, that we cannot conveniently avoid using it. The influence of language over one's opinions, is almost inconceivable. Even those who are aware of this fact, and strive to rid themselves of this influence, are often most strangely blinded by it. We are perpetually haunted with the notion that every name must mean some *thing*, and that words and expressions which are, in themselves, quite different, must mean something quite different.

CHAPTER XVIII.

On Belief.

Before we attempt to define belief, or rather, before we attempt to show what takes place in a man's head when he is said to believe; we must say a little concerning the meaning of certain other words and expressions.

We consider the expressions—*To think—to think thoughts—to think of things*—and *to think over facts*, or testimonies, as synonimous expressions, or so nearly synonimous that we shall leave it to more acute thinkers to point out the difference between them, if they think it worth while to puzzle their heads about it. And we hold that *to think*, means the same thing as *to have thoughts occur;* and the reader already knows, that we consider a thought, and a conscient action of

the sensorium, as one and the same thing. By *incongruous thoughts*, (an expression we shall soon have occasion to use) we mean such thoughts as we should express by what we called, contrary terms or statements. Peter testifies that John Kendall was at his house last Saturday evening at eight o'clock; Goodell testifies that he lives twenty miles from Peter's and that said John Kendall was at his house last Saturday evening at eight o'clock, and that he stayed there all night. These two evidences excite in us, incongruous thoughts—their testimonies are incongruous, and they are incongruous evidences.

There are two species of belief, sensorial or rational belief, and nervous or sentient belief.

Rational belief is that consciousness which exists when a man thinks over congruous thoughts or testimonies. If the thoughts be perfectly congruous—be all bearing one way, the belief may be said to be of the highest degree; but if there be any disagreement, or incongruity between one's thoughts, relative to a particular subject or question, his belief relative to this subject or question, will be of a lower degree. If the evidences for and against any question exactly counterbalance each other there is no belief as to this question—the man does not *feel any conviction*, as the expression is, that an affirmative or a negative answer to this question would be the true one.

Now comes the rub.—

We lay down the following positions as indisputable:—that whatever thinks, can think but one thought at a time—that a thought is an act of that which thinks—and that putting aside sensations, consciousness does not exist when that which thinks is inactive. Hence it follows, that when a man thinks he is not conscious, and when he is conscious he does not think, or else, that, to think, and to be conscious, are one and the same

thing; consciousness being, of course, a word almost superfluous, and calculated to puzzle the philosopher and deceive those who "take words for things and suppose that names in books signify real entities in nature." No one, we think, can hesitate, for a moment, which to say—he will say that to think is to be conscious.

Thus much we have said, that the reader may the better understand and admit what we are about to say concerning belief. We do not suppose that the word belief signifies any particular act of that which thinks—any act which always occurs when a man believes, let him believe what he may; but we suppose that, TO THINK OVER CONGRUOUS THOUGHTS, IS TO BELIEVE. Hence a man may have as many beliefs as he may think over trains of congruous thoughts, relative to the innumerable subjects and questions with which mankind are concerned.

A man can have no idea of belief, except of the word itself, nor can he say that when he believes he always experiences some particular feeling or consciousness. But this he can say, to believe a thing and not to believe it, are not one and the same thing; and this is pretty much all he can say about it, if he be no metaphysician. If he turn his thoughts inward, and attempt to satisfy himself by observation, *what it is*, to believe, he gets no satisfaction—he cannot find that any thing more or less takes place within, than ideas of objects, sounds, flavors, &c. one after another. It is not an easy matter to determine by direct observation what constitutes believing.

Every man would always believe the shortest statement that can be made concerning any thing, if this statement contained within itself no contradiction, and if the statement did not suggest any further thoughts relative to the same thing. If a man should step in, and say to me, *there is a cow in your garden*, I should certainly believe him if nothing further should

occur to me concerning the matter:—I *do* believe him the very instant I hear him, and may this instant start to drive her out; but the next instant some thought may occur to me, which is inconsistent with this statement, and this instant my belief is weakened if not destroyed. If I think that my garden is so fenced that no cow can get into it except through the gate, that I was just now in my garden, looked all over it, and there was no cow in it then, and that when I came out I locked the only gate, put, and still have, the key in my pocket; I may even believe in a high degree, that there is no cow in my garden, so turn about and come back.

The reason why we believe that four and four are eight, and that the three angles of a triangle are equal to two right angles, is because we think over no incongruous thoughts concerning these things. It is universally agreed that the name of that sum which is equal to twice four, shall be *eight;* but suppose that a child were told by one, that four and four are eleven, by another that four and four are six, and by a third that four and four are eight; would he believe that four and four are eight? Surely he would, as the expression is, *have doubts about it.*

If two men should tell him that four and four are six to one that tells him that four and four are eight, he would, other things being equal,* believe in a low degree,† that four and

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* "Other things being equal."—*What things?* The principal one is the child's confidence in his instructors. But what is one's *confidence* in a thing, and how does he come by it? One's confidence in any thing, or concerning any thing, is the same as his belief in such thing, or concerning such thing; and in the case of the child, he is as confident that one of his teachers tells him the truth as that the other does, provided he have never found that either of them told him any thing false, and that he know both are equally reputed by others for veracity, &c. &c.

† There are all degrees of belief, from the highest conviction to the merest conjecture. We have not yet agreed upon terms to ex-

four are six. If the world were disputing about the meaning of the word *right-angle*, some saying it is an angle of 80 degrees, some, that it is an angle of 90 degrees, and others that it is an angle of 45 degrees, &c. &c.; then one might not believe that the three angles of a triangle are equal to two *right angles*. It is true that this dispute and uncertainty about the meaning of one or more words, would not alter the absolute nature or relation of angles; but it would cause some to make statements concerning them which others would not believe.

Disputes and disagreements give rise to *uncertainty*; by which term we mean a low degree of belief, or even *neutrality of opinion*.—When a man is neuter as to his opinion concerning any question, it is common to hear him say, "I scarcely know what to believe about the matter."

Our *intuitive* belief of, or relative to, mathematical axioms, is owing to the universality of agreement among men as to the meaning of the terms of the mathematical sciences, and to the unchangeableness of the relations between numbers, angles, &c. in themselves considered. If twelve cubic inch blocks, placed side by side, extend a certain distance, which distance we call a foot, the same number of like blocks, placed in like manner, will always extend the same distance; whether we do or do not use the same word to denote this distance, and the same word to denote this number of blocks. Hence we say the relation between this distance and this number of blocks, is unalterable. But the relations between many things in nature suffer changes, some of which are unknown, and others of which we have no terms to express; and more than this, when speaking of these relations, different men often use different terms to express the same ideas

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press precisely, the several degrees of belief. The word *opinion*, generally conveys a notion of a degree of belief somewhat between conjecture and conviction.

or sentiments ; hence arise uncertainty and disputes concerning these things.

The reason why every body believes that the same antecedents will, under the same circumstances, always be followed by the same consequents, is because they never knew like antecedents be followed by unlike consequents, under the same circumstances. Had men frequently, or even once, seen a candle continue to burn when dipped into water, they would afterwards, on being asked if they believe that a candle will be extinguished when dipped into water, think that they have seen it continue to burn in such case ; consequently their belief that it will be extinguished, would not be of the highest degree.—Instead of thinking over congruous thoughts relative to the question, they would think what may be expressed thus : Candles *have* been extinguished by dipping into water—candles *have not* been extinguished by dipping into water.

Suppose that a man has found by his own experience, as well as by the testimony of others, that a candle just as frequently continues to burn when dipped into water, as to go out, he would have no belief, one way or the other, about the question—Will this candle go out if I dip it into water ? He would be *opinion neuter* as to this question. Still he might *say*. he believes it will go out, or that it will continue to burn. —People often express opinions, and sometimes adhere to those of " Mr. Leadtheflock," when they have none.

Should a man have learnt that candles more frequently go out when dipped into water than otherwise, he would have *some* degree of belief that a candle will now go out if dipped into the water; and this degree would be below firm conviction, in proportion to the number of times that (as he has learnt) a candle does not go out, to the number that it does, when dipped into water ; in other words, the more frequent-

ly (as he has learnt) that a candle continues to burn when dipped into water, the less would be his belief that a candle will go out on being dipped into water.—The events which take place within the skull occur according to law and order, as much as those that occur without; and every man, learned or unlearned, would say so, if he could but think *how* he thinks at the same time he *thinks*—he would find that in the skull the same antecedents are always followed by the same consequents, under the same circumstances.

A man's belief depends as much on the facts which are told, or which *occur* to him—depends as much on the thoughts which he thinks, as the properties of a chemical compound depend on the kinds and proportions of elements that enter into it; and as a neutral salt may be rendered decidedly acid, or decidedly alkaline, by the addition of a little more acid, or a little more alkali, so a man being opinion neuter, as to any question, for instance, "Is the body of Morgan found?" may, by a little newspaper report, be made to believe one thing to-day and by an opposite report be made to believe the contrary to-morrow. And we may here add, a man's belief is nothing distinct from the thoughts which he thinks, any more than the properties of a body are something distinct from such body. As these properties *constitute* the body, so do the thoughts which one thinks *constitute* his belief—to think over congruous thoughts is to believe. Yet our language, in spite of our teeth, conveys the sentiment that *the properties* OF *a body* are something distinct from, or something besides *the body itself;* and that a man's belief or *conclusion* concerning any thing, is something besides the thoughts, relative to such thing, which he thinks over, in COMING *to such conclusion.* But we must remember, that a man does not *come to a conclusion*, except in a peculiar sense of the expression; his conclusion goes along with him, if we may so say, and alters ac-

cording to the thoughts which occur to him ; and when he has thought over *all* the thoughts relative to a question, his conclusion may be different from what it was before he had thought but a part ; and this last, this ultimate, conclusion, is what is generally called the conclusion.

But after all that we can say, unless the reader have the nack of distinguishing between things and sounds, he will be haunted with the sentiment that a man's belief, conclusion, opinion, conviction, judgment, &c. &c. is something distinct from the thoughts which *lead* to this belief; for we must use the very language which is so calculated to deceive.

Every rational or sensorial belief supposes a judging process, however short it may be; but in saying this, we mean by the expression *judging process*, a thinking over in close order a chain of thoughts relative to a subject or question, whether these thoughts be incongruous *or not*. But if we mistake not, men would generally understand by a *judging process*, only a process in which one thinks over incongruous thoughts; and would say that the man "weighs or compares the facts on both sides of the question, and decides accordingly," &c. &c. In our sense of the expression, we hold that every intuitive belief, supposes a judging process—supposes the thinking over of certain congruous thoughts.

But although every sensorial belief supposes a judging process, still every judging process does not constitute a belief; for if the opposing thoughts or testimonies exactly neutralize or counterbalance each other, the man is opinion neuter. But if a man be opinion neuter as to any question, and still be called upon to give a decision, one way or the other, he can do it, haphazard, in word and act ; but he is not the subject of that consciousness which congruous thoughts constitute.

Should any one be disposed to maintain that to think over a chain of congruous thoughts, is not to believe, will he be so

good as to show what it is to believe; and why it is that the verb *to believe* conveys no idea but what may be conveyed by the verb *to think*? In all cases the verb *to think* may be so used as to convey the same sense as the verb *to believe*.

What we have said in the fore part of this chapter concerning consciousness, may be said concerning belief. If to believe and to think certain thoughts in a certain order, be not the same, then a man cannot believe the instant he thinks, nor think the instant he believes.

Sensitive Belief. To believe is natural. A man believes every thing to be as his senses testify, if he think of nothing opposed to such testimony. He believes the testimony of one sense, if this testimony be not contradicted by some fact previously known to him, or by the testimony of another sense.

If a man's optic nerves should act as they do when he looks at another man, though no other man be present (a thing that often happens in dreaming and delirium) he would believe that another man is present; but should he put forth his hands and *feel* for this man, and feel nothing, there would be a contradiction between his senses, and hence no *sensitive* belief; for should the man at length believe that no such man is present, his belief would be of the rational species, it would be the *result* (as language compels us to say) of a judging process, inasmuch as the man would think over several thoughts, such, perhaps, as may be expressed thus:—"I have heard it said that a man's optic nerves sometimes act as though he were looking at a particular object, though no such object be present; and in such case the man as much believes the object is present as though it really were; but I never knew that the sense of feeling ever so deceived. And as my head has been disordered for several days, my eyes rather weak withal, I guess I have not actually seen any man here; but my eyes have deceived me."

Should a man's auditory nerves chance to act as they do when one is in the room talking with him, he would believe some one to be present, but on looking round and seeing no one present, nor any possible chance for one to escape so instantly, such belief would no longer exist, for there would be a contradiction between his senses; and as the ear more frequently deceives than the eye, knowing this, he might, and probably would, even believe that no man is or just has been in his room.

If the sense of vision and the sense of feeling should both testify that an object is present, we believe that all the world could not convince the person that no such object is present.

It is not to be supposed that when a man has experienced an action of one sense, another sense can testify so as to prevent a belief of the man that he has experienced *something*. If a man's optic nerves should act as when he looks at another man, although no other man be present, he believes he sees such other man; but if the sense of feeling testify that no man is present, *this* belief will be destroyed, but the man will still believe that he has experienced something, either a real or false seeing.—A seeing without impression is a false seeing.

One sense cannot testify that another sense has not acted; it can only testify that it has acted falsely.

The sense of feeling does, perhaps, less seldom act without impression, less seldom deceive, than any other; hence, when this sense contradicts such senses as it can contradict, particularly that of vision, the man believes things to be as this sense testifies.

The reason why a man believes his senses in preference to all other kinds of testimony, is because they so seldom testify falsely in proportion to the number of times they testify correctly—in proportion to the number of times that they agree. If it were as seldom that a man hears a false report,—if it were

as impossible for a man to tell a falsehood, as it is for the sense of vision to testify that an object is present, when the hand can feel no such object, every man would then believe a report as readily as he believes his own senses. Several facts go to prove this statement.

If, owing to disease, any sense have deceived a man a few times, (which deception a sane man discovers by the aid of his other senses, and by a judging process,) he does not implicitly credit this sense; he would sooner believe the testimony of his friends. If, in a man who has been a few times deceived by his eyes, a candle should excite the same actions that two candles do in a healthy man, he would say:—"It seems to me that there are two candles, but I am not certain, my eyes sometimes deceive me."

When men see objects, a mountain, for instance, which appear but five miles off, they do not have a high degree of belief that they are but five miles off, because they know that by measurement, objects have often been found to be farther off than the eye testifies them to be. A medicine or an article of food may taste bitter to a sick man; but if his attendants tell him that it is not, in its nature, bitter, he believes that it is not, even if it be something that he never tasted of while in health. For he believes, or by argument can be made to believe, that an article of food or medicine may taste bitter to a sick man, though it does not to others. These facts, and some others that might be adduced, tend to show that the reason why a man so readily *believes his senses*, as the expression is, is because they so seldom testify falsely, so seldom contradict each other, in proportion to the number of times that they agree.

As a sense may testify falsely, it may be asked how we can know that all our senses do not, at all times, testify falsely; how we can know that any of the external objects really ex-

ist, that appear to exist? We answer, that of the existence of external things we can have no higher testimony than that of the senses; but when the senses do not disagree, their testimony is such that no man can disbelieve them if he would, any more than water can run up hill.—No one can alter the immutable laws of belief.

Lest the reader should fail of getting our precise notions concerning sensitive belief, being deceived by the expression, *a man believes the testimony of his senses*, and other like expressions which we are obliged to use,—we will here observe, that we suppose, that *to perceive an object*, means as much as *to believe such object exists*, or, *to have a belief that such object exists*.—By using different words to express something that goes on in the head, we do not alter this something which goes on in the head. This remark we consider important, and wish it might be remembered; for it is language which got into use in days of ignorance, that, more than any thing else, causes men to think that something very mysterious goes on within the skull. The time will come, however, when it will be generally admitted, that nothing more or less occurs, than conscient actions which are, or *have been* excited by impressions upon the senses,—speaking with reference to the conscient or intellectual phenomena only.

From what has been advanced in this work, thus far, we see that a man is no more culpable or meritorious for believing whatever he does believe, than water is for running down hill. Every thing takes place according to the immutable laws of nature, and whatever thinks, is as much under the control of these laws, as water or any thing else. And we may here observe, that nothing is more absurd and abusive, nothing more clearly indicates a want of penetration, or a narrow, selfish, sectarian spirit, and disregard for truth, than to condemn any one for his belief. It is absurd, because a

man's belief cannot be altered except by facts and arguments; degrading epithets, unfriendly treatment, or appaling threats, cannot change a man's belief—the laws of belief will not admit of it. It is abusive, because it is punishing a man for what he does not do with evil intentions, when such punishment can have no good effect. It indicates a want of penetration, for any one who knows that no events take place without causes, (and who don't know this ?) must be short-sighted indeed, not to see that one event as necessarily takes place as another, whether it occur within or without the human skull; and that one man is no more to blame for his belief, whatever it may be, than another. It indicates a narrow, selfish, sectarian spirit, and disregard for truth, because we never see it in well informed men, who do not so much care what truth is as to *know* what it is.

But although we say it is absurd and abusive to condemn a man for his opinions, we do not say it is so to applaud or condemn a man for his good or bad deeds. The reason is obvious: By applauding or condemning men for their deeds, you may greatly influence their conduct;—this applauding and condemning are links in the chain of causes which regulate human actions; but facts and arguments are the only effectual weapons with which you can attack a man's opinions; and no other ever ought to be used for the purpose.—Let every man stand or fall by his good or bad conduct towards his fellow beings.

CHAPTER XIX.

On Knowledge.

As we frequently hear a man's knowledge spoken of as though it were something distinct from what stands up in his library—something which he carries about in his head; and as no one that we know of, has ever clearly defined the word, we have concluded to give the word a place in our metaphysical vocabulary, and devote a short chapter to the consideration of it.

All the sensorial tendencies possessed by one man constitute the man's knowledge. The word does not signify all the tendencies that ever have existed in what is called the *same* man; for in time some of the sensorial tendencies undoubtedly become entirely extinct, and the man can no more think those thoughts which these tendencies once enabled him to think, than if these tendencies had never been produced; he is therefore as ignorant, *perhaps*, concerning the things to which these lost tendencies related, as if he had never learnt any thing about them. We say *perhaps*, because a man may lose part of his knowledge concerning a particular subject or event, but not the whole of it, and of course not be as ignorant concerning such subject or event, as though he had never learnt *any* thing concerning it. On the other hand, a man's knowledge comprehends all his sensorial tendencies that *do* exist, even if some of these tendencies do not become operative, do not give rise to action or thought, on a desired occasion. Thus a man may wish to think, or *think of*, another man's name, but cannot at the time, and still he may be said to know the man's name, since there still exists a tendency of his sensorium to think it, as will be proved, should

he think it on another occasion, without having seen it or heard it spoken, from the time he wished to think it, to the time he does think it.

Every different impression may excite a different action in one's nerves and brain, producing, of course, a new sensorial tendency, more or less strong. Hence there are, as it were, no limits to the knowledge which a man may acquire, for the number of different impressions that may be made upon his senses is infinite. Nor is this all.—

We may divide the sensorial tendencies into two classes; one class comprehending the tendencies to act individual actions, or, if you please, to think individual thoughts; the other class comprehending tendencies to think these thoughts in certain orders—to think them over, one after another, according to certain relations which may subsist between them. The first class of tendencies are all produced by impressions upon the senses; the others, more or less of them, may arise from mere cogitation. Hence there is a certain kind of knowledge which the sensorium may be said to acquire by its own exercise, without the immediate agency of nerves. The first tendencies may be called *primitive tendencies*, or *tendencies from impressions;* the second, *secondary*, or *relative tendencies*, or *tendencies from cogitation.* The reader already knows that the first sort of tendencies give rise to those actions which constitute what we call *ideas.* Many of the secondary tendencies are tendencies to think over in connexion, certain *congruous* ideas, constituting what may, properly enough, be called a *sentiment.*

For illustration—I think, I believe, or, it is an opinion or *sentiment* of mine, that *calomel and opium will cure inflammation.* Now it must be that several ideas occurring together constitute this sentiment;—it cannot be any one idea, in the sense in which we use the word idea; but why do they occur

together? Is it not because that whatever thinks, is disposed to think them thus?—I now purpose to inquire what ideas occurring together, constitute this sentiment; and why they constitute what is as properly called a *belief* as a sentiment.

By an observation made in two or three separate places in this work, the reader might learn, if his own efforts did not convince him, that it is not a very easy matter for me to determine what are my own ideas that generally occur, when I think what I express by these words:—*Calomel and opium will cure inflammation;* and much less can I take it upon me to say what ideas occurring in others, constitute this sentiment. But before I speak for myself, I will venture to say this much for others, at different times different ideas may occur and constitute what they call a thinking, or opinion, that *calomel and opium will cure inflammation.* Now for myself. For several days, whenever I chanced to think of it, I have been trying to catch myself in the very act of thinking *calomel and opium will cure inflammation*, and so far as I can determine I find that sometimes I have ideas of a white powder, a mass of opium, and the *written* word inflammation; sometimes optical notions of all the important words in the sentence—the great round *O* to the left of the little *p*, appears very conspicuous to my "minds eye." At other times I have ideas of calomel and opium, and of a red spot somewhere upon a man, fading away; that is, growing less red, and the extent of it diminishing—the edges gathering in like the edges of that moist surface which one makes when he breathes upon a polished razor, thinking to determine in this way whether the razor be properly tempered. This idea of a red surface fading away, I think answers very well to the clause *cure inflammation.* Sometimes I have ideas of one of these *saddle-bags* men in a house at the bed side of a patient, with some small white pills lying upon a table or candle stand. Such are some of the

ideas which I find I have when I endeavor to determine what ideas constitute the sentiment, that *calomel and opium will cure inflammation* * But the same fact may be expressed in other words, as follows:—A man has a red, swollen, painful face, foul tongue, quick pulse—in short, an inflammation of the face; the physician gives him calomel and opium; these symptoms disappear—such instances frequently happen—if no medicine be given it has been found that such inflammations generally terminate fatally. All this is much as to say, *calomel and opium cure inflammations*, and to think over these facts, is to think that *calomel and opium cure inflammations*. But why does this thinking constitute a *belief* that calomel and opium cure inflammations? It is because the thoughts are congruous—they are not connected with other thoughts that would be expressed by contrary terms—the man does not think of any fact opposed to the fact or proposition, that *calomel and opium cure inflammation*. It is true, he may think of patients that died with inflammation, who took calomel and opium; but this is not opposed to the proposition that, calomel and opium cure inflammation—it is only opposed to the position that calomel and opium *always* cure inflammation, a position which no man believes.

There may be some disagreement among men about the use of the word *sentiment*;—some may use it in such a broad sense as to include all the grand ultimate conclusions to which a man may arrive; but it would be convenient if there were some term universally agreed on, to denote those minor

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* Since the above was put in type, I have become satisfied that those *audial* actions excited in my sensorium, (not in my auditory nerves and sensorium,) when I hear it said that *calomel and opium will cure inflammation*, are among the sensorial actions that constitute the sentiment expressed by—*calomel and opium will cure inflammation*.

conclusions or principles, which occur to an old, learned thinker when he is said to *generalize*.

Knowledge, then, is of two kinds, primitive and secondary. The first is acquired by the direct exercise of the senses; the secondary arises from that exercise of the sensorium to which primitive knowledge gives rise.

The more we investigate the intellectual phenomena, the more firmly are we convinced that the mystery which is so generally supposed to hang about them, is chiefly owing to the language to which false notions long ago gave rise, and which, more or less of it, we are still under the necessity of using.—We speak of a man's belief, faith, judgments, sentiments, conclusions, doctrines and principles, which words are in themselves as different from each other, as the words *stone* and *steam*; and one can scarcely believe that, so far as it respects any thing which exists or goes on in the head, all these words mean one and the same thing. When we speak about comparing ideas, and distinguishing differences between them, one is naturally led to suppose that we mean something more than merely having these ideas occur in immediate succession. When we say a man substitutes an idea of one thing for an idea of another, one would not suppose that this substituting consists in nothing other than in having an idea of one thing, in connexion with an idea of the name of another thing. And when we say a man believes the testimony of his senses, who at first thought, would suppose that, to have perceptions, means as much? But let the reader lay aside all language and, disregarding the speculations of others, consider what goes on in his own head. He will find, that, putting aside perceptions and sensations, nothing more at any time occurs than ideas of objects (among which are written words) sounds flavors, odors, and feelings, one after another.

What of mystery concerning the intellectual phenomena,

is not owing to our present bad language, is owing to our being unable to *observe* what goes on in us, when we remember, judge, &c. at the very instant we remember or judge: all things without continue to exist the same, when we examine them, as when we do not examine them, but the moment a man undertakes to examine a judging process, that very moment does the judging process cease, or go on differently from what it does when a man is not *paying attention* to it. It is not mysterious that sensibility should arise from the organic union of insensible atoms, or that a sensation or perception should be excited in the nervous system when it possesses sensibility. If it be, then every thing in nature is mysterious; it is mysterious that acidity should arise from the chemical union of non-acid atoms, and that a liquid possessing the property of acidity should change a vegetable blue color to red; and mysterious that one body should move an other by impulse.

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CHAPTER XX.

On Personal Identity.

The word, *identity* means *sameness;* and the term, *personal identity*, means *same person.* But almost every body in nature is continually suffering some kind of change: a piece of gold wrapped in dry paper and laid away in a tight box is continually undergoing a change of relation with the heavenly bodies, and with every thing that moves upon the face of the globe. When even an individual particle of matter is added too or taken from any body, such body suffers a change,—it suffers a change even when a few of its own particles change

their relations with each other. It follows, then, that there are but few if any bodies in existence to day, which are, in the most strict and absolute sense of the term, the *same* bodies that existed yesterday. But notwithstanding this, men say of bodies that exist to day, they are the *same* bodies which existed five, ten, fifty or an hundred years ago, unless these bodies have undergone very great, perhaps we may say, *total* changes. Therefore when we inquire whether a body which exists to day, be the same body which existed yesterday, we do not so much regard the changes which it may have undergone since yesterday, as the changes which it has not undergone ; and yet men have not agreed what changes any body must not undergo, that it may still be called the same body. But it will generally be admitted that John Brown who is the *first* son of a certain Caleb Brown, is the *same* man that was called John Brown and that *bore this peculiar relation to said Caleb Brown* ten years ago, let him have undergone what changes he may since that time. If this be admitted, it follows, that all that is necessary, in order that a man who exists to day may be *to the world around* the same man that existed ten years ago, is, that he be known to the world around, as the man who bore a certain peculiar relation to something else, ten years ago,—a relation which no other being but this could or ever can bear to this same something else.

But the grand question, relative to personal identity, about which philosophers have been so much puzzled, is not what constitutes the same man to the world around: there is no more difficulty about this than there is about what constitutes the same tree, house, or jacknife. The grand question is, what constitutes the same man as it respects himself—what constitutes the *same* THINKING *man?* By which we mean much the same that Professor Brown does by "MENTAL *identity.*" We answer at once :—*the same sensorial tendencies.*

The proof is clear. Take from my brain or sensorium its present tendencies, and I should think not at all; but give it the tendencies of John Brown's brain, and I should then think, believe, remember, judge, imagine, &c. precisely as John Brown now does or may think, believe, &c. I should believe that *my name is John Brown, my father's name is Caleb Brown, I am his first son, I was born at Troy, where my father now lives,—that farm which I own in Nassau ought to bring me* 5000 *dollars—I once stole a turkey of a man in Gill.* In short, I should think of every thing, and believe every thing, just as John Brown now thinks and believes, or may believe; and nothing is more clear than that I should be John Brown, so far as it respects the thinking man, to all intents and purposes.

Suppose, now, that John Brown knows me, my family, my house, &c. and suppose that I receive, not his tendencies, but tendencies precisely like his, while abed and asleep at home: when I awake, I begin to think precisely as the *other* John Brown would had he been brought in his sleep and put in my place. I should, on looking around, think that I had slept very soundly, and that while sleeping, some trickish fellow had taken me out of my [John Brown's] house, and put me to bed in C. K's house along with his wife. I should laugh at the trick, but retaining my [C. K's.] present looks, this wife would wonder what I was laughing at. I should enter into such conversation with her, that she would be satisfied that I was either crazy, or else had a peculiar faculty of talking as though I were somebody besides C. K. But I, on the other hand, should be surprised that she should take me to be C. K. and not John Brown. She might, perhaps, say to me: look in the glass, and you will see that you are the same C. K. that you was yesterday. Should I then look in the glass, I should be exceedingly astonished; for I should find

that my looks had undergone such a change that I now look precisely like C. K.; (for by supposition, John Brown knows how I [C. K.] look; but notwithstanding this, the world could no more convince me that I am not John Brown, than it can now convince me that I am not Charles Knowlton. I should *know* that I am John Brown, every thing else to the contrary notwithstanding. I should soon be making towards my home, from whence I was brought, (by some supernatural power, probably, since nothing short of such could have so changed my looks,) and if, on arriving there, the other John Brown should be at home, a warm contention would soon arise about rights and property; I should own to him that he looks just as I did before my looks were changed, but tell him that I did not expect he would think to claim my wife, my children, and my property, on this account. Some might consider me crazy in respect to this one thing,—*taking myself to be John Brown*,—although I might appear as rational in every other respect, as any other man; but many, (if they were immaterialists,) and especially the other John Brown, would take me to be Charles Knowlton, inhabited by *another supernatural* SPIRIT; for this John Brown would find that I could tell him of every place he ever had been in, of every deed he had ever done, and of every thought and intention of his "heart," just as well as he could tell them himself.—I even doubt if he would not give up his whole estate to me, if I insisted on his doing so, as I probably should, *knowing* that it all belonged to me.

But if 'tother John Brown, instead of retaining his old sensorial tendencies, should loose them all, and receive C. K's on the same night that C. K. receives his, then the new John Brown on going to *his* home, would probably meet the new C. K. going to his home,—both equally astonished at having been carried off in the night, and at having their looks

so changed. The world would take both to be insane, but both would be as confident that they are not, as any man is that he is not insane; and there would be no contentions between them, about property and privileges.

Let us suppose that I, Charles Knowlton, not only swop sensorial tendencies with John Brown, but that my body be so remodelled as to look precisely like John Brown, and John Brown so remodelled as to look like me. I should then be converted into John Brown, and the present John Brown would become Charles Knowlton, not only as it respects the thinking man, *but as it respects the world around*, or the world's man. Hence we see that the particles of matter which compose a man, have nothing to do with his identity, in any important sense of the term; and at the day of resurrection, or rather of reorganization, it will matter not what particles of matter we shall be composed of, any more than it now concerns us whether our bodies are composed of the matter of the bread, meat, butter and cheese of Vermont, or of the fish, rice, and fruits of a southern climate. All that will be necessary to constitute the same man, to all intents and purposes, will be to have the same looking body organized out of *any* matter, possessing the same sensorial tendencies.

As a man may undergo great changes in his looks, and still be the same man to the world around, so may he undergo great changes in his sensorial tendencies, and still be the same man to himself;—he may forget much, [outgrow many tendencies] and he may learn much, [acquire many new tendencies,] and still know, believe, or be conscious that he is the same man.

We would not undertake to determine what tendencies must be retained in order to give rise to those thoughts which constitute one's belief that he is the same man; we think, however, that they are very few; perhaps no more than

enough to give rise to a remembering of his name, of his parents, and of some one thing that he has done.

It may be asked, if it be not naturally possible for two persons to acquire precisely the same tendencies, and of course be precisely alike as it respects themselves. We answer, no. If two children be organized precisely alike, and born at the same time and place, and called by the same name, it would be impossible for them to acquire the same sensorial tendencies ; for they could not both be in the same place, and in the same relation to each other and things around at all times; hence, precisely the same impressions could not be made upon their senses at the same time, and merely on this account, they may in time become quite different men as it respects the *suggesting principle*, which term I think I may now use, without being misunderstood.

After all that we have said about sensorial tendencies, it may be said that their existence is purely hypothetical. We grant it,—so is the diurnal revolution of the earth hypothetical. We are not immediately conscious of any motion of the earth ; but the supposition that it does move enables us to explain many astronomical phenomena ; and the supposition of the sensorial tendencies enables us to explain many physiological or conscient phenomena ; and there is nothing opposed to either supposition. There is a great difference between a supposition which enables us to explain many phenomena, and one which affords no such aid, but on the contrary renders such phenomena ten times more complicated, mysterious, and incomprehensible. If such supposition be not directly contradicted by any one fact, still it is contradicted.—it is contradicted by the simplicity of nature, and the soundest principles of philosophy.

We cannot close this chapter without adverting to the

speculations of professor Brown concerning personal identity ; or as he chooses to term it, *mental* identity. He admits that the expression, *same man*, is generally considered to mean something more than *same mind ;* he says, however, but little concerning *corporeal* identity, or the identity of a man to the world around ; but he writes about fifty, full, octavo pages to establish his notions concerning mental identity : a fact which, of itself, argues much against his opinions. His most important positions concerning mental identity, are the two following :—

First. Mental identity *consists* in the "unity and sameness of that which thinks and feels," independent of all the endless variety of its transient states or changes—independent of all thoughts and sensations.* Second. A man's *belief* that he is the same man, "arises from a *law of thought*," which law is " a principle of intuitive belief ;—as it were, an internal never-ceasing voice from the Creator and preserver of our being—an internal revelation from on high,—too important to be left to the casual discovery of reason." ! ! ‡

We see that according to professor Brown, personal, or mental identity, consists in that which makes no difference between men—in that which (if it exist) is the same in all men, for aught any one can say to the contrary. He places it in an indivisible, unextended (no-) thing ; for such is what he means by " *that which thinks and feels ;*"—he places it in such thing, independent of all the *states* it may chance to be in, independent of all thoughts, feelings, and beliefs. Hence it follows that if John Brown, mentioned a few pages back, should be this night annihilated, and I should be carried to, and put in his bed, with my body so remodelled as to look precisely like

*See his "Philosophy of the Human Mind," vol. 1. p. 162, Philadelphia Edit. 1824.

‡ See pages 158, and 163. Ib.

said John Brown, and my *tendencies to think*, my *store of "latent ideas,"* (if any body can tell what a latent idea is, and how they can be stored away in an unextended mind.) or my *knowledge* (if the immaterialists can tell us what knowledge is) so changed that I should think, believe &c. precisely as the present John Brown does or would,—of course, as firmly believe myself to be John Brown as he now does, still I should be the same thinking, the same *mental* Charles Knowlton that I now am! This is what I say would be the case, according to professor Brown's doctrine; for the same mind (the thing in which he places my identity) which he supposes to have been in me, when an infant, and when asleep, would still be in me, and constitute the very me, myself.

Concerning Professor Brown's second position, that "The *belief* of identity of self, as the one permanent subject of the transient feelings remembered by us, arises from a *law of thought*," it appears unnecessary to say much.

I presume it will be admitted that a law of thought is a law of nature, and a universal law; but I may observe that there is no law of thought in me, which gives rise to "the belief of the identity of self, as one *permanent* subject of the transient feelings remembered by me." To be sure, I believe that I am the *same* man that did a certain act, felt a certain pain, or came to a certain conclusion, at some former period; but I believe it, in the common sense of the word *same*—in that sense in which I use it, when I say,—the horse in my stable is the *same* that I bought four years ago. I do not believe that I am one *permanent* subject of the thoughts and actions, said to be the thoughts and actions of Charles Knowlton.—By the pronouns *I*, *me*, and *myself*, I always mean that visible, extended being called Charles Knowlton. I never have, in using these words, the least reference to an unextended thing in my brain, which thing no man can ever have any idea

of. If our present bad language sometimes leaves me under the necessity of using the pronouns *I*, *myself*, &c. as though they meant something distinct from the *Charles Knowlton body*, still I do not mean so. Neither do I have reference to my sensorium, any more than any other part of my body, unless I specify this part, or speak in particular reference to it.—When in common conversation, I say I walked to Troy. I do not mean, more especially, that my legs walked to Troy; and when I say I think, I do not mean, more especially, my sensorium thinks, unless I am upon some metaphysical subject. But although, by the pronouns I, me, and myself, I mean an extended being, still, if a part of this being should be removed, the part which retained the sensorium would still call itself, *I*, *myself*, &c. What more convenient language could it use? Now I believe that the being called Charles Knowlton, that is, I, myself, is, like every thing else in nature, continually undergoing changes, and is not a *permanent* subject. But until we have a different language, and until I have different sensorial tendencies. I shall continue to call myself, and believe myself to be, the *same* Charles Knowlton that did certain things ten years ago.—Certain tendencies of my sensorium give rise to such thoughts as constitute such belief; but *why*, in any case, congruous thoughts occurring together constitute a belief, I can as well tell, and no better, as I can why oxygen and hydrogen chemically united in certain proportions, constitute water. You may say that such is a law of thought, or a law of nature, or, what is the same thing, that it is one of those ultimate and universal facts, of which there is no explanation to be given, and of which none but the ignorant will ask for an explanation.

Now when Brown says that a man's belief of his identity arises from A LAW OF THOUGHT, *and says no more than this*, we do not object to the expression; but it is the same law of

thought, on account of which, we believe that four and four are equal to eight; that a candle will cease to burn when you dip it into water; the same law of thought, from which arises a lower degree of belief that there will be some snow next winter, and from which arises a still lower degree of belief, that we shall have some rain within three weeks. There is not a particular law of belief for every particular belief which we have—there is but one law of belief: those beliefs called intuitive are such as they are, because they consist of thoughts that are *perfectly* congruous; there is not a single contradictory thought united with them; they relate to things concerning which there is not the least contradiction of any kind.

We may further remark, concerning Professor Brown's speculations, that, according to his test of identity, ice and caloric are precisely the same thing as the steam made out of *this* ice and caloric; and certain bodies of oxygen, hydrogen, and sulphur, are the same thing as the oil of vitriol that may afterwards be made out of them, they being the same substance existing in a different state. So, too, a ball of wax, and the image of a man made out of this wax, are the same thing. Rather a strange perversion of language this, to say no more.

From what has been said in this and the preceding chapter, it appears that what constitutes a man's knowledge, is the same as that which constitutes his identity, *as it respects himself*—that to be the same *thinking* man, is to be a man of the same knowledge. But the whole of that which constitutes *inward* identity is not concerned in giving rise to one's belief that he is the same man to-day that did a certain deed yesterday. Hence a man's knowledge may increase or decrease (if he do not lose a certain part of it,) and his belief of

his identity remain the same, it being neither increased or diminished.

No one will think to object to our doctrine of identity, by saying we place it in something which does not permanently remain the same absolutely. To say this, would be to speak in commendation of it, since we know that the inner, or thinking man, undergoes even greater changes, from infancy to manhood, than the outer, or world's man.

Should we be asked why we say of a thing to-day, *it is the* SAME *that it was yesterday*, when it has suffered some change since yesterday, we should answer,—it is for convenience sake. If men would not agree to use the word *same* except in its most absolute sense, they would not only have very little use for it, but the world could not hold a dictionary big enough to contain a name for every *different* body which has been, is, and will be in existence, if we should say, the instant any body suffers the least degree of change, it is no longer the same, but a *different* body.—If any man will show us any thing which suffers no change, will show us absolute identity, and make such a dictionary, to boot, we will agree not to say of any thing to-day, it is the *same* it was yesterday, provided it have undergone the *least* change.

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CHAPTER XXI.

On Volition.

That the reader may come to this subject, prepared to judge correctly of the opinions we are about to advance, it is necessary that he have a sincere love of the simple truth of nature; and that he have no interest in the mysterious and

complicated dogmas of the schools. That he free himself as much as possible from the influence of our very objectionable language, so as not to be deceived by such as the writer may be under the necessity of using. He must have correct notions of cause and effect,—he must remember that a cause is nothing more than an event which is *immediately* and *invariably* followed by a certain other event, under the same circumstances,—and indeed we often use the word when it cannot be said to mean so much as this, unless we give the word *event*, a broader meaning than "*an agent acting* ;"—but he must not suppose that the succeeding event never does and never can occur, except it be immediately preceded by one and the same event :—The body A may stnke the body B, and this body may move a certain distance in a certain direction. This is an event caused (immediately preceded) by the stroke of the body, A ; but the body X may be brought pretty near the body B, and by attraction cause it to move the same distance and in the same direction that it did when impulsed by the body A. Here then, are two *like* events, or the *same* event occurring twice, from different causes. It is necessary, also, that the reader be aware, that it is just as natural for matter to act, be it in what state it may, as it is for it not to act ;—that, being at rest, it never moves or acts without cause, and being in action, it never rests or ceases to act without cause. An internal action going on in any organ, no more ceases to go on without some cause for its ceasing, than a cannon ball ceases to move without a cause, after being forced from the mouth of a cannon :—some change, some wear and tear, must take place in the organ, from its own action ; or some alteration in the kind and quantity of fluids flowing to and from the organ, must take place ; or some other action must take place in the same precise organ, or some organ connected with it, which must, *according to*

the laws of nature, be followed by a cessation of the action which ceases.

In treating of the relation between the nervous and muscular systems, we come to the conclusion that the *immediate* antecedent or cause of voluntary contractions, is an *action* commencing in the brain and extending along the nerves into the voluntary muscles. *This* action of the nervous system is an *unconscious* action, and we call it the *motive action* of the nervous system.

We are of opinion that this action does not commence *in* the sensorium, or that part of the brain in which conscient actions occur; but in a contiguous part—perhaps in the cerebral extremities of nervous fibrils, of a different organization than those which take on conscient actions; and is excited, caused, or more properly, is immediately preceded by certain conscient actions of the sensorium, just as any other effect is immediately preceded by its cause.

The relation between the conscient actions of the sensorium, and the motive actions of the brain, may be illustrated by the relation which subsists between a master and his servant. The master and the servant may act independent of each other; yet when the master commands, *do this—do that —go on—stop*, the servant obeys; but the master is not controlled by the servant. So the conscient and motive actions may even *commence*, and continue, independent of each other; yet the motive actions (unless they are unruly, as in epilepsy, tetanus, &c.) commence, vary, and stop at the command of the conscient actions; that is, they commence, vary, and stop, according to those conscient actions of the sensorium which occur. But the motive actions do not *govern* the conscient actions, that is, it is not a fact, a universal fact, or law, that when such and such motive actions occur, such

and such conscient actions or thoughts follow as a necessary consequence.

Again, as the servant may be set to work by the master, and afterwards continue to work independent of the master, in the same way as directed, until again dictated by the master, or until exhausted—at which time he can work no more if commanded ever so urgently ;—so the motive actions, having been excited by the conscient actions, may continue to go on as at first, *independent* of the conscient actions, until varied or stopped by the conscient actions, or until some change, some wear and tear, takes place in the brain, inconsistent with their further continuance, at which time a man may desire to move ever so much, but he cannot.

For further illustration :—Certain conscient actions or thoughts occur in me, which constitute a desire *to walk to the bridge*.*—certain motive actions of the brain immediately set in, (as it is a law of volition that they should,) and certain muscular contractions immediately follow, and I walk along, step after step, as I set out, without any further *thinking about it*.—I go trudging along in the *same* pace, cogitating about some subject, as foreign to my walking as any thing can be ; but the moment I quicken my step, turn my course, or stop, you may know that a thought has occurred relative to my walking—you may know that the master has given a new command to the servant.

Although the conscient and motive actions of the brain are

* We shall invariably call those conscient actions which immediately precede the motive actions, (which motive actions immediately precede voluntary contractions or motions.) a *desire* ; but like belief, this desire may be of a high or low degree. It may, in many instances be of such low degree as not to constitute such consciousness as would generally be called *desire*.—We must be permitted to have a language to express our sentiments, if it be at the expense of coining a few new words, and altering a few old ones.

essentially different, still there is a striking analogy between the ultimate facts that relate to them. The conscient actions must, in the first place, be excited by impressions upon the senses, after this they may recur on certain *occasions* without the reapplication of the impressions which first excited them, or they may be re-excited by the same impressions ; so the motive actions must, in the first place, be excited or caused, and afterwards they may recur on certain *occasions* without being immediately preceded by that which first caused them. And as the conscient actions of the sensorium may be excited by various impressions through the medium of at least five modifications of nerves, so the motive actions may be excited by different causes, that is, they may be the consequents of different antecedents. The ordinary antecedents of the motive actions are the conscient actions of the sensorium ; next to these are actions commencing in various parts of the body, and extending to the brain, some of which are conscient and others unconscient. Other causes of the motive actions of the brain we would express by the rather loose but convenient phrase of *morbid affections* of the brain itself, as in some cases of epilepsy.

But the motive actions of the brain must be excited *many more times*, by the cause which first excites them, than the conscient actions, before such a *tendency* to their recurrence is produced that they may recur on what we call *occasions*. A man need see an elephant but very few times, before the action of his *sensorium*, excited by seeing the elephant, may recur when the elephant is absent—before the man may have a real idea of the elephant ; but when a child begins to walk, or a man begins to dance, the conscient actions must excite the motive a great many times, before the child can walk, or the man dance, without thinking any thing about it.

We will now show what we mean by *occasions*, as above

used. When one thought succeeds another on account of some relation between them, we say that the thought which precedes, is the *occasion* of the thought which succeeds. With respect to the motive actions, we cannot, in few words, show distinctly what we mean, when we say that they occur on occasions: we must suppose a case—Suppose that I have performed a dozen different actions in immediate succession, a thousand times or more; now if a desire excite that motive action of the brain that corresponds to the first of this dozen actions, and then I think of something quite foreign to these actions, the remaining eleven may still follow; and if so, we should say that one motive action of the brain is the *occasion* of that other which immediately succeeds it.

When we say that one thought, or one motive action of the brain, is the occasion of another, we do not mean that such thoughts and such actions are not, as truly and as really, *causes* of the thoughts and actions which succeed them, as impressions upon the senses are causes of sensations and perceptions. But these causes or antecedents are different from the antecedents of these thoughts and actions, *the first time or times they occurred;* on this account, and for sound's sake, we call them occasions. Indeed, considering the notions generally annexed to the word *cause*, and to the word *occasion*, we think it would always be more correct to say that one event is the *occasion* of another, than to say that one event is the *cause* of another.

One grand reason why men so generally believe that *all* the motions of their voluntary organs, even the most familiar, are excited by conscient actions, or to use a common, but very mischievous word, by the "*will*," is undoubtedly this: All motions which we perform when we are experimenting with ourselves, to determine whether they be so or not, certainly are thus excited; of course, instead of coming directly

at the truth in this way, our experimenting only serves to confirm us in error. But let a man who is trudging onward, musing on his wordly plots, stop of a sudden, and think whether he have been willing, desiring, or thinking something relative to, every step which he has taken for miles back.

It would be absurd to say that he has, but was not conscious of it at the time, for to will is but to think, and to think is to be conscious—to say that a man wills or desires any thing, and is not conscious of it at the time, is a downright contradiction. And as for saying that a man wills every step which he takes, while thinking of something quite foreign to his walking, but cannot afterwards remember it, it would be saying something which no man can ever prove to be true, but which we have the following good reasons for believing to be false.

First. It is strange indeed, if certain thoughts or conscient actions do occur several thousand times within an hour or two, and cannot recur at the end of this time, so connected with other thoughts, as altogether to constitute a remembering that these certain thoughts have occured within this time—strange, I say, since it so often happens that a conscient action of the sensorium, having occurred two or three times today, may recur a week hence without impression.

Second. When conscient actions do actually excite motive ones, we can remember it ;—we must add, *sometimes*, and not add *always*,—lest it be said that we beg the question. But this every man will own, when he performs any new or uncommon act, or even when he quickens his pace while walking, he can afterwards remember that he thought something about it—that he willed it, and well may he wonder that he cannot remember that he willed his most common actions, if he do indeed will them all.

Third. Philosophers of every class admit that whatever

thinks can think but one thought or act but one action at a time ; neither can they do otherwise than admit, that to will, as the expression is, is to think, as much as to guess, to judge, or to cogitate:—they must admit, that willing supposes an act, or actions of that which thinks. Now as a walking man is all the time putting one leg before the other, where is the time for him to lay plots, and judge about matters and things, if every step must be preceded by a certain act of that which lays plots and judges? How is it that a man writes, and reasons within himself at the same time, if both these processes suppose different trains of actions of that which thinks but one thought or acts but one action at a time? *We* say that when a reasoning man is writing, every particular letter which he makes is not immediately preceded by a particular desire or willing *to make such letter* ; but this is what we suppose takes place :—we suppose that when a man first learns to write, first begins to make letters, he has a particular thought, will, or desire, to make each and every letter which he does make ; and that when he first begins to write words, he *attends* to the writing of each word. But after long practice, his *writing machine* gets so habituated to writing the letters of words in a proper order, that it needs only one *touch* of his thinking part to put it in motion, and it will write a whole word while this thinking part is engaged in a reasoning process.* After still longer practice in writing, the thinking part may think over a whole sentence, and giving the writing part *one* command to write it, it is done, even if the master

* Besides other evidence of the above opinion, the following may be mentioned : When a man is in the habit of writing a word wrong, he will continue to write it wrong, *if he do not attend to it*, after he knows that he is in such habit ;—he will continue to do so until he gets in the habit of writing it correctly. Many and many a time has the present writer written the word doctrines, *doctrings*, after he knew better.

turn away to some other business, as he often does, after he has set the *walking machine* in operation.——According to the principles of immaterialism, it cannot be that a man wills, and judges or imagines, at the same time ; if willing and judging are not the same thing. And we, even we, do not believe that he does, although our leading principles are as different from those of immaterialism as truth is from error ; and would more easily admit of the supposition that a man may will or desire at the same time that some other intellectual process is going on. But to return.—

Fourth. The motions of the ribs and diaphragm (organs concerned in breathing,) may be accelerated, retarded, or for a time suppressed, by a desire ; hence the diaphragm, and the muscles that elevate the ribs, may as properly be called voluntary as any other ; but in a sleeping state, (we do not say a dreaming state,) a state in which it would be a *whim* to say that conscient actions of the sensorium occur, we continue to breath. Now if the motive actions of the brain occur in sleep, without being immediately preceded by conscient actions, why may they not do so in a waking state ?

Why should it be difficult for men to admit that the motive actions of the brain may occur, or rather recur, on *occasions*, i. e. without being preceded by the same antecedents which preceded them when they first occurred ; since they must and will admit that the conscient actions do thus occur ?

We have now been endeavoring to show that the motive actions immediately succeed *some* of the conscient actions of the sensorium, (which actions, to distinguish them from others, we say constitute desires or willings.) as subsequents or effects of such actions ; and furthermore, that the motive actions may, after much practice, recur on occasions, as well as the conscient. But every conscient action or thought is not succeeded by a motive action—we are not always moving

when we are thinking; and the question now is: What conscient actions do the motive ones follow; or, as we will put it, *when* do they follow? It may be said that when a man is at a tavern, and those thoughts occur in him which constitute a desire to go home, he gets up and goes home. This is very plain and satisfactory; but if the man also have a desire to stay and hear the end of a story, what then?—We proceed to answer this question. We suppose that there is some cause, in every case, for a man to be doing whatever he is doing, whether he be sitting, standing, walking, or whatever else you may mention; and such cause is either mechanical force, or a desire of his own. We hold, too, that whatever a man be doing, this will he continue to do, until there be some cause for his ceasing, either that he get *tired out*, or stopped by mechanical force, or until he have a *greater* desire to do something else, than to do what he is doing. If a man have a desire to do one thing, and a desire to do another thing, both which things he cannot do, or cannot do at the same time, he acts agreeable to the predominant desire; but if the two desires exactly *equal*, *counterbalance*, or *neutralize* each other, he acts according to neither, except one of the desires be to do, or keep doing what he is doing; in this case he keeps doing so. These are ultimate and universal facts, or laws of volition; and there is no mystery about them, unless it be mysterious that a ball should not move when impulsed by two equal and opposite forces, or with one force which is equal, but not superior to the force by which it is attracted to the spot where it lies. If, then, the man at a tavern have a greater desire to stay and hear the end of a story, than he has to go home, he stays and hears the story; or if his desire to go home equals, and *no more*, his desire to hear the story through, he stays and hears it through.

Some may think that they can bring objections to the doc-

trine, that nothing but physical force ever causes a *well* man to perform any motion, any contraction of his voluntary muscles, which he does not desire or choose to do ; they may say that the criminal who loves life, walks of himself to the gallows, yet his desire to be hung can not exceed his desire to walk. But all such objections are only seeming ones : the truth is, the criminal cannot have his choice, to cease to walk towards the gallows or to be hung, and he knows it. It is for him to choose whether like a man he will *walk* to the gallows, or whether, like an obstinate fellow, he will be *carried* to the gallows, and his greater desire, i. e. his choice, is to walk. Indeed, when physical force propels a man, it is not the man that acts, but he is acted upon, and it would be philosophically correct to say, that a well man never performs any act or motion, which he does not choose or desire to perform—certain habitual movements, excepted ; and these never occur *contrary* to a wish of his, *at the time*. A man may be placed in circumstances which he would not, and of course, do things, voluntarily, which he would not, were it not for such circumstances ; but whatever he does do he does from choice, we may say, a necessary choice, if he do it in prefferrence to suffering the unavoidable consequences of not doing it. We have not a dozen laws of volition—they are but few ;—the most important one is, that a man do that (possible act) which he has an *uncounterbalanced* desire to do. To have such desire, is to choose, to please, to determine, to will, to "have a mind," to do the thing desired. We may observe, however, that according to the common acceptation of terms, *to will* is to have thoughts which *immediately* precede the motive actions of the brain, whereas, to *determine* do a thing tomorrow, is to have such thoughts occur as to constitute a conviction that, if nothing unexpected turn up, it will be your pleasure, or choice, to do the thing tomorrow.

It is a thing which, owing to circumstances you think of, you do not have a greater desire to do *now* than you have to do something else inconsistent with the thing you determine to do to morrow.

Should any one assert that a willing consists in something more than in having certain ideas occur, one after another, let him observe as well as he can, what goes on in himself, let him be careful that he is not himself deceived, and that he do not attempt to deceive others, by empty sounds; and then let him tell us what it is. To be sure, when we come to treat of the passions, we shall mantain that they consist in something more than conscient actions of the sensorium, and admit that what is *commonly* called desire, may consist in something more than conscient actions of the sensorium alone. But although this will do very well for us, since we maintain that thinking and sensing are not functions of an *unextended* thing; we have a curiosity to know what the immaterialists will tell us that *willing* consists in, if it be not essentially the the same as thinking,—which, by the by, we suppose to be the same as, to have thoughts, and to have thoughts the same as, to have ideas. They wont tell us, will they, that their unextended thing has parts,—a thinking part and a willing part; and that a man may think and will at the same time, and yet thinking and willing are not the same thing? If they do, we trust they will be so good as to show us why an act of the willing part can, and an act of the thinking part cannot, be immediately succeeded by motive actions of the brain and nerves, or if they please, by contractions of the muscles. Perhaps they may tell us that it is so, because such are the laws of nature, and that they can tell us no more about it. Very good, but may it not just as easily and rather *cheaper* be a law of nature, for certain motive actions of the brain to set in, on the occurrence of certain thoughts? Now we know that we

have thoughts and of course, a thinking part, but we have no evidence at all, that we have any willing part, besides the thinking part; we cannot discover in any of our *willings* that we have any thing besides sensations and thoughts. And if simple truth had preceded complicated error, and we had never heard any thing about the "*will*" and the many other *powers* and *faculties* of the *Soul*, (all thingless, and the second and third very ambiguous names,) we never should have thought any thing, more or less, about volition than this:— on the occurrence of certain sensations and thoughts, or certain thoughts alone, certain motions of the body immediately follow.

As we maintain that not more than one sensorial desire can exist in the same man, at one and the same instant, and as it is clear, that, in this instant, the desire which does exist, cannot be equalled or counterbalanced by an opposite desire; it may be asked why, the moment a man has any desire to do a thing, the motive actions of the brain do not set in and the man start to do this thing?

In answer to this question, we offer the following conjecture: We suppose that thoughts succeed thoughts, a little more quickly than motive actions succeed thoughts. Hence, if conscient actions, constituting a desire, be *immediately* succeeded by such as constitute an opposite desire, there is no time for the motive actions to set in so as to give rise to muscular contractions; but if one desire be not *immediately* succeeded by an opposing thought, the motive actions do set in. But we know from what we have experienced in ourselves, that after a man has set out to do a thing, a "second thought" sometimes stops him quicker than a cannon ball would do.

Different desires give rise to different motions; this will be admitted on all hands, for it is but saying, in the language of the schools, that a man's will governs his actions;—it is to

state an ultimate fact, or law of nature, or volition, and none but those who disbelieve this, will talk about explaining it. We don't hear any one talk about explaining laws of nature: to explain her phenomena, is to explain every thing to be explained. The Deity himself cannot explain a law of nature in the sense in which the word *explain* ought to be used by men.

When two different desires which are exactly equal, immediately succeed each other, the man may be said to be *choice-neuter*, but when there be but one desire, or when one desire is more than equalled by another, he may be said to be *choice-absolute*.

A man seldom remains choice-neuter for any length of time; for as the sensorium is continually thinking, some thought is apt to occur, which is sufficient to turn the scale, already on the balance: when this is done, the man is choice-absolute, and the motive actions set in.

Ninety-nine times out of a hundred, the thought which turns the scale, or the desire which gives rise to action, when not counteracted by an opposing thought, is so trifling,* that one can hardly say what induced him to do so and so, and will very readily say, "I might have done otherwise if I had had a mind to." This we grant, objecting only to the language used. If the conscient actions of his sensorium had been different, his actions would have been different; but as it was, his actions were as much necessary consequents of their antecedents, as other effects are necessary consequents of their antecedents.

However much the short-sighted, and those who have an

* A thought may be said to be *trifling*, when it does not relate to any thing of importance—does not relate to any thing which, if it do or do not occur, or do or do not exist, can make but very little odds in the happiness or misery of him in whom the thought occurs.

interest in choking truth, may talk and scribble, the fact is as stubborn and unalterable as the laws of nature, that whatever a man has done, he could not otherwise than do, and his doing so, is absolute proof that *he*, as he was, under all the circumstances of the case, could not do otherwise than he did. If a man do not do a thing, it is proved that he might not, nay, could not do this thing at the time.—To say that a man might have done so and so, if he had desired, chose, or had a "mind to," is to say nothing at all in favor of the doctrine of free agency, or against the doctrine of necessity. So may water run up hill, *if* sufficient force be given it,—so may gunpowder not explode on the application of a spark, *if* it be well drenched with water; nay, water *must* run up hill, and gunpowder *cannot* explode, under these circumstances. In all cases where the antecedents are different, the consequents not only may, but must, be different; for such are the laws of nature.

The sequences of nature are linked together, if we may use a figurative expression, by an indissoluble bond: the same antecedents must, under the same circumstances, be followed by the same consequents; and every individual act or event, whether it occur without or within the human skull, is the consequent of an antecedent, or in older language, the effect of a cause. It is one of the links in the chain of events that constitute the phenomena of nature.

We hardly know what to say of a man who admits that there are no events without causes; that a cause is that which must, from the nature of things, be followed by an effect; and then says that man is a free agent. He might as well admit that *two times* and *twice* are synonymous terms,—that twice four are equal to eight, and then say that two times four are not equal to eight.

Some may say that this doctrine, if generally believed,

would have a bad effect on society, and that they "would not believe it if they knew it is true ?" But my dear reader, you cannot help believing it. The laws of belief are the same with you as with me ; you may not *own* that you believe it ; you may even assert that you do not, and attempt to argue against it ; but to assert, or to argue, is not to believe or disbelieve. But how do you know that the state of society would be worse than it now is—how do you know that there would be less human happiness, or more human misery in the world, than there now is, if the doctrine of necessity should be universally believed ? Have you any reason to suppose that a general knowledge of truth will increase the sum of human misery as much as it will increase the sum of human happiness ? To be sure, owing to the present state of mankind—owing to the errors which at present prevail—the diffusion of truth and the consequent eradication of error might give rise to some upturnings and overhaulings which would disturb the peace and comfort of many an ant's nest ; and we might expect a mighty fuss and stir among them.—But we have no reason to suppose but that great good would result to mankind, as one great family, from the diffusion of truth ; and like good surgeons who produce a little temporary pain by probing and washing an old sore, to bring about a cure, every philanthropist ought to persevere in gradually and *tenderly* eradicating ignorance, error, and all their evil progeny. Knowingly, we ought to wound no one's feelings uselessly. But when argument may be aided by giving an absurdity a good *setting off*, I think we are justifiable in doing it.

Few appear to be sensible of the degree to which the happiness of the human family might probably be increased, if a few million of dollars, and the labor of a few thousand men, should be yearly expended in diffusing truth, and promoting

sound morality,—the machinery for choking truth and diffusing error, being at the same time motionless. Men would soon begin to believe alike ; for truth is one universal thing, and all who are taught the whole truth and nothing but the truth, must believe alike.

Wars between nations, wars between church and people, wars between neighbors, and wars within one's own breast, would soon cease to exist on account of difference of opinion. Merit or demerit would no longer consist in believing or disbelieving any thing, and the expression "he that believeth not, shall be damned," would not be understood. But virtue would consist in increasing the sum of human happiness, and diminishing the sum of human misery. Societies would be formed for the diffusion of philosophical truth, and the promotion of real virtue ; and he that detected errors or developed truths would be as good as his neighbor, whose brains might be a little more phlegmatick. Different and more effectual inducements would be held forth for men to do good, and refrain from doing evil ;—if any one did society an injury he would be degraded, *with compassion*—he would not be held up for professing to believe that *one* and *three* are synonymous terms, and the like o' that. But if he reformed, as manifested, not by word, but by deed, he would be again restored to society and *publicly applauded*. And what is a very important consideration, the incalculable amount of human misery which consists in the "horrors of death!" and the fears of "an eternal hell fire!" would be blown away, as chaff before the wind.

We should here close this chapter, were it not for the erroneous notions entertained by many, concerning the succession of a man's thoughts. There are many who—to use their own expressions—believe that a man's thoughts are under

the controll of his "will;" that he may, and in many instances ought "to banish thoughts from his mind." &c. &c.

Perhaps there is no other subject under heaven, concerning which men so generally entertain erroneous views, which views may so easily be shown to be erroneous, as they do concerning this. Men find that they can think *as they think*, and not only so, but *if they please* they can think of this, that, and 'tother subject; hence they very readily and inconsiderately assent to the position, that a man may think as he "has a mind to;" and suppose that this is as much as to say, a man's thoughts are under the controle of his will. But this doctrine will not stand the test of inquiry. What is the *will?*—Let us proceed upon the principles of immaterialism, and ask, *candidly*, WHAT IS THE WILL? Is it any thing distinct from the mind and the brain? No. Is it a part of the brain? No. Is it a part of the mind? No; for that which is unextended has no parts. Is it a *faculty* of the mind? It is generally so considered. It appears then that a faculty of an unextended thing which is known to exist only by its faculties, is no part of such thing! But what is a faculty of the mind? ———hem———hem———Well,—it is nothing but a *fact*. It is a fact that on the occurrence of certain thoughts, certain muscular contractions immediately follow; it is a fact that on the occurrence of certain thoughts, certain other thoughts succeed; when a man, for instance, thinks he will think about heaven, he thinks *more* about heaven. It is because of these facts that we say the mind has the *faculty* of causing the voluntary muscles to contract, and of causing its own self to think about this, that, and the other thing; this faculty we call the *will*. Well, *Mr. Immaterialist*, since you spake as a philosopher, and not as a poet, or an orator before a popular assembly, we must tell you that we object to your language, in the strongest terms. It is calculated to deceive,—it is old

language gotten into use, in days of ignorance; and is calculated to keep alive the very notions that gave rise to it: the word *will* is generally understood to mean something existing in the head besides a *fact!* However if such language is in such general use, that it is better, for the present, to use it, than to invent a substitute, we permit you to use it. But we must ask you what causes the will [the fact!] to act? We suppose you will grant that every *willing* is an act of that which wills; but there are no events without causes, no gaps in the great chain of events, and we do not see but that you must suppose another will, to cause your old one to act, and so go on, supposing *wills*, one atop of another, until you get to heaven, the Great First Source of all events!!

Immaterialist.—I must confess this is rather difficult ground to maintain—more so than I ever before thought. I have heard so much about "the will," about a man "controlling his thoughts," and so much of censure when a man chances to believe differently from his neighbors, that I never dreamt but that there is a *will* in a man's head, that makes his thoughts come and go at pleasure, free and absolute pleasure; and that a man in whom this something does not cause *good* thoughts to occur, but suffers *evil* ones to occur, is to blame; and in some instances deserves to have his *body* tied up to a stake, and made to smart most wretchedly, by having a fire built about it!—But I will take the ground of the late professor Brown of Edinburg. He was an immaterialist, and an acute reasoner too, though not quite so *orthodox* as I could wish; but as I am drawn into company where I must *reason*, I will take such ground as I can defend without giving up the *capitol.** Brown maintains that all our sensations, thoughts, and emotions—in a word, all our intellectual phenomena, are

* The doctrine of soul, as something distinct from the brain.

states of an unextended and indivisible mind ; and that this mind can exist in but one state at a time. Of course, *to will*, does not suppose the existence of any thing but *the mind in a certain state ;* and to will a motion of one of our members, is to have the mind in such a certain state as it is, immediately anterior to such muscular contractions as produce the motion ;—to will a thought, is but to have the mind in a certain state immediately anterior to its existing in such state as constitutes the thought. Does this sense of the expression, *to will a thought*, suit you any better ?

We.—To be sure, this is not so absurd as to say, a *fact* causes thoughts to exist, and prevents the existence of thoughts which have no being; but the question before us does not relate altogether to the fitness of expressions : the main question is, whether there be any thing like free and independent agency in the succession of a man's thoughts; whether every thought which DOES occur, must not as necessarily occur, as pain must follow the application of a red hot iron to the skin of a living and healthy man ; in short, whether it be, or be not, the effect of a cause ? And to establish such free agency, we should as soon have thought of your referring to any other authority as to that of Brown. Although Brown was not a professed materialist nor necessarian, he has done more, perhaps, than any other one man towards establishing materialism and other important truths. Locke did considerable, by banishing the world of innate ideas. Every man who dispels any of the metaphysical darkness of the schools, furthers the cause of materialism, whether he designs to or not. But to the point. It must be granted, that according to the principles of Brown, the mind changes states as frequently as we have different sensations, thoughts and emotions ; and to change state supposes action ; and an action is an event, whether the *agent acting* be discernible or not.—

Now, where are you ? A certain state of the mind (a state which constitutes a *desire*, *will*, or *willing*,) is immediately succeeded by a certain other state, constituting a thought ; but what caused the mind to exist in the *first* state ?—no events without causes—no gaps in the everlasting chain of events—what will made the mind will, to think the thought ?

Immaterialist.—Reason is a dangerous thing ; it ought not to be exercised in the present case ;—we may reason away all the *exalted* sentiments concerning human nature, and make a man a mere organized machine, who is no more *absolutely* culpable for any thing he does, *in the eyes of his Maker*, than a cotton factory ; destroying, thus, the fundamental principles of that *wholesome* morality which is productive of so much human——*happiness*. I know that when I am determined to think of any subject, I *can* and do think of it, and when I choose to think of some other subject, I can [do] think of it ; and this is all I mean by saying my thoughts are under the control of my will.—I'll hear no more of your mischievous philosophy ; I am satisfied with my own opinions, and I leave you to enjoy yours.—May God have mercy on your *souls !*——

We.—That man is no *numskull*—he feels the force of arguments ; but he is either too proud to admit that he is wiser to-day than he was yesterday, or else he has some selfish motives in keeping alive ancient absurdities. He *appears* to be alarmed at our reasoning away the fundamental principles of that sound morality which is productive of so much human happiness ; but he has too much good sense to suppose, for a moment, but that more good than evil will result, in the end, to mankind, as one great family, from the diffusion of truth. He has not, however, and never will have, sense enough to reason away the laws of nature, or what is equally difficult, to refute the doctrine of necessity.

He says that when he is determined to, or chooses to think of any subject, he can [does] think of such subject; and that this is all he means by saying his thoughts are under the control of his will. But if this be all he mean, we admit that his thoughts are under the control of his will; and it argues exactly as much in favor of man's free agency, and consequently against the doctrine of necessity, as to say, that when fire is applied to gunpowder, the gunpowder can [does] explode. Let us say, for instance, that a man is determined to think of heaven. This language suffers nothing in sense by rendering it thus:—the man thinks he will think of or about heaven. But is there no cause for his thinking he will think thus? If he cast back a little, he will find that these thoughts were preceded by other thoughts, in some way or other, related to them, and these, again, by others, and so on. He will see that, considering his sensorial tendencies and the laws of thought, every thought which does in him occur, must as necessarily occur, as an unconfined body must move when struck by a heavier body swiftly moving.

A man having got so far as to think he will think of heaven, *already* thinks of heaven; and as all thoughts relative to heaven are related to each other, we should expect, according to the principles which we have said regulate the succession of thoughts, that he would think *more* about heaven, than merely to think he will think of heaven.

We see that it argues nothing to say a man may think as he pleases, chooses, or "has a mind to;" and besides, the expression is very nonsensical, as much so as to say, a man may think as he thinks; for to please, choose, or have a mind to, is but to think.

If there be a *will* in a man's head, which may *control* his thoughts, in the sense in which these two words are generally understood, why, when a man is tired and worn down by the

toils and anxieties of the day, does he not *stop* his thoughts? He would then be in a refreshing sleep. Why, like a fool, does he tumble and think half the night, anxiously desiring to go to sleep? Surely, it must be a very strange and powerless *controller* to put into such an active organ as the brain, that cannot *stop* its actions.

Why, if a man may *will* his thoughts, does he not always think of a man's name when he wi— desires it? If you do think of a man's name on a desired occasion, it occurs to you in this way: Some ideas, more or less remotely related to the idea of the man's name, are, in some way or other, *caused* to occur;—the fact that you desire to think of his name, is proof that some such ideas have occurred: the *desire*, as it is called, consists of some such ideas; and as ideas that are related are apt to *suggest* each other, it is clear on what principle the idea of the man's name occurs to you.

But why all this talk to prove that the actions of that which thinks, are not *controlled* by—the actions of that which thinks, when it may be done by one short argument? The very expression, *will a thought* implies a contradiction. Who can will a thing until he have an idea of what to will? But the instant a man have an idea of what thought to will, that very instant is the thought already present—it has occurred according to the principles which we have mentioned in several parts of this work.

We must here be permitted to offer a few remarks, which, however, relate more particularly to what we have said in the fore part of this chapter, than to what we have just been advancing.

We have said, that on the occurrence of certain conscient actions of the sensorium, certain motive actions of the brain and nerves immediately set in, and certain muscular contractions immediately follow. These conscient actions we call

desires, merely to distinguish them from conscient actions of the sensorium that are *not* immediately succeeded by motive actions. In doing this, however, we use the word desire, in a sense somewhat peculiar, for there may or may not be, that consciousness which is generally called desire. These desires we call *thoughts*, also, for we call every conscient action of the sensorium alone, a thought. Should the reader ask why we do not use the word *will* in the instances in which we use the word desire, we answer, because we fear the consequences of using this word; we think it would be more apt to suggest erroneous notions than the word desire.

Perhaps the reader may find more difficulty than we do in admitting that it is a *thought* which, through the medium of the motive actions of the nervous system, gives rise to voluntary contractions. If he do, it is because he does not have the same notion of a thought that we do: he may own that a *willing* supposes consciousness, but does not feel right in calling it a *thought*, or *thinking*; and for this very good reason, he calls it a *willing* and ever has done so. But he must remember that, in many cases, words which are quite different in themselves mean the same thing in reality.

If a man would have just such notions as we do, concerning thoughts or ideas, and concerning volition; he must put aside all preconceited notions; must look right into a man's head, and there see the sensorium near the centre of the brain, with nerves running up to it from all parts of the body, and see it acting one action after another, (calling each one of these actions, a thought or idea) and see that when a certain action of the sensorium occurs, a motive action commences in a certain nervous tract and runs down into a muscle, and a contraction of the muscle immediately follows. Should any one ask why one conscient action of the sensorium is succeeded by a certain motive action of the nervous

system, in preference to another; we would ask him why events out of the skull, occur in any kind of order,—why the event B, instead of the event L, X, G, or any other event, immediately succeeds the event A.

We may, perhaps be told, that, notwithstanding all we have said, the existence of the motive actions of the nervous system, is not a fact *known*, but an *hypothesis*—we grant it. We are not immediately sensible of their existence—they are not objects of sense; but the diurnal revolution of the earth is also an hypothesis. The supposed existence of the motive actions of the nervous system enables the physiologist to explain the phenomena of volition, and many phenomena which he witnesses in disease and while experimenting upon animals, even after their death; as much as the supposed diurnal revolution of the earth, enables the astronomer to explain certain astronomical phenomena. We know of no well ascertained fact that tends to disprove either of these suppositions.

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CHAPTER XXII.

On the Passions.

The passions consist of thoughts and natural sensations, not immediately excited by agents exterior to the body. Some of them consist of conscient actions that commence in the nerves and extend to the sensorium, others consist of conscient actions that commence in the sensorium and extend down the nerves. The former we propose to denominate the *organic* passions; the latter, the *sensorial* passions.

We say the passions consist of thoughts and *natural* sensations, not because we suppose there is any thing in nature

which is not, strictly speaking, truly natural ; but to exclude from our definition of the passions, all those sensations which arise from *morbid* states of the system, as the tooth-ache, the belly-ache, the pain of the gout, &c. &c.

The definition of passion, which we have given, is, we think more philosophically correct than any other that can be given. The only objection to it, is, the word has not generally been used in so broad a sense ; for according to this definition it may be contended that even the pains of a *natural* labor must be considered as constituting one of the organic passions, and it would require a good deal of metaphysical subtlety to make it appear that they do not.

As we do not generally know, *precisely*, by what and how, the organic passions are excited, we shall take the liberty to say they are excited by, or arise from, *states* of the organs. When the stomach contains a quantity of healthy gastric fluid, and no food, it is in such state that *hunger* arises ;—when the organs subservient to generation are in a state of plenitude, or in an irritable state, the venereal passion often arises without what may be called an exciting cause.

The sensorial passions may, also, be said to be owing to the *states* of our organs, and especially to the state of the sensorium. The actions which constitute the sensorial passions, we say, *commence* in the sensorium : if a man become angry on account of what he sees, hears, or feels, we do not say, the anger commenced in the eye, ear, or shin—the actions of the optic, auditory or cutaneous nerves constitute no part of the anger. And as no anger would arise on the occurrence of these sensations, if the sensorium were destitute of tendencies, it may truly be said, that the sensorial passions are more especially owing to the state of the sensorium, than to the state of any other part of the system. But if it were

possible for two persons to possess sensorial tendencies precisely alike, in kind, number, strength, relation, in short, in every possible respect ; we believe that one of these persons might become angry on seeing, hearing, or feeling, what the other might see, hear, or feel and not become angry. We are led to this opinion by the fact, that the same man does not, at different times, become angry on what would be admitted to be equally vexing ; and yet we cannot suppose this difference of susceptibility to anger is owing to any change that has taken place in his sensorial tendencies. What would vex the weary laborer at eve, he may with patience bear, after a recruiting night's sleep ;—what would be taken in good humour by the man who has just taken his dram, may the next hour make him mad. It appears, then, that so far as the sensorial passions are depending on *states* of our organs, they are not owing altogether to the sensorial tendencies, though these are essential to their existence ; it appears, also, that when the nervous system is in such state as it is, after exhaustion from fatigue, muscular or sensorial, or from high stimulation, it more readily takes on such actions as constitute anger, (and the same might be said of some other passions,) than at other times.

According to our views, a man is never in a passion, or more properly, a passion is never in man, when there is no conscient action of a nerve. Actions of the sensorium alone, may be more or less vivid, we admit ; but when vivid, they alone constitute nothing more than what we would call *vivid thinking*.—A man's thoughts may be distinct and numerous, but they do not, of themselves, constitute a passion.

The organic passions are often called *appetites ;* the sensorial, especially the fainter ones, are often called *emotions*. In most instances of the sensorial passions, the *nervous* actions are confined to the nerves about the *epigastrium*, or that

upper and middle region of the abdomen, which includes the "pit of the stomach;" but in some instances, as gamesters well know, the nervous actions thrill down the back, even into the extremities.

When any thing is first told to us, which does not accord with what we have been in the habit of believing, it at first appears to us irrational; but on more mature consideration we often think of some fact which we admit as such, but which we must admit to be equally inexplicable with the thing told us; this thing then ceases to appear so strange and irrational as before we thought of such fact. Men have been so much in the habit of thinking that conscient actions commence in the organic extremities of nerves, and extend towards the brain, that when it is said they sometimes commence in the brain and extend down the nerves, it, at first thought, seems irrational; but when they consider that they cannot explain the fact that an action commences in the organic extremities of nerves, and extends towards the brain, and that they admit it because there are well known facts that cannot be explained without admitting it—because that facts seem to prove it; then they more readily admit that an action may commence in the brain and extend down a nerve. And they will admit it, if facts be adduced which appear, *to them*, to show that it is so.

Now the fact, that, on the occurrence of thoughts relative to one's well being, sensations without impressions often follow, (and follow too so instantly, that we must suppose them the *immediate* consequents of the sensorial actions,) appears to prove that conscient actions may commence in the brain and run down the nervous prolongations connected with it. —It seems to be useless to say any thing to show that the sensations or emotions of which we are speaking, are truly *subsequent* to the thoughts of the head.

Having shown what we mean by the passions, we now proceed to offer a few words concerning some of their *effects*, on the individual in whom they occur. Although some have found it easier to deny the existence of a nervous fluid secreted by the nervous *glands*, than to *prove* it, still its existence is admitted by most physiologists, and will we think, in time, be admitted by all. Those who admit the reality of this secretion, will not deny that some of the passions increase, and others diminish it. By admitting this, and admitting its use to be what we have supposed, in the chapter on the relation between the nervous and muscular systems, they can find no difficulty in showing in what way some of the passions give rise to a flushed face, a sparkling eye, a strong arm, and an increased secretion of bile ; while others give rise to a pale face, a fluttering heart, a trembling knee, a diarrhœa, an increased secretion of limpid urine, &c. &c.*

Although we suppose that, in cases of emotion, a nervous action extends *from* the brain ; still we are of the opinion that, in all those cases in which there is any paleness of the countenance, the sensation in the epigastric region is in part owing to the pressure of fluids in this quarter. We will not stay to advance all the considerations in favor of this opinion,—only the few following: When the fluids *strike in* from the surface, as indicated by pale shrunken features, there must be an unusual pressure about the heart and lungs—a pressure which in some diseases is very great, and undoubtedly gives rise to the oppressive feeling which medical men term anxiety. Second, A little ill luck, or bad news is much more apt to produce a disagreeable feeling about the epigastrium and breast when the contractility of the muscular system (including the capillaries of the lungs) is so low that the blood gets through the

* See pages 149, 150, 151.

lungs with more difficulty than usual; and, third, a deep inspiration, or a yawn, either of which is calculated to facilitate the passage of the blood through the lungs and relieve congestions of the venous blood. relieves for the time that disagreeable, oppressive feeling which a man experiences when he thinks of things which he believes will (and consequently do, at the time) diminish his happiness.

Although we hold that a passion supposes an action of a nerve, we are not prepared to say that some conscient actions of the sensorium alone, are not more agreeable than others—some thoughts more agreeable than others; but to ask, *why?* would be like asking why oxygen is different from hydrogen. No *explanation* can be given, and no answer can be given, except we say, such is the fact, such is the very nature of them; or something like this. Neither could any man tell another what is an agreeable thought, if this other never experienced one himself.

It has been a question why one thing pleases us, and another displeases us,—why one thing excites such a consciousness in us that we call it pleasant, or beautiful, and another thing, that we call it unpleasant, homely or ugly. Now we suppose that in some instances this question is a very proper one, as something of the why and wherefore may be said of it; but in other instances it must be considered as a question relative to an ultimate fact; and when we are satisfied that any thing is an ultimate fact, it would be as foolish to ask *why is it so?* as it would to ask, why is hydrogen such sort of substance as it is? We believe that some agents *immediately* and *invariably* excite agreeable conscient actions in *all* nervous systems organized alike. If so, it is an ultimate fact, or law, that such agents excite such actions in such nervous systems; and to distinguish them from other agents they may be said to

be *naturally* agreeable, good, pleasant, or beautiful, in relation to those beings which possess such nervous systems.

But there are some things that *give rise* to agreeable consciousness in one man, but not another; and in the same man at one period of life, though not in a former period. In this case, the question, *why?* is a proper one to be asked, for some answer—some explanation can undoubtedly be given: it must be owing to circumstances, and to point out these circumstances is to explain *why*. If a certain piece of dress give rise to such consciousness in me, that I call it handsome, and in another man, such consciousness that he call it homely; we must suppose that either in the one case or the other, the agreeable or disagreeable consciousness is not an action immediately *excited*, but an action *suggested* by means of the piece of dress; for it is probable that all men are organized so near alike, that what *immediately* and of itself excites an agreeable consciousness in one does so in all, and may be said to be *naturally* agreeable. Perhaps neither the agreeable consciousness of me nor the disagreeable consciousness of the other man, is an action *excited* by the piece of dress, but in both cases an action suggested—perhaps men in general would say that the piece of dress is indifferent as to beauty or ugliness. It is owing to difference of sensorial tendencies that one thing gives rise to an agreeable consciousness in one man and not in another—that one man calls one thing agreeable which another man calls disagreeable.

Suppose a man to be, or to have been, in love, as the expression is, with a lady who wears, or did wear, a particular piece of dress; suppose that the man have enjoyed many agreeable emotions at the same time he saw this piece of dress; then the action immediately excited by seeing this piece of dress, has occurred many times in connexion with those that constitute the agreeable emotions, and of course

there is produced in his nervous system a tendency to the recurrence of these actions in connexion; hence it follows, that when a man sees a like looking piece of dress, be it where or upon whom it may, it excites an action of his nervous system, which calls up or suggests the agreeable emotions, and he is led to say this piece of dress *looks well*, altho' it is not the *immediate* cause of that which leads him to say so.

If this piece of dress be not *naturally* handsome, and another man have frequently seen it at the same time he has experienced unpleasant emotions, and seen it only at such times, then it will call up unpleasant emotions in such man, and he will say it is a homely looking thing. The fact that nauseating drugs taken with spirits create a disgust against such spirits, is to be explained by referring to the suggesting principle.

As the notions of many concerning *love*, are rather unsatisfactory, and the notions of some concerning *conscience*, are rather ridiculous, we shall dwell a little on these two passions, before closing this chapter. And first, of Love.—We do not call the venereal appetite the passion of love;—the passion of love is one of the sensorial passions, but the peculiar love of one sex for another, arises from the venereal appetite. A man loves what he regards as a cause of happiness in him, (and the gratification of any organic passion is so much happiness, though often called pleasure,) and the different sexes may be a cause of a peculiar happiness in each other, on account of the venereal appetite; hence the peculiar love of a person of the one sex for a person of the other sex. But men may love each other, and men may love women, because they regard them as causes of other happiness in them than that which consists in the gratification of an organic passion. Such love, to distinguish it from the sexual love, may be called *social* love; and it is the sexual and so-

cial love combined, that constitute that compound affection which binds hearts with a more lasting cement than the sexual love alone ; and which, when disappointed, renders the person more lastingly miserable. Beauty of person, and even of dress, favors the passion of love ; for whatever is *naturally* beautiful, *immediately* and invariably excites agreeable consciousness in all persons—this consciousness is so much happiness, and we love what is to us a cause of happiness.

The appetite which causes us to love a thing, is not the love of such thing,—the first is an organic, the last a sensorial passion.

Of Conscience. It is an ultimate fact, or law of the nervous system, that on the occurrence of certain conscient actions of the sensorium, certain conscient actions of the nerves, immediately follow. These actions of the nerves, together with the actions of the sensorium, constitute, as we have said, the sensorial passions, which are often called, not improperly, emotions. The actions of the nerves alone may be called internal, retrogade sensations,—*internal*, to distinguish them from sensations excited by agents exterior to the body ; *retrograde*, to distinguish them from the sensations which constitute (in part) the organic passions, which sensations consist of conscient actions that run towards, instead of from, the brain.

What thoughts or conscient actions of the sensorium are thus succeeded by internal, retrograde sensations, we can say no more particularly, than that they are thoughts which relate to the happiness or misery of ourselves or other sentient beings. All thoughts about future misery, be this misery expected at what period it may, are of this nature. A man who meets with a little ill luck, or hears a little news which causes him to think of, and expect, a diminution of his happiness, or an increase of his misery, experiences, especially if he be in a weak and exhausted state, and above all, if exhausted by

debauch, a disagreeable sensation in the breast and epigastric region. If he have been led to do any thing or even think about doing any thing which calls up ideas of misery—any thing which he has been taught to believe he shall be punished for in a future state—the same kind of sensation arises. That this sensation is the same in kind as that which arises when a man thinks of the bad conditions he expects to be in, to-morrow, next week or next year, no one will doubt, after paying so much attention to it as the present writer has done; but if it should be granted that it is not, it would not follow that conscience is not as much a passion as joy.

The notions entertained, or at least expressed, concerning conscience, are whimsical enough: It has been talked about, as though it were a "divine voice" (if any one can tell what this is) either slipped into us about the time we were begotten, or else coming directly to us from heaven just before, at the time, or soon after we do any thing which the book of nature, or a paper book has taught us to believe we ought not to do. And the "dictates of conscience" [conscience itself] have been talked of as though they were "the strivings of the Holy Spirit;" but by the by it is a spirit which, in nine cases out of ten, a glass of grog will banish from one's stomach, until the stimulating effects of the grog are over, but which will then return, more troublesome than before, if the system be not, in the mean time, recruited by rest and nourishing food.

We do not maintain that the passion conscience, is no sign that the person in whom it occurs is not *a person of principle*, as the expression is, but the reverse,—it is the most sure sign he can have that he is a man of principle—it is certain evidence. But it is not the least shadow of evidence that his principles are true. It is evidence only that he *believes* them to be true, which belief is what constitutes him a man of principle.*—

* We have here used the word *principle* in a loose and familiar

Only make a child believe it wicked to whistle, that it displeases God, and that he will suffer eternal, never-ending torments in an unquenchable hell fire, for whistling; such child, should he chance to whistle, would experience the same compunctious feelings that many good boys now do, when in a moment of excitement they incautiously swear, or take the Lord's name in vain. Yet for all this, it might be as innocent to whistle, in the views of the Almighty, as every body now supposes it to be.

The law of conscience is, that it arise whenever a man contemplates an act of his which he believes is wrong. We think, however that it is more intense and partakes of the nature of fear in case the man believe he shall suffer for doing such act. Be this as it may, the existence of conscience in any man, on a certain occasion, depends on what the man has been made to believe, be it truth or falsehood. And as a man's belief, opinions, views, sentiments, or whatever you please to call them, may undergo changes, we see why it is that a man may do an act at one period of his life, without such compunctious feelings as arose at a former period, on doing the same act. We see, too, why men of different nations, and different men of the same nation, do not feel remorse alike, on doing the same deeds, though they may be men of a similar weak and nervous constitution.

Nevertheless, it is freely admitted, that what seems wrong to one, would, if known, very generally be pronounced wrong by all men. This however is very easily accounted for. It

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sense—in that sense in which it is used when it is said that a man who believes such religious doctrines as are generally believed, and believes in the fitness and utility of such rules of conduct as are generally believed right and useful, is a man of principle. But strictly speaking, every man is a man of principle, who holds to any rule of conduct or believes any thing concerning theological subjects: to be without principle, is to be opinion-neuter as to all moral and religious creeds.

is because nature has taught men what they ought to do towards each other ; and nature is a universal school-mistress, teaching all men the same lesson.

A man need not resort to any paper book, to learn that he does not want his person or property injured, nor to learn that his fellow beings are much like himself ; neither does he stand in need of any philosophical speculations to convince him that his fellow beings do not want to be injured in person or property. Nature teaches him this, and this is as much (we believe the *same*,) as to teach him that it is wrong to injure his fellow beings. If he do injure them, a sense of disapprobation arises ; and if he believe he shall suffer for so doing, this sense of disapprobation partakes somewhat of the nature of fear, and is called conscience, or the " dictates of conscience," if the man believe his suffering will be in a future world.

It is an object of moral philosophy to point out the consequences of such and such courses of conduct, which consequences are so remote as not to be readily seen by every one.—As soon as any man is convinced that any deed, or any course of conduct, is productive of more human misery than happiness, he is convinced that it is wrong. And we believe that to be convinced of the one, is precisely the same thing as to be convinced of the other. When we say a thing is wrong, what are our ideas of this wrong, except such as constitute a conviction that the thing, be it a disposition, design, deed, or course of conduct, is immediately or remotely productive of more human misery than happiness ?

As to regarding conscience, or what is the same thing, the " dictates of conscience," as any *principle*, or the operation of any principle, within us, except the mere *fact* that on the occurrence of certain sensorial actions, certain internal, retrogade sensations arise ; we should as soon think of regard-

ing the pain which arises when a barefooted boy strikes his toe against a stone, as the "voice of a Divinity within him," warning him not to strike his naked toes against a stone again!—But the world is full of strange notions, and the more absurd and mysterious they are, the more obstinately do the ignorant adhere to them.—Conscience is one of the passions which, like all other passions, influences our conduct. It arises when we think of deeds which we have done, just as sorrow arises when we think of losses we have sustained.

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CHAPTER XXIII.

On Religion.

The word religion, is used in quite different senses. According to one very common use of the word, religion is an affection of the human system. In this sense of the word, it belongs to the physiologist, or, if you please, metaphysician, to examine into the nature and causes of religion; and it is the more necessary that he do so, because most persons, even in this enlightened age, appear to be much in the dark concerning this matter. Indeed, the notions that *have been* expressed concerning it, are such as to excite emotions in every well informed man. It has been said that religion is caused by, or consists in, (we scarcely know which to say,) being born again of water and the Spirit,—an expression so very ambiguous, that if any one totally unacquainted with all religious notions, should ask if this *being born again of water and the Spirit*, consists in being brought to life with rum and water, we should not think it strange. Again, it has been said, that no man has religion until he have experienced a

change of heart; by which it is not meant, however, that he must have his thorax opened and his natural or congenital heart taken out, and a new one put in its place. At other times, religion was spoken of as though it were caused by, or consisted in, certain operations of the Holy Ghost or the *Spirit* of the Lord.

But to speak truly and intelligibly, the religion of which we are treating—often called the religion of the heart—is nothing more nor less than a sensorial passion; that is, conscient actions of nerves preceded by conscient actions of the sensorium as a cause. A share of the conscient actions of the sensorium which give rise to these actions of the nerves, are such as constitute thoughts concerning religious doctrines, occurring in such order—so free from intermixture of opposing or contradictory thoughts—as to constitute a belief that such religious doctrines are true. Hence we see that a belief in religious doctrines is essential to, and indeed constitutes a part of, the religion of which we are speaking.

Having shown what inward religion *is*, we proceed to treat of its causes and effects.

Mankind are *now* too much enlightened to mistake mystification for explanation, or attribute effects to supernatural causes, when natural causes, amply sufficient to account for them, may be pointed out. Something like a thousand years ago, of course during the dark age, it is said—however incredible it may appear to men of this enlightened age—that men attributed their inward religion to special operations of the Holy Ghost upon the heart! and some, if history be true, even virtually asserted that this Being—often spoken of as though he were nothing less than the Creator of the universe—entered the human system and dwelt for a time at least, all about in or between the thoracic and abdominal viscera,—and that religious emotions were caused by this agent. If an

"awakening" or "revival" took place, these men of the dark age used to attribute it to "outpourings of the Spirit," and tell of the Lord paying them a special visit. But these notions now remain in history as monuments of ancient ignorance, and men are left free, so far as it respects *legal* punishments, to search out the true causes of all known events. Consequently they have found that inward religion is effectuated in the following manner.

Children are presented with books which teach them that the first man and woman ate an apple or some such thing, in consequence of which the whole human race are totally depraved, and deserve not only to earn their bread by the sweat of their brow, to endure much misery in this life, and the pains of dying, but to be eternally wretched after they are dead! That the author of nature, in his infinite goodness and mercy, caused a child to be brought forth by a woman who had not known her husband—a child who, by the by, was as old as his Father. That this child having become a man, was by men unjustly executed; but came to life again, three days after, and *ascended up* into heaven, (for heaven is above us, in the day time.) That on account of these things mankind will not be eternally miserable after they die, merely because of the apple affair; but still, on account of this, their natures are so very corrupt, that is, they have such strong passions or propensities for doing those things which they ought not to do, and are so little disposed to do the things which they ought to do, that they cannot or do not (it makes no odds which you say) refrain from doing many evil deeds, for doing even one of which they deserve to be eternally damned, and indeed will be; unless, before they die they are sorry for doing such deeds; and furthermore, profess to belive such things as we are now stating, and many others equally *rational*, to be true. But if they are thus sorry,

and thus profess, instead of being eternally wretched, they will be eternally and most exquisitely happy.

After more pains are taken to make children, and young persons (who have not yet sufficient knowledge to reason correctly) believe the things, than would be necessary to cause them to believe the most romantic story that ever found its way into books; many of them do believe them in rather a low degree. And they think that after accomplishing certain worldly objects, and indulging a little more in those things for which they have a wicked (but natural) propensity, they must attend to the repenting part.

While they are in this state striving perhaps to render their fellow beings more happy, of whatever sect or denomination they may be, they meet with one or more persons who undertake to convert their mere cold belief in religious doctrines—which is at best little better than mere morality—into real effective religion, a religion that will move the tongue. For this purpose a consciousness a little lower down than the brain, must be excited,—there must be an emotion. In effecting this, some are more skilled than others. The means by which they operate, are various, depending somewhat on circumstances. For the most part, they are well calculated to effect the object in view, though not uniformly successful. If they think their subjects are not properly prepared for a real getter-up of revivals, that is, their belief in the religious doctrines is not of a sufficiently high degree, their first object is, though a little out of their favorite line of business—to increase such belief. This being done, they aim to impress their subjects with the imminent danger they are in of "losing their souls," and being eternally wretched in hell fire (a terrible place for an unextended thing) where there will be weeping and wailing and gnashing o teeth—*among the devils, probably, for the soul has no teeth.* They tell them that they

know not but that they will be called to the bar of God *this very night*—and perhaps give a history of some poor fellow repenting with all speed, but could not possibly get through before the angel of death (what's that ?) flew away with the only thing he had to repent with—adding, that if this repenting apparatus should continue its operations on its way thither, or after it arrived at its journey's end, it will avail nothing : it must all be done while it is in the brain, or it is of no use.—They tell them that *now* is the time, the accepted time, and if they do not repent *now*, and turn to God, he may turn a deaf ear to all their cries, as soon as to-morrow ; for he has long been knocking at the "*door of their hearts !*" and they would not open unto him.

By such sort of sentiments as these, delivered in a solemn and impressive manner, aided by the ringing of bells, by singing, by instrumental music, and such other means as are calculated to arouse the nervous system, every one who firmly believes that the impenitent wicked will be forever wretched in a future state, and believes himself to be one of such wicked, has his feelings wrought upon. He is sorry and fearful for the corruption of his nature, and the many wicked deeds he has done ; and the more of these, the more sorry is he. It is now that conscient actions of his nerves arise ;—it is now that he repents ;—it is now that he is in the sorrowing stage of religion. After remaining in this stage for a longer or shorter time—in acute cases, not over a few days—he is told, or perhaps it occurs to him, that he is already repenting, or has repented ; and of course, there is not only a prospect of his escaping the eternal wrath of an *angry God*, but of his enjoying eternal felicity—yes, *eternal felicity*. Oh! what a pleasing thought ;—he now begins to feel better ;—his thoughts are different ; and of course, the disagreeable feelings of his breast are gone. Indeed, if he be very susceptible of vivid

emotions, (as the young, feeble, and effeminate are the most likely to be,) and be surrounded by new friends, to whose doctrines he has become a convert, and who salute him with all the fervent affection of brothers and fellow laborers in one glorious cause, he is not a mere *thinking* man, but a joyful man. His breast is alive with a new passion ;—he is not now the repenting child of sorrow,—the stage of oppression has passed off,—he is one of the most happy beings on earth ; he tastes of paradise below. He has made his peace with God, and professes religion, (another thing to be glad of,) he thinks that no one who has not experienced the like, can know his joys. He thinks that nothing false or earthly could give him such bliss ; and would that all would repent of their sins, and be a brother of his, on the Lord's side. He is enthusiastic ; and if you express any doubts as to the truth of the doctrines which he so firmly believes, and is so happy in believing, since he has been led to believe that he shall be infinitely happy, he pities you ;—or if you go so far as to advance arguments which bear hard against such doctrines, may be offended at you, and even secretly endeavor to injure you in your lawful occupations. He is not now equally kind and charitable to persons of all denominations ; for he has taken sides in a cause, in promoting which he believes (for so he has been taught,) he is doing God's service ; and in which he may have a wordly interest, and, being still human, a *pride* in promoting. Consequently those who are of his sect are to be encouraged, and those who are not, put down.

Now it is this change in one's thoughts and feelings concerning religious matters, that constitutes what is sometimes called a " new birth," sometimes " *getting religion*," and at others, " a change of heart."

It is well known to every one at all acquainted with the

animal economy, that the expression, *change of heart*, as used by religionists, is as figurative, though not quite so ambiguous, as the expression, *born again of water and the Spirit*.—The heart is a thick muscular organ, situated in the chest, and containing four apartments. Its function is to assist in circulating the blood, by which it is excited to act. It possesses a much lower degree of sensibility than the skin, and is never the seat of any feeling except it be in a diseased state. Its action is often accelerated during the passions, probably in the manner we have explained in the course of this work; but it has no more to do with a man's thoughts and feelings than his lungs; and we have no more reason to suppose it is ever the seat or habitation of any good or evil spirit, than we have to believe there are such beings in existence as witches. It is less liable to *change* than almost any other important organ, and every change of it is a disease, requiring medicine. But the heart is in the neighborhood of those nerves which take on conscient actions during the sensorial passions, and as it is often influenced by these passions, it is not strange that the ancients regarded it as the seat of some of them, as well as of good and evil spirits,—a mistake which gave rise to language that is still in use with those who prefer ambiguous to plain matter-of-fact language.

There are some who seem to regard their religious joy not only as the effect of some supernatural agency, but even as evidence of the divine origin of the religious doctrines which they believe; but these we think are mistaken notions. Indeed, if every person who firmly believes the doctrines of the christian religion, who has repented of his sins, and made a profession, should not be as happy as any person ever was, it would be something so unnatural that no philosopher could account for it. What! a man believe that he is a sure candidate for eternal and consummate happiness, and not be

transported almost to madness. All the happiness of the oldest man that ever lived is as nothing compared with such a sum of happiness as this; yet how often do we see men almost frantic with joy on meeting with a little good luck, which they know can be a cause of happinesss to them, but a few short and uncertain years? Surely, if there be any mystery concerning the religious joy of penitent and professed believers of the doctrines of the christian religion, it is because they are not much more happy than they are. We should think they would sink into perfect apathy as to the things of this world, and anxiously await the hour of death. We cannot account for their love of life, and their sorrows under wordly misfortunes, but by supposing that their belief in future bliss is not of the highest degree.

As to religious joy being any evidence of the truth or divine origin of christianity, it certainly is not. If a poor man should purchase a ticket, and afterwards be informed that it has drawn 20,000 dollars, in such a manner that he would firmly believe it, his joy would be just as much evidence that he has drawn this sum, as religious joy is, that the religious doctrines are true, or of divine origin. In neither case is the joy any evidence of any thing, more or less, than that the man *believes* —no evidence at all that what he believes is true. If the poor man firmly believe that he has drawn 20,000 dollars, his joy is the same whether in reality he have or have not.

Neither is the fact that learned men of well organized brains, believe in the christian religion, the least shadow of evidence of its truth or divine origin.—We are no novel readers, but we presume there is no fiction extant but what would be believed by as many enlightened men as believe in the christian religion, had it been published in the same age of the world, and as many millions of treasure, and the labor of as many millions of educated men been expended in its cause,

as have been expended in the cause of christianity, since its first introduction into the world.

One grand reason why so many believe in the christian religion, is this ; They are not only taught to believe it, before they are old enough to reason, but they are at this tender age deeply impressed with the idea that they *ought* to believe it, and that they will be eternally wretched after they die if they do not believe it : consequently they think that they are not only justifiable, but even praiseworthy, in reading every thing that has been written in favor of it, and rejecting, without reading, every thing that has been written against it. And this delusion is not a little encouraged in maturer years by those influential persons who have a pecuniary interest in the cause of religion. Only let all persons come to the *age of reason* before they are made acquainted with any religious notions more than what they draw from the book of nature ; afterwards present them with the bible, together with all that has been or can be written, both for and against it ; and let as many persons, under equally favorable circumstances, be employed to convince them that christianity is not divine, and the general scheme of it not true, as there are to convince them to the contrary ; *then* might the preponderance of either party be considered as some small evidence in favor of its principles.

But when we consider how much time and treasure, as well as blood, have been expended in the cause of christianity ; the smallness of the proportion of mankind which truly believe in it, seems to argue much against its truth and divinity. Only about one fifth of the human family are called christians, and as much as one half of this one fifth are not believers in christianity ; and not more than one of a thousand that do believe in it, ever as fully examined what has been written against it, as what has been written in defence

of it; and nine tenths of the one ten thousandth part of the human family who have thus examined, had some selfish motives in maintaining it. Finally, we think it would be difficult to produce a single instance of a person believing in the christian religion, who examined into its negative side, before he were deeply impressed with the idea that it is true and sacred.—Where are our deistical schools and colleges, openly and professedly such? where our deistical presses? where our deistical teachers, all over the country, calling the people together every seventh day, or oftener, to impress them with their doctrines? Where the numberless deistical books, tracts, and weekly papers, thickly scattered abroad, so as to be in every man's house? They are not to be found. Only let deism and christianity be on an equal footing as to all these things, and then see which is most easily maintained among the multitude.—Let a century pass away, and again see if the number of enlightened christians so exceeds the number of enlightened deists, that any one would think of regarding it as any evidence of the divine origin of christianity.

If we represent by one, the means that have been operating in the cause of deism in the United States since the landing of our fore-fathers at Plymouth; the means that have operated in the cause of christianity in these states since that time, may be represented by 100,000. Yet it is probable that the number of intelligent and confirmed deists at present in the United States, is, to the number of enlightened and confirmed christians, at least, as one to ten. Accordingly, a certain amount of effort in the cause of deism has given rise to 10,000 true and enlightened deists; whereas an equal amount of effort, in the cause of christianity, has given rise to only one such christian.*

* In speaking of enlightened christians as in the text, we do not mean to be understood that they are enlightened in respect to the

Surely, we need not suppose that christianity has the least divinity about it, or that those who believe in it are weak-headed, to account for its success.—There is no doctrine under heaven, false or true, but what would be as widely diffused and as long maintained, if it had been introduced eighteen hundred years ago, and as much effort been made in its behalf, as has been made in the cause of christianity for eighteen hundred years past.

We have now treated of the nature and causes of the "religion of the heart,"—more properly, the religion of the nervous system. In doing this, we have laid down what we consider the general scheme of the christian religion, in plain English.† But no friend of truth will censure us for this; for whatever is not true ought not to be believed, and whatever is true, so far from suffering by being stated in plain, matter-of-fact language, will even stand the test of argument.—All doctrines in which the unlearned as well as learned, have a deep interest, ought, as much as possible, to be stripped of all figurative and ambiguous expressions, and exhibited in their true colours. Error is an evil which is sometimes suffered to exist among the multitude, merely because it is dressed up in such a style that they cannot see it. Furthermore, all important doctrines ought to be most scrupulously tested by reason, for this is the only way in which we can determine what is true and what is false, excepting those cases in which

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religion which they profess; for most of them have not examined into its negative side; and no man can be said to be enlightened concerning any question until he be acquainted with what can be said both for and against it.

† There is so much dispute and contention in the world about, *what is christianity?* that we do not presume to decide what it is; but we think we have sketched the outline of what the most prevalent sect of religionists in christendom call christianity.

we can have the evidence of our senses.—If any body know of any other way, we wish he would point it out.

I do not presume to say for a certainty, but that the original organization of my brain is such, and such the impressions that have been made upon my senses, that my sentiments concerning all religions, pretending to divine origin, are quite erroneous. I do not use the expression *I know*, to express any of my convictions that are the result of a long and complicated judging process. In all these cases I can, with propriety, only say *I believe*; for every conviction which is the result of a judging process, depends on the facts which we think over; and no man can ever be certain that he knows—or in a judging process concerning any question, thinks over—all the facts that relate to the question. Because a man sees as far as he can see, it would be presumption in him to say that no one sees any farther, or that there is nothing to be seen beyond what he sees.

I will further remark, that I consider every man's belief—be what it may—as the necessary result of certain causes; and I should about as soon think of condemning a man for being born with only one arm, as for believing whatever he does believe, or for not believing as I believe.

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CHAPTER XXIV.

On Phenomena referred to Instinct.

The organic passions often lead animals, especially young ones, to perform many actions before they have learnt, by experience or otherwise, whether what they do will be to their good, in the end, or not. But it so happens that the Great

Designer has caused them to be so organized that they are seldom pushed on by these passions to do any thing which is not subservient to their own individual good, or to the propagation and well being of their species. It is on this account that these instinctive actions, as they are called, have greatly puzzled philosophers, and led them to conjure up many strange notions concerning them.

One [Des Cartes] is led to maintain that brutes possess no peculiar or physiological properties, but are mere mechanical (not physiologically organized) machines; and of course are never the subjects of sensation or a thought, however much they may appear to enjoy pleasure and endure pain. According to this doctrine, all instinctive actions must be merely mechanical, and the young mammalian is drawn to the breast of its mother, I suppose, by the scent of the udder, a scent however that is not smelt by the young animal. Another [Darwin] maintains that it thinks over a train of thoughts relative to the subject, and comes to the conclusion that it will be well for him to lay hold of its mother's teats and suck a little. A third [Cudworth] holds that "an active and plastic nature!" exists throughout the world independent of "pure mind" or pure matter, and that matter is solely rendered visible and endowed with manifest properties by a union with this plastic nature. Such one conceives "that all instinctive powers might be resolved into the operation of this plastic nature."*

What a *power* is, that it may be "resolved into an *operation*," we leave for close thinkers to determine; but if this "plastic nature" be that which renders pure matter visible, and be also the cause of instinctive actions, we would ask, (since Good has suggested the idea,) why all visible matter,

*See "Good's Book of Nature," vol. 1, p. 307, Boston edit. 1826.

unorganized as well as organized, does not, now and then at least, exhibit instinctive phenomena.

A fourth [Cuvier] asserts that "the understanding may have ideas without the aid of the senses; two thirds of the brute creation are moved by ideas which they do not owe to their sensations, but which flow immediately from their brain. Instinct constitutes this order of phenomena: it is composed of ideas truly innate, in which the senses have never had the smallest share."

What the *understanding* is, and where it comes from—what innate ideas it possesses—how it holds them, or where they are packed away—what ideas are, that they may *flow* immediately from the brain—what sort of instinct it is that is *composed* of innate ideas, at the same time it *constitutes* an order of phenomena—how the ideas of the *understanding* flowing immediately from the *brain*, can move *two thirds* of the brute creation, and not the other third, are questions which the materialist feels himself under no obligations to answer—he considers the whole talk perfect nonsense.

The learned Dr. Good appears not to have been satisfied with either of the above *doctrines* concerning instinctive actions; and by regarding many phenomena as instinctive, which the above mentioned authors did not regard as such, he finds no difficulty in making it appear that they cannot all be accounted for upon the principles of either. Accordingly he begs the candid attention of the audience to which he is delivering a lecture, while he presents to them a new view of the subject.

That he may not build upon sand, but have his speculations based upon a rock, sure and steadfast, he first proceeds to prove the existence of a "*principle of life*." This he does by showing that there are essential differences between organized and unorganized beings; which differences must, *of*

course, be owing to the superaddition of a *principle of life* to the former. He says he does not know exactly what this principle of life is,—that some have thought it caloric, some oxygen, and some electricity; but be its nature what it may, it is a "controlling and *identifying* power" to be traced "in every organized system, whether animal or vegetable, and in every part of such system, whether solid or fluid." He now tells us ("Book of Nature," vol. 1, p. 383.) that "the *agency* by which it [principle of life] operates is that which we denominate or should denominate INSTINCT"—"or to speak somewhat more precisely, instinct is the operation of the living principle, whenever manifestly directing its operations to the health, preservation, or reproduction of a living frame, or any part of such frame." At page 388, the same book, he says, "instinct may be defined the operation of the principle of organized life by the exercise of certain natural powers directed to the present or future good of the individual."

Now it appears to us that the Doctor has thrown no light at all upon those phenomena of organized beings called instinctive. Had he shown us satisfactorily what instinct is, this would not be to explain the phenomena called instinctive.—To make it appear that some unknown thing exists, and to give it a name, is not to *explain* those phenomena that are *referred* to this unknown thing; but the Doctor has not even shown us, satisfactorily, what instinct is. His *principle of life* is a brain-begotten thing, having no being in reality; and the "certain natural powers" by which it operates can be nothing besides the principle itself, and the same may be said of its operation; yet the sum and substance of what he has told us about instinct, is, that it is this "operation."

We grant that under the present state of our knowledge, it may be difficult to give a satisfactory explanation of instinctive actions; but this is sure: he that says organized beings

act as they do, under the circumstances they are placed, because they are organized as they are, gives as complete an explanation of all their actions, as he that refers these actions to unknown entities. What is the difference, so far as it respects the mere explanation of an action, whether we say it is an action of an organ which is organized so as to act thus, under the circumstances of the case; or whether we say it is an action of an organ which is enabled to act thus, by the superaddition of an immaterial principle? Or, what is the difference, whether we say the conscient phenomena of animals are actions of organs, or say they are actions of a soul, a life, a will, an instinct, &c. &c.? To be sure, in the one case we *refer* these phenomena or actions to real beings, of which a man may have some idea, in the other case, to brain-begotten nonentities, of which a man can have no idea; but so far as it respects any *explanation* of these phenomena, there is no difference except in sound: only give these organs the names of soul, will, life, instict, &c. and there would not be even this difference.

Altho' we do not profess to be able to give a complete and satisfactory explanation of instinctive phenomena; still we cannot close this chapter without offering a few more sentiments concerning them, than we have in the fore part of it.

We suppose that the organic passions, which, by the by, may be called *appetites*, *desires*, *longings*, *hankerings*, and perhaps we may add, *propensities*, are the springs that give rise to instinctive actions. This being granted, the following questions arise. First. Why do animals ignorant of consequences, so seldom do any thing which is not subservient to their well being? Second. As an organic passion is not a muscular action, but a cause, more or less remote, of muscular actions; what events take place in the system between the rise of an organic passion and the muscular contractions that must and do take

place in gratifying such passion; or in other words, in what way do the organic passions give rise to muscular actions?

In answer to the first question, we say that animals are so organized that they have no *natural* appetites or propensities to do any thing which is not for their good; and not being led to do any thing because they *judge* it will be to their good, (as they often are after acquiring many sensorial tendencies, and hence often do wrong, for they often judge erroneously,) they seldom do any thing which is not to their good.

The second question is the most difficult to answer; but in our attempts to answer it, we may derive some aid from the facts, if facts they be, pointed out in the chapter on volition.

Those organic passions which give rise to instinctive actions we will, for the present, call *hankerings for something*—not hankerings for any particular thing which the young animal has any idea of before he have seen it—but a *hankering for something*, or if you please, a *hankering*. The young duck hatched by a hen has a hankering for something, and the new-born calf has a hankering for something; but suppose them both at the side of a pond, the one with its foster-mother the hen, the other with its natural mother a cow; the hankering of the duck will cause it to rush into the water, while the hankering of the calf will cause it to lay hold of the cow's teats and suck. Now why this difference? Why does not the calf rush into the water, and the duck attempt to suck the cow? We cannot say the duck's hankering is *a desire to go into the water*, and that this is the reason it goes into the water; for a *desire to go into the water* supposes an idea of water, but by supposition, the duck has no idea of water. We believe it is an *ultimate fact* that whatever will gratify an inward longing of a young animal, looks good as soon as he sees it, feels good as soon as he feels it, and tastes good as soon he tastes it, without having previously learned that it will promote

its health or make it grow; and that the duck goes into the water because its organic passions are such that the water looks good, or seems desirable; and that the calf lays hold of the cow's teats for similar reasons.

But an animal to have a hankering, and to see something before, is not to lay hold of such thing—to lay hold supposes motions, supposes muscular contractions, supposes motive actions of the nervous system: now what *governs*, as we may say, these motive actions? Are they immediately *antecedented* or caused by the conscient actions that constitute the hankerings? or are they immediately antecedented by the actions excited by the things that appear good, desirable or inviting? or do they set in, on the co-existence of both these sensations? The duck may have its hankering for something, but seeing no water may stay by the side of its mother the hen, which never goes into the water; and again, the duck having been in the water suffers such a change in its system, that for the time being, has no such hankering, but a desire to return to its mother on the land, and so goes to its mother, and does not immediately go into the water again, although it still sees the water. Such being the facts, it would appear that in the case of the duck, the hankering and the goodly looking thing, have each a share in giving rise to its movements.

But it may be said that migrating birds and fish steer off certain courses to certain places which they never saw; and this too perhaps without being guided by any that have seen such places; and to such birds and fish these places do not look desirable or pleasant; for they neither see them nor have an idea of them. Now what causes these birds and fish to steer off these courses as they do? We suppose it is the mere pleasure,---the mere feeling of fitness or right which they experience in doing so; and we suppose if they turn out of these courses, they do not feel well, do not feel right.—

suppose that a young duck hatched by a hen, on a dry plain, would steer off some straight course until it came to water, if its organic passions were such that it would experience a pleasurable and proper feeling merely in doing so.

We suppose that migrating birds and fish steer off to other regions at certain times o' year, because at such times o' year such changes take place in their inward feelings, and in the weather, that they feel better in doing so, than in staying where they are. Young animals act from the feelings of the moment, and not from any long-headed calculations about future consequences; and they do that which is right because there is nothing to cause them to do otherwise, and there are no effects without causes.

Men may draw some confirmation of what we have said concerning instinctive phenomena, by considering what they experience in themselves. We have supposed that instinctive actions are such as the organic passions lead animals to perform without knowing, and consequently without thinking about or regarding, the consequences of such actions; now do not organic passions often lead men to perform actions, not because they expect any future good to arise from performing them, but because of the pleasure they experience in performing them? Do they not often act without paying any regard to or even thinking about future consequences, and even in some cases in which they believe the future consequences will be bad, rather than good? Think of the venereal appetite. In ninety-nine cases of a hundred, we consider *these movements* as strictly instinctive, and not performed because, by a chain of reasoning, the man or woman has come to a conclusion that it will be to his or her future well being. Nature spurs them on as she does the young mammalian to suck.

Again. Does not a man know that a lady looks peculiarly good, desirable, or inviting, on account of a peculiar organic

passion of his? and does he not know that when this passion is gratified, his mere sexual love is abated; but that it returns again, as the passion returns? And I would put this question: Suppose a man have been brought up to the age of 20, without ever having seen a woman or learned any thing concerning one, and yet so brought up as not to fear to approach any being. Now let him loose among women and all sorts of animals—let not a word be said, or an indicative motion be made; (we will have the women naked if you please;) do you not suppose the women would seem to him more agreeable, fitting and desirable than any of the other living beings about him? Would he not associate with them, in preference to any of the other animals? If you admit these questions, why would you not admit that water looks desirable to an untaught duck, and that he rushes into it, not because he has learnt by experience that it will be to his good, but because of some organic passion?

If the immaterialists are not satisfied with our speculations concerning instinctive phenomena, (we do not say concerning *instinct*, for there is no such thing,) may they offer something better: remembering all the while, that we do not calculate to be deceived by empty talk, and led to suppose that they explain things when they only *mystify* them.

CHAPTER XXV.

On Sleep.

According to our views, nothing is easier than to define sleep. It is that state of a living animal, in which no conscient actions occur. Indeed, we may leave out the word living, for in truth a dead animal is just no animal at all; and such are the sentiments of those who say of a man who has died, *he no longer exists.*

But although we can have no doubts that a sleeping state is a state in which neither sensations (of course not perceptions) or thoughts occur, still some questions may arise concerning sleep; as, does a man ever sleep? if he do, what causes operate in bringing him into a sleeping state? and *how* do these causes operate in bringing about the ultimate effect?

There are but few, perhaps not any, who will not readily admit that they do sometimes sleep, according to our definition of the term; but putting aside one's own belief about the matter, it is not so easy to prove, by argument, that a man ever sleeps, as some may at first think. However, he that asserts that a man never sleeps, asserts that of which there is not any evidence—there is nothing to favor the opinion that a man never sleeps; his continuing to breathe, we consider as no evidence of such opinion. But there are some considerations in favor of the opinion that a man often sleeps, and they may have some weight with those who may be disposed to maintain that a man's belief that he sometimes sleeps, is no proof that he believes correctly.

It must be, and is admitted, even by immaterialists, that thinking supposes some kind of exercise of the brain;* and

* Abernethy, the latest medical writer whose love of popularity

every studious man is as sensible that this exercise wearies his brain as he is that walking wearies his lower limbs. He knows too, that during those hours in which he is not awake, and in which he does not dream *as he can remember*, this weariness of his brain, like the weariness of his limbs, goes off; but when he does dream, as he can remember, he is sensible that the weariness of his brain does not pass off, as when he does not dream. Finally, there is much evidence in favor, if not absolute proof of the opinion, that a man often sleeps; and until something more than we can now think of, can be brought in favor of the opinion that a man never sleeps, it will be a principle with us, that a man sleeps during that time which seems a perfect blank to him, and during which he dreamt not, as he can remember.

The causes of sleep are muscular, or even mere sensorial, exercise; narcotics; and compression of the brain.

By exercise, the sensorium, or we may say, the whole nervous system, suffers such a change that it is not in such good condition to act—is not so disposed to act, as before such exercise, other things being equal. Hence stronger or more interesting impressions, or stronger sensorial tendencies, are necessary to keep a man awake after exercise, than before; hence, too, a man retiring from noise to a soft couch, and closing his eyes, sooner ceases to think and sense, after having studied or toiled all day, than he does on placing himself in a similar situation when not tired.

We may say that exercise is a predisposing cause of sleep, and the avoiding of impressions a more immediate cause. To go to sleep, is to have all conscient actions cease. We do

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has given him courage to advocate the doctrine of immaterialism, has "admitted the assertion that the brain is as much an organ of sensation and thought, as the liver and stomach are organs for the secretion of bile and gastric fluid."

not believe that in ordinary cases, the conscient actions of th brain are stopped by any accumulation of blood within the brain. There is no need of such a supposition to account for ordinary or healthy sleep. We do not see why, when the brain is not in a good condition to act, and strong impressions are avoided, it should not cease to act until it suffer a change of condition, or until stronger impressions are made upon some of the sentient nerves.—Because the sensorial tendencies are sufficient to keep up an action of the brain when it is in a good condition to act, it does not follow that they may keep up such actions under other circumstances.

But there is some reason to suppose that narcotics induce sleep by causing the vessels of the brain to become more distended with blood, hereby obstructing the actions of the sensorium. It may be, however, that they affect the condition of the brain, so as to cause sleep in some other way. This is certain, after full doses of opium are taken, the vessels of the head become more full. By turning to page 163, the reader will find our notions concerning the *modus operandi* of opium in producing sleep. We wish the immaterialists would tell us how they suppose opium operates in stopping the actions of their unextended soul, or prevents it from changing "states."—An unextended thing can never be *squeezed* or obstructed in any of its actions : we suspect, too, that it possesses no chemical affinities.

That morbid sleep is sometimes caused by compression, there can be no doubt. A pice of skull driven in upon the brain, or an accumulation of blood as in apoplexy, or of water, as in hydrocephalus, stops the conscient actions of the brain in this way ; and when no conscient action of the brain can be excited, (meaning by brain all the nervous matter within the skull,) no sensation can be excited ; for the co-existence

of a conscient action of the organic and cerebral extremities of a nerve is as essential to a sensation as two tongs put together are to a pair of tongs.

Before closing this chapter, a few words may be offered concerning some of the causes that may prevent sleep. It is quite conceivable and even probable that a morbid action of the minute vessels of the brain, especially that part of it which we call the sensorium, may prevent the conscient actions of the sensorium from ceasing, may cause a morbid watchfulness. The physician often finds great difficulty in causing his patients to sleep in such diseases as are attended with an excited action of the vessels of the brain—excited, as he has good reason to believe from other considerations than merely that his patient cannot sleep. With that disease peculiar to hard drinkers, known by the name of Delirium Tremens, or Brain Fever, it is not uncommon for patients to pass three or four days and nights in succession without sleeping.

Another cause of watchfulness may be exceedingly strong sensorial tendencies.—Whatever appears to us to have an important influence on our happiness, interests us greatly, and whatever interests us greatly, gives rise to very strong sensorial tendencies; either because we think much about it, or because our thoughts relative to this thing are very intense. Now when the sensorium is strongly disposed to think about any thing, the man will sometimes lie tumbling and thinking half the night, in spite of all his "willing" to go to sleep. When any painful disease exists; when the brain is in a rested state; or excited by tea, spirits, &c. it is difficult going to sleep.

For the purpose of further illustrating and confirming the metaphysical, or more properly, physiological principles, we have already advanced; and with the view of dispelling some

of the darkness which hangs over several interesting subjects, we now proceed to treat of some of the morbid actions and conditions of the nervous system.

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CHAPTER XXVI.

On Dreaming, Somnambulism, and Somnamloquism.

Man exists in three states, a sleeping, a dreaming and a waking state. The dreaming state though essentially different from either of the other two, partakes more of the nature of the waking than the sleeping state.

Although it is very common for persons to dream, we class dreaming among the morbid actions of the nervous system; and chiefly for the three following reasons: First, Diseased persons are more apt to dream than well ones. Second, We cannot see that dreaming is subservient to the well being of the individual who dreams, as all healthy actions are. Third, We suppose that in dreaming, conscient actions sometimes commence in the sensorium and extend into the nerves, as they probably do in delirium, which last affection is universally admitted to be a morbid one.

There is no difficulty in pointing out an obvious distinction between a sleeping, and a dreaming or a waking state; but to determine the precise nature of the difference between a dreaming and a waking state, appears to be rather more difficult. And although it will be admitted that in most cases there is a wide, nay, an essential difference between these two states; yet, for a short time, a man sometimes exists in such a state that he scarcely knows whether to consider it a dreaming or a waking state.

We believe that in a dreaming state, either the organic extremities of the nerves, or the parts exterior to them, are in such a state that impressions do not so readily excite conscient ctions in them as in a waking state; we believe also *that the sensorium is not in so active a state as in waking hours.* But both of these things together do not constitute all the differences between a dreaming and a waking state—there is something more, but this something more may be owing to the torpor of the senses.

We believe, as the reader knows, that conscient actions sometimes commence in the sensorium and extend into the nerves: now this is what we suppose takes place when a man dreams of seeing objects, hearing noises, &c. We believe that when a man dreams of seeing any object, he has something more than an idea or conception of such object—we believe that the same, *or very nearly the same*, conscient actions take place in him that would were he, when awake, to look at such object. In short, we believe that when a man dreams he very often has—what we will for the present call—perceptions without impressions; and that this constitutes another difference between a *dreaming* and a *waking;* or if you please, between a *dreaming* and a *waking state.* But conscient actions may extend from the sensorium into the nerves when a man is dreaming though not when he is awake, *because the senses are in a torpid state.* It must be admitted that only one action can take place in the same part at the same time; and it is not unreasonable to suppose that when the senses are in such condition as to be easily excited by surrounding impressions, these impressions excite the sentient nerves more strongly than the thoughts can excite them. Hence in a healthy waking man, we have no perceptions without impressions; (not considering *states* of organs as impressions.)

Curious questions now arise :—When a man dreams of hearing noises, seeing objects, &c. do the conscient actions which extend from the sensorium into the nerves, extend to the organic extremities of the nerves, or only into their cerebral extremities ? And if they extend only into the cerebral extremities, what shall we say they constitute ?—It is clear that they constitute neither a *sensation* or a *perception*, according to our definitions of these terms, and yet they are something more than a thought.

Our views concerning these questions are rather *complicated ;* but we will labor to express them as clearly as we can. We are inclined to believe that conscient actions very frequently extend from the sensorium into the cerebral extremities of the nerves in dreaming, but rarely so far as to the organic extremities. In the former case we would say these actions constitute *imperfect* retrograde perceptions ; in the latter, *perfect* retrogade perceptions. Now with respect to the optic and auditory nerves, their organic and cerebral extremities are so near to each other, that an imperfect optical or audial perception may be so nearly like a perfect one, as to influence a man's conduct the same as a perfect one. If so, a man on awakening, after having had an imperfect perception of his friend, would say (for to *say* is to *conduct*, as much as to run, stab, or perform any other muscular action,) " I have dreamed of seeing my friend, and it seemed the same to me as though I had really seen him."

But with respect to those nerves, the organic extremities of which are more distant from the cerebral, we believe that a conscient action of the sensorium and of the cerebral extremity of one of these nerves, would not constitute a *seeming* so like that consisting of a conscient action of *both* extremities of such nerve and the sensorium, that the man would say they are the same. Therefore, as we seldom have *perfect* per-

ceptions while dreaming, it seldom seems to us as though we experience *feelings* in distant parts of our bodies, or in other words, we seldom *have* feelings in distant parts of our bodies, which feelings are CAUSED by the actions of the sensorium. It is true, we may dream of seeing a red hot iron, or a piece of ice, and of laying our hands upon them, (for all this would be but to have conscient actions of the sensorium and the *optic* nerves,) but on awakening we should not say it seemed to us as though the iron burned us, or the ice made our hands ache with the cold. We ourselves have dreamed of holding our hands in a fire, but we were never burned in such cases—we never smarted at the time, or awoke as we should if fire had actually been applied to our hands. But we have dreamed of seeing objects, [have had imperfect optical perceptions of objects when not awake,] and our consciousness was so very near like a perfect seeing of such objects, that at this moment we should say, *precisely* the same actions took place in us, that would were we to look at such objects when awake; were it not for certain pathological facts.*

That we have something more than ideas of objects when we *see* them in our dreams, we no more doubt than we do that we ever dream.—Every man must know that there is an *essential* difference between a sensation and an idea; that they do not differ only in degree, and if any one doubt his having any thing more than pretty vivid ideas of objects when he *sees* them in his dreaming hours, we would request him to

* It is said that after a man has had the organic extremities of his optic nerves destroyed, he still dreams of seeing objects as before. And a young man rendered perfectly blind by a disease which undoubtedly affected his optic nerves in some part of their course from the sensorium to the retinæ, tells me that he still sees objects in his dreams, as before he met with this lamentable misfortune.

pay attention to his dreams, *when he dreams*, or as soon as he awakes.*

As to audial perceptions while dreaming, we believe that we frequently have imperfect ones, and sometimes perfect ones ; and that the latter are those which cause us to awake as suddenly as though the perception were a natural one—as though it were excited by an impression.

As to those perceptions which consist, in part, of actions of nerves of feeling, we believe there are many men, and some women, who might testify that they have, while dreaming, experienced such perceptions ; attended too with other sensible phenomena which convince them that there is no mistake about the matter. But there may be some dispute whether these perceptions commence in the sensorium, or the genital organs.—We are of the opinion that they sometimes commence in the one, and sometimes in the other.

We have said that the sensorium is less active in a dreaming than in a waking state. By this, we mean it is not so much disposed to act, and its actions are less intense than in a waking state ; but many say their thoughts or ideas are more distinct or vivid when dreaming than when awake ; and such persons may be disposed to maintain that whatever thinks is more active during dreaming than during waking hours. Such persons, we believe, mistake weak or imper-

* It is not so absurd to request one to attend to his dreams while dreaming, as some may think : owing to our desire to determine what takes place in us when we dream we have often dreamed about our dreams and satisfied ourselves at the time, that when we see objects or hear noises in our dreams, we have something more than optical or audial *ideas* of such objects or noises. How much weight waking men in general may place in their dreaming conclusions, we know not ; but our requesting them to attend to their dreams while dreaming, may be a cause of their doing so ; and by doing so, they may be satisfied at the time, that they have something more than mere ideas.

fect perceptions for vivid ideas. Perhaps, by closing our eyes when awake, we may have more distinct ideas of absent objects than when they are open, and this too for obvious reasons ; but when a man is dreaming, we believe that the conscient actions of his sensorium, and nerves too, are less intense, and those of the sensorium less numerous, than when awake.

It has been said that in dreaming hours, our thoughts occur in very unnatural relations, and that we imagine many strange and unnatural things ; and yet it is generally admitted that their succession is governed by the same principles as when awake. Now if their succession be governed by the same principles as when awake, and they do in fact occur in odd relations, we do not see how the immaterialists can account for the fact. If they assert that these principles are any thing besides ultimate facts or *laws of thought*—which, by the by, are as truly *laws of nature* as any other ultimate and universal facts—we call on them to prove the assertion ; but if they admit that they are nothing more, we ask if these principles, these laws of nature, are *out of tune*, when a man dreams ; and if not, we ask the cause of his thoughts occurring in unnatural relations.

The materialist, however, is not much puzzled by the phenomena of dreaming : he supposes that if our ideas, when awake, should become perceptions—that if our sensorial actions should be attended with corresponding actions of the optic and auditory nerves—we should hear noises, see strange objects, and be in as many different and distant places in a minute, as when we dream ; our *ideas* or *sensorial* actions occurring in the same natural order that they now do, when we are awake. If the optical and audial *ideas* which I shall have while writing the following paragraph, should, at the time they occur, be attended with nervous actions, so as

to become optical and audial *perceptions*, I should (as really as when I dream,) see as many strange things, be in as many distant places, and converse with as many absent friends, in a minute, as I did in my last night's dream.

Thousands of soldiers on Deerfield Plains—*Shoulder arms*, cries out that tall officer with a long red and white feather in his hat—Ah, here's the city of Troy—What a noble block of buildings that—Really, friend Jones, I am right glad to see you here at Brighton again—did you thrust your fist down a wild boar's throat and pull out his liver and lights? No, but I rode through the air astride a barber's striped pole, and saw the clouds burning with a blue flame, and a mighty snapping there was—Come along here; do you see that monstrous ox, with a ram's head sticking out just behind his udder!

While writing the above sentence I had ideas of distant places, unnatural things, absent friends, and of sounds; and if my ideas had been perfect or imperfect perceptions I should have experienced something very similar to what a dreaming man experiences; yet no one will contend that my thoughts did not occur according to the same principles that they do at other times; or contend that it is any more strange that they should occur as they did, than it is that an idea of *squills* should be followed by ideas of a sick man, coughing and spitting.

But notwithstanding what we have said, we admit that a man's dreaming thoughts may often occur in singular relations, and we should not be at a loss to account for their doing so. We may suppose that as the sensorium is not in a very active condition during dreaming, many of its tendencies may be too weak to give rise to actions; hence instead of thinking over all the thoughts that usually constitute a certain train, some of these thoughts may not occur, may be left out, as it were; and of course, those that do occur, occur in a new and singular relation.

It sometimes happens that when a man is not awake, those motive actions of his brain which precede the contractions of the muscles of locomotion and voice, will not set in, on the occurrence of certain sensorial actions, as they do when the man is awake. In such case the man may urgently desire to speak, or move his limbs or body, but cannot—his muscles do not contract. He has the Incubus or nightmare. We are inclined to believe that in some rare cases, even those motive actions of the brain which precede the contractions of the muscles of respiration, cease, and the person dies without moving a limb. We well recollect a death which we conjecture was caused in this way. It was the death of an elderly gentleman who had not been threatened with any kind of fits, nor suspected of having any disease of the bloodvessels. He died in bed; and from all appearance, it was evident that he died without moving a limb. Query. If in such cases, the circulation should cease the instant the respiration ceases, would such changes take place in the system as to render it impossible to excite it into action again, so quickly as when the heart continues to beat, and thus gives rise to accumulations of venous blood?

At other times those motive actions of the brain which precede the contractions of the muscles of loco-motion and voice, do as readily set in on the occurrence of certain sensorial actions, as when the person is awake. In such case the person talks, walks, and performs many other muscular actions. It is not generally the case, however, that the same person talks and walks in his dreaming hours; and indeed, sleep talking and sleep walking are considered as different affections, and are furnished with different names,—*somnamloquism* for the former, and *somnambulism* for the latter; but they are not essentially different, pathologically considered.

In some instances the somnambulist's eyes are wide open;

and it is probable that his optic nerves are in as excitable a condition as when his other senses are not in a torpid state, as when he is awake. If so, he has natural and perfect perceptions, he *sees* as distinctly as a waking man does with the same degree of light. At other times his eyes are closed, and he goes about from place to place as a man in the dark, or as a blind man, and sometimes meets with accidents. Those who are fond of the marvellous do not tell us of the accidents which somnambulists meet with, in their blind excursions; but these accidents occur so frequently that most men are acquainted with particular instances. We have many *wonderful accounts*, or many accounts of the *wonderful doings*, of somnambulists; but they have not puzzled philosophers so much as the somniloquists. The latter often utter long discourses, particularly religious discourses, when alone or when closely surrounded by many persons, and with greater fluency than they probably would, were they awake. If questions are put to them, they often give rational answers; and what is perhaps still more difficult to account for, they cannot remember, after they awake, that they dreamed or uttered any thing—*provided* we may rely on their testimony.

We suppose that somniloquists cannot generally remember their dreams, because they consist of ideas only.—A man never remembers his mere ideas. We remember our perceptions, that is, we rememder what we have *seen*, *heard*, &c. But to have an idea occur to us to-day, is not to remember that it occurred to us last night, or at any other particular time. Ideas may occur to us to-day, which are not new to us, and which we do not consider as such; but to remember that they occurred to us at a particular time, we must have an idea *of ourselves in a* PLACE *at a certain time*, must have ideas of the things that were around us at that time, and must think that this idea occurred to us when we were in such place. When a

man remembers a dream, he remembers or thinks of, what he *saw*, *heard*, &c. when he was not awake. A man may have thousands of mere ideas when not awake, but if he have no perceptions, he cannot say, when awake, that these ideas occurred to him when he was not awake: Millions of ideas occur to the waking man every day, and at night he may not be able to say, with certainty that one of them has occurred to him *this* day. The reader will remember that in the chapter on sleep, we came to the conclusion that we often lie hours together without having any ideas, not so much from the consideration that we cannot remember, after we awake, that any ideas occurred to us during these hours, as from other considerations.

But we shall be told that somniloquists do sometimes have perceptions; that they give rational answers to questions, and undoubtedly *hear* and regard, such questions. This we must grant; but they do not have such perceptions as enable them to say in the morning, that they had these perceptions the night previous. Ask them if they *ever* heard or thought of such question as you know was put to them last night, and they may tell you yes, but cannot say whether it was last night, yesterday, or a year ago.

If this way of accounting for the fact, that somniloquists are often, nay, generally, unable to remember that they dreamed *at the time* that bystanders heard them talk, be not satisfactory to all, we shall not thing it strange. We are not, ourselves, entirely satisfied with it; but under the present state of our ignoranee we cannot account for it in a more plausible way. We assume what we cannot prove, and what some may not be disposed to grant; and that is, that the dreams which somniloquists cannot remember, are not like the dreams which men do remember, but consist of mere ideas with a few scattering perceptions.

Should the remarks of the present writer be thought worthy of notice, the assertion, that we never remember our ideas, may give rise to ingenious discussions; and if so, we doubt not that it will be determined that we do not remember an idea, in the sense we remember a thunder shower, or any other event that takes place without.

That a man should readily hear when not awake, is not more strange, than that one sense should be less torpid, at the time others are more torpid.

The reason why somniloquists sometimes talk more fluently than they would were they awake, is this, their train of ideas relative to the subject concerning which they talk, is not interrupted by such discordant ideas or sensorial actions, as would occur were they awake. When a waking man converses with others on any subject, he thinks what words are most proper for him to use; thinks how his hearers will be pleased with what he says; thinks what they will think of his person and jestures; in short, he has many perceptions and ideas which prevent the regular, connected flow of ideas relative to the subject he is talking about; and hence does not converse with the ease and fluency that he would were he in the condition of a somniloquist. We are all of us acquainted with men who undoubtedly think finely in their studies; but who, when they attempt to speak in public, make very bad work of it. A man cannot speak in public, flippantly and to the purpose, until he be regardless about what words he uses, regardless about what his hearers will think: he must think right on about his subject, and nothing but his subject.

As to the immediate *causes* of dreams, they may be divided into two classes, *sensorial* and *nervous*. The sensorial causes are nothing more nor less than the sensorial tendencies; the nervous are such *states* of organs, and such impressions, as give rise to actions of our nerves.

There are many causes which serve to bring the nervous system into that weak, ticklish state which medical men call *irritable;* all such causes may be considered as predisposing causes of dreams. Affections of the digestive organs; mental, or more properly sensorial agitations, and hard drinking are of this kind.

When a weary man first goes to sleep, his nervous system is not in a favorable condition to act; but after sleeping some time, his nervous system becomes recruited, and as the sensorium is disposed to act—as it has many and strong tendencies to act, it will set to work of its own accord, if it be not set to work by some nervous action. Every thing else being equal, the stronger sensorial tendencies give rise to actions in preference to the weaker, and as we are strongly disposed to think about such subjects as we have *recently* thought much about, our *sensorial* dreams (speaking with reference to their cause) generally relate to such subjects as have lately engaged our attention during our waking hours.

When dreams are caused by states of organs, or by impressions, they generally have some relation to such organs, or to the impressing agents. Thus, if a bottle of hot water at the feet be the impressing agent, the person may dream of making a journey to the top of Mount Ætna and of finding the heat of the ground almost insupportable; if a blister applied to the head, the person may dream of being scalped by a party of Indians. The bladder and seminal vessels being replete with their respective fluids, give rise to dreams having some relation to these organs. A full stomach, obstructing a free motion of the diaphragm, causes an accumulation of blood about the heart and lungs, and in this way gives rise to a sense of weight or load at the breast; and the person dreams of a "huge and hideous spectre, tyrannically squatted upon the chest, and striving to take away the breath."

Persons often start suddenly as they are about going to sleep. How are we to account for this? We conjecture that the person's ideas become perceptions at this instant, and *seeing* himself in trouble the motive actions of the brain set in; for the nervous system is not yet entirely calmed down into an inactive state; but if it were, the motive actions would not thus set in and cause the man to awake; instead of this, he would lie in a troubled dream, desiring to move, but unable to do so.

We have expressed the opinion that, a *healthy* waking man has no perceptions without impressions, (as in dreaming,) because surrounding impressions hold the mastery over the sensorium in exciting the sentient nerves.* Now, in certain *morbid* states of the system this is not the case; but the waking man *sees* spectres or apparitions, and *hears* them talk; and this is as much as to say, he sees and hears what does not exist—sees and hears without impressions. Philosophers have not agreed on any name for the affection in which a person sees and hears, when awake without impressions, and is at the same time so far from being *crazy* as to regard the whole a delusion, or the effects of a morbid state of the body, requiring physic, leeches and blisters. It is an affection different from that commonly called *delirium;* for in this last the thoughts occur in irregular, unnatural relations—*the suggesting principle is out of tune*, or as some would say, "the judgment is disordered." However, these false perceptions of a waking man have generally been considered as "freaks" of that little unruly wanderer called

* This way of accounting for the fact that a healthy waking man has no perceptions without impressions, does not appear entirely satisfactory to us. At some future period some new sentiment concerning the matter may be advanced —Perhaps it may be hinted that when we are awake the sensorium is so active that our thoughts do not *stick by us* long enough to give rise to correspondiag actions of the cerebral extremities of nerves.

the "imagination."—We propose to denominate the affection we are now speaking of, *day-dreaming*.

We have recently met with the history of a case of day-dreaming in the New-Enland Galaxy, which was copied into that paper from the Western Monthly Review. The editor of this review finds the story in a work which is entitled "Beasley on the Human Mind," a work which is said to be a compendium of all that has heretofore been written upon the subject of the human mind. This story is the more interesting as it was originally given by the subject of the affection, who was evidently a man of observation, and not unacquainted with metaphysical subjects. We here give the story entire, as the editor of the Galaxy has taken it from the above mentioned Review.

'M. Nicolai, a member of the Royal Society of Berlin, some time since presented to that institution, a memoir on the subject of a complaint with which he was affected; and one of the singular consequences of which was the representation of various spectres or apparitions. M. Nicolai for some years had been subject to a congestion in the head, and was blooded frequently for it by leeches. After a detailed account of his health, on which he grounds much medical, as well as psycological reasoning, he gives the following interesting narrative.

'In the first two months of the year 1791, I was much affected in my mind by several incidents of a very disagreeable nature; and on the 24th of February, a circumstance occurred which irritated me extremely. At ten o'clock in the forenoon, my wife and another person came to console me; I was in a violent perturbation of mind, owing to a series of incidents which had altogether wounded my moral feelings, and from which I saw no possibility of relief, when suddenly I observed at the distance of ten paces from me, a figure, the fig-

ure of a deceased person. I pointed at it, and asked my wife whether she did not see it. She said nothing, but being much alarmed, she endeavored to compose me, and sent for the physician. The figure remained some seven or eight minutes, and at length I became a little more calm; and as I was extremely exhausted, I soon after fell into a troubled kind of slumber, which lasted for about half an hour. The vision was ascribed to the great agitation of mind in which I had been, and it was supposed that I should have nothing more to apprehend from that cause; but the violent affection having put my *nerves* into an unusual state, from this arose other consequences, which require a more detailed description.

'In the afternoon, a little after four o'clock, the figure which I had seen in the morning again appeared. I was alone when it happened; a circumstance which, as may be easily conceived, could not be very agreeable. I went therefore to the apartment of my wife, to whom I related it. But thither also the figure pursued me. Sometimes it was present, sometimes it vanished; but when seen it was always the same standing figure. A little after six o'clock, several stalking figures also appeared; but they had no connexion with the standing figure. I can assign no reason for this apparition, than that, though much more composed in my mind, I had not been able so entirely to forget the cause of such deep and distressing vexation, and had reflected on the consequences of it, in order, if possible, to avoid them; and that this happened three hours after dinner, at the time when the digestion first begins.

'At length I became more composed, with respect to the disagreeable incident which had given rise to the first apparition, but though I had used very excellent medicines, and found myself in other respects perfectly well, yet the apparitions did not diminish; on the contrary, they rather increas-

ed in number, and were transformed in the most extraordinary manner.

'After I had recovered from the first impression of terror, I never felt myself particularly agitated by these apparitions, *as I considered them to be really the extraordinary consequences of indisposition.* On the contrary, I endeavored as much as possible to preserve my composure of mind, that I might remain distinctly conscious of what passed within me. I observed these phantoms with great accuracy, and very often reflected on my previous thoughts, with a view to discover some law in the association of ideas, by which exactly those or other figures might present themselves to the imagination. Sometimes I thought I had made a discovery, especially in the latter part of my visions; but on the whole, I could trace no connexion which the various figures, that thus appeared and disappeared to my sight, had with my state of mind, or with my employment and the other thoughts which engaged my attention. After frequent accurate observations on the subject, having fairly proved and maturely considered it, I could form no other conclusion than that when the nervous system is weak, and at the same time too much excited, or rather deranged, similar figures may appear *in such a manner as if they were actually seen and heard;* for these visions in my case, were not the consequence of any known law of reason, of the imagination, or other usual association of idea; and such also is the case with other men, as far as we can reason from the few examples we know.

'The figure of the deceased person never appeared to me after this dreadful day; but several other figures showed themselves afterwards very distinctly; sometimes such as I knew, mostly however of persons I did not know; and among those known to me, were the semblance of *both living and deceased persons*, but mostly the former; and I made the ob-

servation, that acquaintances with whom I daily conversed never appeared to me as phantoms; but always such as were at a distance. When these apparitions had continued some weeks, and I could regard them with the greatest composure, I afterwards endeavored at my own pleasure to call forth phantoms of several acquaintances, whom I, for that reason, represented to my imagination in the most lively manner, but in vain; for however accurately I pictured to my mind the figures of such persons, I never once could succeed in my desire of seeing them externally, though I had some short time before seen them as phantoms, and they had, perhaps, afterwards unexpectedly presented themselves to me in every case involuntarily, as if they had been presented externally, like the phenomena in nature; *though they certainly had their origin internally;* at the same time *I was always able to distinguish, with the greatest precision, phantoms from phenomena.* Indeed I never once erred in this, as I was generally calm and self-collected on the occasion. I knew extremely well when it only appeared to me that the door was opened and a phantom entered, and when the door really was opened: and any person came in.

'It is also to be noted, that these figures appeared to me at all times, and under the most different circumstances, equally distinct and clear. Whether I was alone or in company, by broad daylight, or in the night time; in my own, or in my neighbor's house; only when I was at another person's house they were less frequent; and when I walked the street, they very seldom appeared. When I shut my eyes, sometimes the figures disappeared; sometimes they remained even after I closed them. If they vanished in the former case, on opening my eyes again, nearly the same figures appeared which I had before seen.

'I sometimes conversed with my physician and my wife,

concerning the phantoms which at the time hovered around me ; for in general the forms appeared oftener in motion than at rest. They did not always continue present ; they frequently left me altogether, and again appeared for a short time or a longer space of time, singly or more at once, but in general several appeared together. For the most part, I saw human figures of both sexes ; they commonly passed to and fro as if they had no connexion with each other, like people at a fair when all is bustle, sometimes they appeared to have business with one another. Once or twice I saw among them persons on horseback, and dogs and birds ; these figures all appeared to me in their natural size, as distinctly as if they had existed in real life, with the several tints on the uncovered parts of the body, and with all the different kinds of colours of clothes. But I think, however, that the colors were somewhat paler than they are in nature.

' None of these figures had any distinguishing characters ; they were neither terrible, ludicrous or repulsive ; most of them were ordinary in their appearance ; some were even agreeable.

' On the whole, the longer I continued in this state, the more did the number of the phantasms increase, and the apparitions become more frequent. About four weeks after, I began to hear them speak ; but for the most part they addressed themselves to me, and endeavored to console me in my grief, which still left deep traces in my mind. This speaking I heard most frequently when alone, though I sometimes heard it in company, intermixed with the conversation of real persons ; frequently in single phrases only, but sometimes even in connected discourse.

' Though at this time I enjoyed rather a good state of health both in body and mind, and had become so very familiar with these phantoms, that at last they did not excite

the least disagreeable emotion, but on the contrary, afforded me frequent subjects for amusement and mirth ; yet as the disorder greatly increased, and the figures appeared to me for whole days together, and even during the night ; if I happened to be awake, I had recourse to several medicines, and was at last again obliged to apply leeches.

'This was performed on the 20th of April, at eleven o'clock in the forenoon. I was alone with the surgeon ; but during the operation the room swarmed with human forms of every description, which crowded fast on one another ; this continued till half past four o'clock, when the digestion commences. I then observed that the figures began to move slowly ; soon afterwards the colours became gradually paler, and every seven minutes they lost more and more of their intensity, without any alteration in the distinct figure of the apparitions. At half past six o'clock all the figures were entirely white, and moved very little, yet the forms appeared perfectly distinct ; by degrees they became visibly less plain, without decreasing in number, as had often formerly been the case. The figures did not move off, neither did they vanish, which had also usually happened on former occasions. In this instance they dissolved immediately in air; of some, even whole pieces remained for a length of time, which also by degrees were lost to the eye. At about eight o'clock there did not remain a vestige of any of them, and I have never since experienced any appearance of the kind. Twice or thrice since that time I have felt a propensity, if I may be so allowed to express myself, or a sensation as if I saw something, which in a moment again was gone. I was even surprised by this sensation whilst writing the present account, having in order to render it more accurate, perused the papers of 1791, and recalled to my memory all the circumstan-

ces of that time. So little are we sometimes, even in the greatest composure of mind, masters of our imaginations.'

Those clauses which we have italicised in the foregoing narrative, are peculiarly interesting to us, as they are expressions of facts and opinions which coincide with our views.—Let us consider them separately and in order.

First. M. Nicolai regarded the opparitions which he saw, as no apparitions at all—no beings, material or immaterial; but "the extraordinary consequences of indisposition;" or in other words, morbid actions of that which thinks and senses, the nervous system.

Second. After maturely considering the subject, M. Nicolai came to the conclusion, "that when the *nervous system* is weak, and at the same time too much excited, or rather deranged, similar figures may appear *in such manner as if actually seen and heard;*" or as we should express it: When the nervous system is in an irritable state and much excited, such actions of the optic and auditory nerves may occur with impressions as would be excited were the man to see and hear actual beings.

The *third* clause in italics is especially worthy of notice, as it goes to refute the vulgar notions concerning the "souls" or "ghosts" of deceased persons. All who are so little acquainted with the animal economy as to believe in the existence of these brain-begotten nonentities, admit that when the unextended soul, or the extended ghost, (both the same thing—at least, the immaterialists have not informed us to the contrary) quits the body—quits it because its organization has suffered derangement—the *body* (not the *man*, for the immaterialists place personal identity in the sameness of that unextended thing which thinks.) dies; but M. Nicolai saw the souls, ghosts, apparitions, or phantoms "*of both the* LIVING *and the dead.*"

The *fourth* clause favors the opinion which we ventured to give (before we saw the above narrative) concerning our perceptions in night-dreaming; and that is, that these perceptions are for the most part *imperfect*, that is, they do not suppose an action of the *organic* extremities of nerves; and yet our *optical* and *audial* ones are so nearly like perfect ones, as to influence a man's conduct much the same as perfect ones, or in other words, as to be mistaken for perfect ones. Although M. Nicholai's morbid perceptions were almost exactly like natural ones—although they were certainly something *essentially* different from mere ideas or *conceptions*, still, being awake and rational, he "was always able to distinguish, with the greatest precision, phantoms from phenomena;" and we have no reason to suppose that he did so by resorting to the testimony of the sense of feeling—by putting forth his hands to feel the phantoms in the places where they appeared to be.

If the present chapter on dreaming have the effect of doing away the absurd notions so generally entertained concerning dreams, apparitions, ghosts, hobgoblins, and the like, we shall not think it useless.

CHAPTER XXVII.

On Insanity.

We treat of insanity in a physiological point of view; we have nothing to say of its causes or treatment; our object is to point out its nature. If the reader do not remember what judging consists in, according to our views, we would have

him return to the seventeenth chapter of this work, before he proceeds any farther.

It is not probable that a case ever did or will occur in which three of the five senses testified falsely concerning one thing; but if the eye, the ear, and the hand, should testify to any person that an enemy is present, threatening him, when there is not, such person would undoubtedly believe that such person is present, and all the world could not change his belief; of course, his conduct would be so influenced by his false perceptions, that all sane persons would pronounce him insane, respecting this enemy, if nothing more. We see, then, that a case of insanity from false perceptions is *supposable*. But the case of M. Nicolai shows that when the thoughts occur in a natural order—*when the suggesting principle is in order*, a man may have false optical and audial perceptions, and yet, so far from being insane, reason on *all* subjects as soundly as the soundest philosopher. This then is essential to insanity—*the suggesting principle must be out of order;* or in plain matter-of-fact language, the sensorium must act helter-skelter, first one thought and then another, without any proper order or relation.

When the nervous system is in such state that the sensorium acts thus, the schoolmen would say, the judgment is disordered; and furthermore, when the nervous system is in such state, false perceptions are apt to arise; when these occur, they would say, the perception is disordered, or the man is *delirious*.

According to our views, delirium is not essential to insanity; but, although a case of insanity from mere false perceptions, is *supposable*, insanity is essential to delirium. A certain variety of insanity is delirium, or delirium is a frequent attendant on insanity. The mere false perceptions which do in reality occur in a waking man whose thoughts occur in a

regular, natural order, do not constitute delirium—they constitute what we call day-dreaming.

If the reader be not satisfied with this short chapter on insanity, he may find a deal of learned nonsense concerning the subject, in various medical and metaphysical books.

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CHAPTER XXVIII.

On Idiotism.

As the intellectual powers of different species of animals are more or less perfect, accordingly as their brains are more or less developed; so the intellectual powers of different individuals of the same species correspond, in perfection, with the perfection of their brains; and one may decide with much certainty whether a man be a genius or a fool, merely by viewing his head. If the individual possess a full, high forehead, and other parts of the head in natural proportions, it is pretty certain that he is not a natural, that is, *congenital*, fool; and highly probable that he is a man of good natural parts; yet he may not be reputed as a man of talents, for although the sensorium be ever so fully developed and well organized, it cannot think without tendencies. Knowledge is as essential to intellectual superiority as a good brain; but a good brain will acquire knowledge with greater facility than a poor one. However, a full, high forehead, and a large *facial angle*,* are not sure indications of a good sensorium; for the

* Supposing a skull to be observed in profile, in the position which it would have when the occipital condyles are at rest in the articular hollows of the atlas, in the erect attitude of the body, and neither inclined backwards nor forwards,—a line drawn from the

skull and the membranes which envelope the brain may be unusually thick; or the outer and insensible part of the cerebral mass may be uncommonly great in proportion to the sensible part—of which part the sensorium constitutes a share; or the sensible part, though sufficiently large, may be poorly organized,—it may be too dry and stiff, or too soft and phlegmatic, or it may be in divers other morbid conditions.

A low forehead soon sloping backwards, with flat temples not very distant, indicate a deficiency of that part of the brain which is so influenced by exercise as to acquire a *habit* of acting without impression, Yet, as in the above case, these outward appearances are not *sure* indications of an imperfection of the sensorium. But in most, perhaps all, cases of *congeni-*

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greatest projection of the forehead to that of the upper maxillary bone, follows the direction of the face, and is called the *facial line*; the angle which this forms with a second line, continued horizontally backwards, is the *facial angle*, and measures the relative prominence of the jaws and forehead.—The facial angle in the human subject varies from 65° to 85°, speaking of the adult; for in the child it reaches 90°. The Grecian artists represented their legislators, sages, and poets, with a facial angle of 90°; and their heroes and gods, with an angle of 100°.

The following is a statement of the angle in certain animals, taken by drawing a line parallel to the floor of the nostrils, and another from the greatest prominence of the alveoli to the convexity of the cranium, without regarding the outline of the nose and face.

Young orang-utang,	67°	Probably less by 8 or 10° in the adult animal.
Sapajou,	65°	
Guenon,	57	
Mandrill,	42—30	
Coati,	28	
Pole-cat,	31	
Mastiff—line drawn from outer surface of cranium,	41	
—— inner,	30	
Hare,	30	
Ram,	30	
Horse,	23	

LAWRENCE'S LECTURES, p. 147–8–9.

tal idiotism, the forehead is low and narrow, indicating a contracted sensorium.—Parents who are naturally idiotic, that is, idiotic from original make of their thinking organ, are as liable to have idiotic offspring, as they are to have offspring which resemble them in features ; for like organized animals beget like organized offspring ; and as the organs are, so are their functions.

The more remote causes of idiotism, when not congenital, are habitual inebriety, excessive and enervating pleasures, violent passions, injudicious management in ecphronia, [insanity] and especially an excessive use of the lancet. To which some add, the suppression of accustomed discharges, and the drinking of human blood. But in all cases the immediate cause is some misaffection of the brain ; and in a great majority of cases this morbid affection is manifest to the senses of the anatomist. Sometimes the brain is softer than natural, but more frequently harder and denser ; sometimes polypous and even bony concretions are discovered.

" In idiotism," says Dr. Good, " there is no memory, no language, no reason." But " the idiot has all the animal instints, and some of the passions." How it is that idiots may have organic and even sensorial passions, and yet " no memory, no language, no reason," the materialist finds no difficulty in showing ; as those who have perused this work thus far, must be prepared to admit. But why idiots should have poorer souls than other human beings, rather puzzles us—perhaps it is because their brains are so badly organized they do not deserve better. We wish the immaterialists would clear up this matter. It will not satisfy us, for them to compare the brain to a fiddle, and the soul to a fiddler, and tell us that when the fiddle is out of tune, the best musician cannot play a good tune upon it, for we know that impressions are what play upon the brain ; and besides, the immaterialists

are, in many instances, under the necessity of regarding the soul as the fiddle and the brain as the fiddle : they must admit that there is no music, no ideas, until the brain plays upon the soul. But more of this in another place.

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CHAPTER XXIX.

On Death and Dying.

When all actions of the nervous and muscular systems cease, the person dies ; and if the system have suffered such derangement that these actions, or even those of the nervous system alone, cannot, by any natural means, be excited again, the person is absolutely dead,—dead in the common sense of the word. That a man may be dead in the common sense of the word, it is not necessary that his muscular organs have undergone such change in their physiological organization that no contractions can by any means be excited in them. Otherwise the criminal is not "dead, dead," whose voluntary muscles may be excited to contract by galvanism ; nor the senseless bullock whose blood is let out, but whose heart continues to act.

If a case should occur in which all muscular actions, even those of the minutest capillaries, should cease, and the conscient actions of the nervous system continue, the person would *appear* to be dead ;—he would be speechless, pulseless, motionless, and probably, "pale as death." But if bystanders knew that he continued to think and sense, or even think, they would not say such person is dead ; this, however, they could not know ; and the person would be dead to the bystanders, but not dead as it respects himself. Where-

as every person is dead, for the time being, as it respects himself, whenever the conscient actions of his nervous system cease. In every case of asphyxy from drowning, hanging, inhaling irrespirable gases, from lightning and intense cold; and in every case of compressed brain in which conscient actions do not occur from strength of sensorial tendencies, and cannot be excited by impressions upon the senses; and we may add, in every case of *natural* sleep,—the person is *dead*, for the time being, so far as it respects himself, whatever may be the muscular actions that take place.

Sleep, either morbid or natural, is a temporary death, as it respects the individual who sleeps—he is none the less dead to himself, for the time being, because he may think and sense again before his body is decomposed. What would often prove to be only a temporary death, if proper means were used to bring the nervons system again into an active state, proves a sleep to the hour of reorganization or resurrection, merely for want of a surgeon with his instruments, or even a pair of bellows to bring the soul back again into the brain! Death, a thing often personified, is not an old dry-bones walking to and fro the earth, and up and down in it, *striking* sick folks; but merely a dead state of organized beings.

After the animal system has undergone such changes that its physiological proporties no longer exist, or in other words, after it has undergone such changes that it cannot be excited into action by natural means, it soon undergoes still further changes, called chemical; but it is no more mysterious that it does so, than that a barrel of beer should turn sour, after undergoing the process of fermentation, and suffering some other slight changes. The expression, that life, or the laws of the vital principle, control the laws of chemistry or of chemical actions, if not so much mere nonsense, is at least a

very figurative expression, which we trust will no more deceive even weak heads.

Dying, though often spoken of as an *act*, is more properly the cessation of vital actions; and the immediate cause of dying is not the cessation of vital actions, for this *is* dying; and the same thing cannot be both the cause and the thing caused: the immediate cause of dying is, *in every instance*, some change in the condition of nervous system. This change is generally apparent on dissection, though not always, for the nervous system may suffer some change in its nice, physiological organization, which destroys its sensibility; and yet not be cognizable by the imperfect senses of the anatomist. But when this change of the nervous system is not obvious, and often when it is, a change in some other important organ, or in the fluids of the system, may be discovered. *These* changes are often considered as causes of the death; but they are to be classed among the remote causes: they are not the *immediate* cause of the conscient actions ceasing.

In the few instances—if any there be—in which it may be said that persons die of old age, the changes which take place in their systems, are very gradual; but they are none the less real on this account. You can no more make a physician believe that death ever takes place without some morbid change of the system, as its cause, than you can make him believe that fire will not burn him. But the immaterial theologists have not yet decided, that I know of, whether a man dies because the soul quits the body, or whether he dies because the body is disordered, and the soul flies off because the body is dead. Should they ever seriously consider this matter, they will find themselves compelled to admit—if they regard the evidence which the book of nature furnishes—that a derangement of the system is the cause of every death. Were it a fact, that men quite as frequently die instantly, without

any derangement of the system, as otherwise, it would be some small evidence in favor of immaterialism. Nor have the immaterialists yet informed us what becomes of the soul, and what it is about, during those hours, days, and even weeks (if reports be true) in which the body is dead as it respects itself, and apparently dead to by-standers—after which time, however, it is brought again into a thinking condition, by natural means. Should they tell us that, during this time, the soul remains inactive within the body; we should be induced to ask several other questions, to which they must give rational answers, before their doctrines will be rendered as clear and satisfactory as the doctrines of the materialist. We would not insist on their informing us by what means we can ever know when the soul has quit the body; but we would ask them why the soul does not continue to think and sense even in if the body be deranged:—we suppose they will contend that it thinks and senses after it quits the body; (if it do not, it is a matter of indifference whether it go to heaven or hell—it is the sheerest little nothing that ever did exist;) now if it may think and sense without any body at all, why may it not think when in a disordered body? Is the unextended thing squeezed! or otherwise obstructed in its operations? If it be, why does it not—being intelligent—quit the clayey tabernacle, and *hunt* its way back—for I am sure there is nothing in my head that knows the way--to the celestial abodes? But should the immaterialists tell us that in case of asphyxy, the soul quits the body; we should like to know how inflating the lungs, warming and rubbing the body, applying volatiles to the nostrils, &c., bring it back again.—Oh, ye men of mysteries, clear up these difficulties, or the groundless hypothesis which gives rise to them, will not much longer be believed by men of sound brains.

The *pains of death* are undoubtedly much less than most persons have been led to believe. To die, is to go to sleep;

and we doubt not that most persons who live to the age of puberty, undergo tenfold more misery in thinking of death, than in the simple act of dying; nay, tenfold more misery than they would, did they but entertain correct views concerning this change.—Error, of whatever description, invariably gives rise to more human misery than happiness: it is the bane of human felicity—the black devil of the earth. Methinks I can see that the doctrine of soul, or we will say, the ignorance of men concerning the constitution of organized beings, has been the ROOT of more human misery than would be endured, if every human being now living, were put to death by hours of excruciating torture; and yet it has been gravely asked, what good can result from diffusing the principles of materialism, admitting them to be true!

In all cases of dying, the individual suffers no pain after the sensibility of his nervous system is destroyed; for after this, there is neither sensation nor thought. We say, no thought, for we have every reason to believe that when the sensorium has suffered such change that conscient actions cannot be *excited* in it, such actions will occur merely by virtue of its tendencies. Now the sensibility of the nervous system is often destroyed without much, and sometimes without any, previous pain. Those who are struck dead by a stroke of lightning, those who are decapitated with one blow of the axe, and those who are instantly destroyed by a crush of the brain, experience no pain at all, in passing from a state of life to a dead state. One moment's expectation of being thus destroyed, far exceeds in misery the pain during the act. Those who faint away, on having a little blood taken from the arm, or on any other occasion, have already endured all the misery they ever would in this world, did they not again revive. Those who die of fevers, and most other diseases, suffer their greatest pain, as a general thing, hours, or even

days, before they expire. The sensibility of their nervous system becomes gradually diminished, their pains become less and less acute under the same exciting cause; and at the moment when their friends think them in the greatest distress, they are more at ease than they have been for days previous: their disease, as far as it respects their feelings, begins to act upon them like an opiate. Indeed, many are already dead, as it respects themselves, when ignorant bystanders are much the most to be pitied, not for the loss of their friend, but for their sympathising anguish. Those diseases which destroy life without immediately affecting the condition of the nervous system, give rise to more pain than those that do affect this system, so as to impair its sensibility. The most painful deaths which human beings inflict on each other, are produced by the rack and the faggot. The halter is not so cruel as either of these, but more savage than the axe. Horror and pain considered, it seems to us as though we should choose a narcotic to either.

We think that most persons have been led to regard dying as a much more painful change than it generally is, first, because they have found by what they have experienced in themselves and seen in others, that sentient beings often struggle when in distress; hence struggling is to them a sign, an invariable sign, of distress. But we may remark, that struggles are very far from being invariable signs of distress; muscular action and consciousness are two distinct things, often existing separately; and we have abundance of reason to believe, that in a great proportion of cases, those struggles of a dying man which are so distressing to behold, are as entirely independent of consciousness, as the struggles of the recently decapitated fowl. A second reason why most persons are led to regard dying as a very painful change, is, because they know that men often endure great pain without dying, and,

forgetting that like causes produce like effects *only under similar circumstances*, they infer that life cannot be destroyed without still greater pain. Third, because they believe that there is something in man, which is the subject of as vivid consciousness when he is dying, and almost dead, as when he is in health.

Most persons, and especially young persons, desire to live, and this is as much as to say, they desire not to die ; but the horrors of death, which render a considerable portion of the majority of men's lives much less happy than they otherwise would be, are not owing to this desire to live. Nor do they consist but in part in dread of the pains of death : they consist mostly in doleful ideas of a future state, fear of endless and most desperate punishments, &c. but if this share of human misery be thought a blessing to mankind, we may thank ignorance and her big baby superstition for it. The materialist, who has been so fortunate as not to have his reason shackled, looks on death with much more composure than any one else, excepting a very small proportion of mankind who have been lead to believe, *confidently*, that they shall be extremely happy in a future state.

The materialist who has studied the book of nature, and drawn his conclusions from it, regarding the books of men as erroneous in all points in which they do not agree with it, says to himself: If a body be organized at some future period, possessing the same sensorial tendencies which I possess, *I* of course, shall again exist. And if I do, I shall neither be extremely happy nor extremely miserable. The same merciful and unchangeable God, who governs now, will govern then, and we have no reason to suppose that his laws will he altered. He will not, with a vengeance, punish, for deeds done in this life, any being who was involuntarily born into the world, with passions to spur him to action, and

so circumstanced that there was a CAUSE for every action of his, whether muscular or nervous. But as in this life if I stray from the path of rectitude, there will always be something *to prick;* and the more I go astray, the more miserable shall I be.

But if I donot exist in a future state, I shall not care a straw; for when I am dead, I shall not exist; and it is absurd to suppose that a being will *care*, which does not exist. When the body, which the construction of our language compels me to speak of as though it were something besides myself, calling it *my body*, is in the grave; there will be no thinking *I*, off in some other region, thinking about the *cold grave*, and anxiously awating the day of resurrection. No; my thoughts of annihilation are far from being horrible to me—they are not blended with the strange notion of caring about it, after I am dead; and I have never been cajoled into the belief that I shall be extremely happy hereafter, like one who may have been led to believe that he deserves, and will indeed draw, a larg esum, because he has bought a ticket. Consequently my reason goes abroad without meeting with information which blasts my fondest, *firmest* expectations.

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CHAPTER XXX.

An Attempt to show that Materialism is as consistent with Christianity as Immaterialism.

We presume to state in terms unqualified, that whoever maintains that christianity is opposed to materialism, virtually maintains that christianity is opposed to truth. Christian-

ity must accord with materialism or she cannot have a passage; for truth will go when he once gets under weigh.

Whether it be possible to reconcile either materialism or immaterialism with christianity, we cannot with certainty say, until the diverse religious sects professing christianity agree among themselves what christianity consists in, and inform us of their decision. However, we can proceed to show, that, according to our views of christianity, materialism is as consistent with it as immaterialism.

According to our views, the sentiment that whatever thinks and senses is something distinct from the nervous system, and may sense and think independent of it, is not essential to christianity. This being the case, certain doctrines, of which this sentiment is not one, may constitute christianity; and whoever believes in these doctrines may be a christian, though at the same time a materialist. And again, according to our views, the idea that the bible writers were inspired with a preternatural share of scientific knowledge, as of Astronomy, Anatomy, Physiology, &c., is not essential to christianity.

Now if it be admitted that neither of these sentiments or doctrines, are essential to christianity, that they constitute no essential part of it; then are materialism and christinity compatible. For, admitting it is the nervous system, which senses and thinks, it does not follow from this but that every christian doctrine, may be true.

But if the doctrine of soul be essential to christianity, so that there is no christianity without it; then it is as evident that christianity is false as that the earth turns on its own axis. And if the idea that the bible writers were inspired with true knowledge concerning physical subjects, (and the constitution of man and other animals is one of these,) be essential to christianity; then shall we prove that christianity is false,

when we prove that these writers were not thus inspired ; as we now proceed to do.

" And God made the firmament and divided the waters which were *under* the firmament from the waters which were *above* the firmament. And God called the firmament *heaven.* And God said, Let the waters *under* the *heaven* be gathered together into one place, and let the dry land appear."—Gen. ch. 1st, v. 7, 8, 9. " And God created two great lights, and the stars also, and *set them in the firmament of heaven.*"—Gen. ch. 1st, v. 16, 17. " And the *windows of heaven* were opened, and the rain was upon the earth forty days and forty nights."—Gen. ch. 7. v. 11, 12. " And the windows of heaven were stopped, and the rain from heaven was restrained." —Gen. ch. 8, v. 2. These passages show clearly that whoever wrote the book of Genesis, believed that the blue and seemingly arched canopy over our heads, is the firmament of heaven ; and that the sun, moon and stars, are all equi-distant from the earth, or at least, that they are all set in this arching canopy, they being all " set in the firmament of heaven," which divides the waters, &c. This is an opinion which children and all persons ignorant of astronomy would naturally entertain. It is clear, also, that this writer believed that when it rains, or at least, when it rained in the time of the flood, the windows of heaven were opened, and the water " *above* the firmament" ran down—large streams being broken into drops, no doubt, by falling so great a distance.

Now it is certain that these notions about the firmament ; about the sun, moon and stars being set in the firmament ; about the windows of heaven which are windows of the firmament, (for " God called the firmament heaven ;") about the water *above* the firmament, that is, up in heaven, where the God or Gods of the old and new testaments dwell ; about

the rain, &c. &c. are false ; and of course the writer that entertained them did not receive them by inspiration.

Perhaps it will be said that this writer* expressed himself in figurative language, and that we do not know but that he thought correctly. Very well, we will then say, and with quite as good reason, that whoever has spoken of a *soul* in the bible, spoke figuratively ; and we have no more reason to suppose he believed the word means any thing distinct from the nervous system, than we have that this writer believed the firmament of heaven and the windows thereof, to be real beings.

In the ninth chapter, thirteenth verse, of Genesis, we read " I will set my bow in the cloud, and it shall be for a token of a covenant between me and the earth."

Before we offer any remarks concerning this passage, we would observe, it is impossible for us to believe (and who is to blame for it,) that the Author of worlds on worlds, ever descended in a cloud of fire, smoke, or any other vehicle, to this earth, and conversed with a man! What should we think of any man nowadays, if he should gravely assert that he had been up to the top of Mount Tom and seen and conversed with God Almighty? Why is it that men will sooner believe a whole string of big stories than a single one ? If Moses ever saw and heard what his unknown historian has declared that he did, it is much more rational to suppose that actions occurred in his optic and auditory nerves without impressions, than that the Deity ever paid him a visit and conversed with him. From what we know of the God of nature, he brings about his ends by the most simple means ; and if he be un-

* We say *this writer*, for it is altogether unknown by whom the book of Genesis and the four following books were written ; convinced we are that they were not written by Moses. See Paine's Age of Reason, Second Part.

changeable, as the book of nature declares, and we believe, it is but reasonable to suppose he always did so.

From the passage last quoted from Genesis, and from others immediately connected with it, it is evident that the writer considered the rainbow as a thing that made its appearance for the first time, after the flood, as a token of a covenant, &c., whereas it is a natural phenomenon which must always occur when rays of light from the sun are reflected by drops of rain in a particular manner; and which must necessarily have taken place, the unalterable laws of nature being such, before the flood as well as now.

What we read in the tenth chapter of Joshua, twelfth and thirteenth verses, about the sun and moon standing still—taken in connection with other passages in the the bible which speak of the earth as standing on pillows,—shows clearly that the bible writers, some of them at least, were so very ignorant of astronomy as to believe that the sun and moon move round the earth, instead of the earth turning round on its own axis.

Another erroneous notion entertained by the bible writers, is of a physiological nature—it relates to the constitution of man; it is the notion that man consists of material organs and an inconceivable something else superadded, a something that scuds out of him when his organs cease to act, and steers off, or by angles is carried off, to heaven; and enjoys pleasure and endures pain independent of the body.

It is true that with the exception of man, the writers of the Old and New Testaments, seldom had occasion to discover their opinions concerning the nature of things; but from what little they have said concerning natural objects, it is evident that they knew no more about them than thousands of other men of their age; it is evident they were not inspired with a knowledge of the nature and constitution of organic or

inorganic bodies. Consequently, if the opinion that they were, be essential to christianity then is christianity false. But if it be admitted that they were not thus inspired, all they have written about souls amounts to no more than if the same had been written by any other man of their age. To enquire whether a man has a soul or not is to inquire into the constitution of man; and this is a subject that belongs to that branch of physics called physiology. Strange indeed it is, very strange, if the opinions of divines concerning the constitution of man, are to be regarded in preference to the opinions of physicians.

It may be asked if Christ did not often speak as though man possesses a soul. We grant that those who have written accounts of his birth, death, and doings, have written that he did. But what then? was Christ born into this world, to teach men physiology? Admitting that he, though the son of a carpenter's wife, knew every thing and could do almost any thing, it does not follow that he must work a miracle in every man's brain to convince him that he has no soul, or convince him so by a long reasoning process. Before the science of chemistry had taught men that new combinations give rise to new properties it would have required an octavo volume of greater size than this, to convince them that they are composed entirely of matter. It was an object of Jesus to make men believe certain doctrines which he delivered unto them; and it would have operated much against him, to have contradicted an opinion so firmly and universally believed, as was the opinion that each man has a soul in his head: *unless* he convinced the people that this opinion is erroneous: a thing which he could not do, short of working a miracle in every man's brain, or of a long reasoning process.

Now as it was not an object of Jesus to teach men what they are made of, but to teach them their duty towards their

Maker and towards each other; and to teach them that they will come to life at some future period, and be punished or rewarded according to their behaviour before they die; instead of contradicting their opinions concerning their constitution, he spoke to his hearers in the same language that they used; he could not otherwise converse with them. Hence according to Matthew, chap. x, v. 28, he said "Fear not them which kill the body but are not able to kill the soul, but rather fear him which is able to destroy both soul and body in hell." But had all his hearers been materialists—none of the language of immaterialism being in use—we may well suppose he would have said: Fear not them who are able to kill the body only; but rather fear him who is able to destroy thy present existence, and render the future miserable.

Matthew was undoubtedly an immaterialist; but Luke writes more like a materialist. Luke informs us that Christ said: "I say unto you, my friends, Be not afraid of them that kill the body, and after that have no more that they can do: but I will forewarn you whom you shall fear: Fear him, which after he hath killed, hath power to cast into hell; yea, I say unto you, fear him." Not a word is here said about a soul; but that Luke here had reference to the same saying of Jesus, that Matthew had in the passage we have quoted from his tenth chapter, no one can doubt, after comparing together this chapter of Matthew and the twelfth chapter of Luke.

We do not know that Luke was a materialist; but he does not appear to have been very friendly to the word soul. In the whole of his book containing 24 chapters, it occurs in only four instances; and in only one of these does it appear that Jesus used it, in an expression strictly his own. In the first instance, chap. 1, v. 46, it occurs in an expression of Mary—"And Mary said, My *soul* doth magnify the Lord." A very figurative expression this. What! a woman's soul *mag-*

nify God Almighty ? Surely, it can mean nothing more than that she rejoiced and felt thankful because the " Lord had regarded her low estate." In the second instance, chap. 10, v. 27, a lawyer tells Jesus, " It is written in the law, Thou shalt love the Lord thy God, with all thy heart, and with all thy *soul*, and with all thy strength, and with all thy mind," This strong but figurative passage means nothing more than, you shall love the Lord as much as you can ; and we defy any man, be he a necessarian or not, to love him less. In the twelfth chapter it is written that Jesus spake a parable ; and in this parable it is represented that a rich man addressed his soul, saying, " Soul, thou hast much good laid up for many years ; take thine ease, eat, drink, and be merry." " And God said unto him, Thou fool, this night thy soul shall be required of thee." But what sort of thing did this man take his soul to be, when he tells it to eat, drink, &c. ? Surely, nothing more nor less than his person, his visible extended person, including of coerse both eating and drinking organs.— But as to the expression, " This night shall thy soul be required of thee," it means nothing more nor less than, this night shall thy life be required of thee ; and this means nothing more than, you shall this night die, that is, your organs shall cease to act. This is the third instance in which the word soul is used in Luke. The fourth instance occurs in the xxi. chap. and 19th verse : " In your patience, possess your souls." Here it is represented that Jesus used the word in an expression strictly his own. But from this passage we have just as much reason to infer that a man's *patience* is something distinct from his body, as that his soul is. The expression is so very ambiguous, that we scarcely venture to offer an opinion as to the sense in which it ought to be understood —it would have been less so, had it been, in your souls possess your patience. However, considering what goes before

and after it, we are inclined to think it ought to be understood as follows: In all the trials and perplexities you may meet with, keep cool and collected; or, have patience, so as not to be discouraged and vexed, so as not to be dispossessed of your intellectual powers, by the difficulties you may meet with.—Surely, if the writings of Luke had been the only ones of Christ's historians that were voted genuine, and we had never seen those of the other Evangelists, we should have had no reason to suppose that Jesus was an immaterialist from any thing he said concerning souls. Admitting that Jesus often spoke of a soul, it is no sort of evidence that he believed it to be any thing distinct from the body. Scarcely a day passes but that materialists use the word soul or mind as though it were something distinct from the body, or at least, as though it were something besides the body; and if, twenty years hence, their conversation should be written in a book, it would be just as much evidence to future generations that these materialists were immaterialists, as the few clauses in the New Testament which represent that Jesus spoke of a soul, are that he believed in the existence of a feeling thinking thing that scuds away from a man when he dies.

Perhaps it may be said that there are sayings of Jesus which favor immaterialism, although they contain nothing express concerning souls. According to Luke, he said to one of the malefactors who was put to death with him: "Verily I say unto thee, to-day shalt thou be with me in paradise." But what are we to understand by this? Do not the pronouns I, me, and myself, mean the same thing? and did not Jesus, by *paradise*, here mean heaven, the place to which it is said he ascended, the place where his Father and the angels dwell? The first question must be answered in the affirmative, and if the second be not, we wish our learned divines would inform us something about this paradise. But if par-

adise be heaven, the place where it is represented that the God of the bible dwells; then Christ did not go to paradise for several days after he was crucified. For after he came to life, he appeared to his disciples, and said unto them, "Behold my hands and my feet, that it is I MYSELF, handle me and see; for a spirit hath not flesh and bones, as ye see me have." This much to show that Jesus did not consider himself as consisting in something which has not flesh and bones. (Genuine materialism this.) Now according to John, chap. xx. v. 27, Jesus said to Mary, "I am not yet ascended to my Father;" and this was several days after he was crucified. From all this, it appears that the malefactor, soul nor body, could not be in paradise with Jesus the same day, *as it respects time*, that he was put to death; for Jesus himself was not there. However, the christian materialist finds no difficulty in getting along with this: he says that when a man dies, he does indeed die; of course, if he lie in the grave ten thousand years, it is no time at all to him;—every man passes from this life to the future in the twinkling of an eye *as it respects himself*, though millions of years may elapse between his death and reorganization. Consequently the malefactor will be in paradise the day he died, as it respects himself, should he not be there for thousands of years to come.

What Jesus said in a parable concerning the rich man and Lazarus, has been considered by some as favoring immaterialism. But the rich man died and was buried, and in hell he lifted up his *eyes* and saw Lazarus in Abraham's bosom; and cried out to Abraham to let Lazarus come and dip his fingers in water, and cool his *tongue*. Now in the name of common sense, how comes it that an unextended soul has eyes and a tongue in hell? and why did not the old fellow help himself to water if it were handy? and how large must Abraham's bosom be to hold Lazarus? We should think the immaterial-

ists had better keep this passage in the back ground, if they do not wish to be puzzled. Will they tell us that when the soul quits the body and goes to heaven or hell, it becomes extended, and has the parts of a man? Let them say so; but this would be nothing more nor less than creating a material man out of an immaterial—*nothing!*—The christian materialist may admit, if he pleases, that when men die, men of like sensorial tendencies are instantly—as it respects *time*—organized in some distant region; but why, then, the "resurrection of the *dead*," which is certainly the most important, and we should think an *essential* doctrine of christianity? Is there going to be two sets of human beings precisely alike? Methinks there would be much contention if they should ever get together; and perhaps some mistakes among the men and women!

Immediately after noticing the third instance in which the word soul occurs in Luke, we meant to have remarked that the same Greek word which is translated *soul* in the New Testament, is, in as much as thirty instances in this Testament, translated *life*.

Thus much have we written to show that materialism is consistent with christianity, We shall now proceed to show that immaterialism is not consistent with christianity; after which we trust *all* will be convinced that materialism is *at least* as consistent with christianity as immaterialism.

As intimated in the fore part of this chapter, we shall not decide dogmatically what christianity is; for this would be to decide a question concerning which the different sects calling themselves christians, are at war. It would be to decide a question in which we do not feel at all interested:—we can only say, we wish those doctrines the least success which make men the worst neighbors and citizens. We proceed according to our own notions of christianity.

According to our views, the doctrine of the resurrection of the *dead* is the most important, and an *essential* doctrine of christianity. Without this resurrection we hold there is no future existence—no future rewards and punishments. Consequently, whoever does not believe in this, is not strictly a christian, though he may be a virtuous man.—There were many virtuous men before the christian era; perhaps more in proportion to the whole human family and their unenlightened state than there now are.

Now if the doctrine of the resurrection of the dead, be essential to christianity, then is immaterialism, or the doctrine of soul, altogether at variance with christianity. For according to this doctrine, the man never dies; that thinking, feeling being which constitutes the man—that being, in the sameness of which the immaterialists place personal identity, never dies. To be sure it quits its old material tenement, but this is nothing but changing its place. Therefore the many passages in the New Testament which speak of a man dying, and of his resurrection from the dead—an exemplification of which we have in the death and resurrection of Jesus—are diametrically opposed to immaterialism.

Is not death spoken of as a *sleep*, that is an unconscious state? But acccording to immaterialism, the man is not in an unconscious state after the material machine ceases to breathe; unless it be admitted that the soul is unconscious after it quits the body; but if the soul be in an unconscious state from the time it quits the body to the re-organization thereof, we wish to know for what reason any religious sect contends for its existence. An unconscious, unextended thing must be the sheerest little nothing that ever did exist—quite too insignificant for men to contend about. If I have a soul which can neither think nor sense independent of the body, then let my body be well off, and I care not what becomes of my soul.

Again. Do the scriptures inform us of any place for dead men, or, if you please, for men after they get out of their bodies, except heaven, hell, and the grave? Now if men do not in fact die, but only scud away from the machines by which they have operated, and in the top part of which they have dwelt; they must go to heaven or hell for aught we know to the contrary. But if all go to heaven, then many wicked are in heaven, and will remain there perhaps for thousands of years to come; but if all go to hell, then many righteous men are in hell, there to remain until the day of resurrection and judgment. But if they are sorted out as they fly away from their machines, why the final day of judgment that is spoken of? and why are all the wicked men called out of hell, united with their old machines, and sent back to hell again? Poor machines! I pity you; you are not to blame for any thing you have ever done—you only obeyed the commands of your controller.—Again, if the soul may be conscious independent of the body, it may be the subject of rewards and punishments; and for what purpose is the body re-organized? The God of nature brings about his ends by the cheapest means; and according to the doctrine of soul we can see no use for the body in the celestial regions, unless it be to sing hymns with—no connubial bliss there, at least with those that die old bachellors! Surely, the doctrine of soul, and the doctrine of the resurrection of the *dead*, and a day of judgment—a day when all shall be judged, and sentenced to their future abodes, are altogether at variance: they cannot be made to harmonize. But not so with materialism and the doctrine of resurrection, and one day of judgment for *all* men. The materialist says that all men appear at the bar of God, the moment they die, *as it respects themselves;* and yet although men die at different periods of time, they all appear at the bar of God on one and the same day *as it respects time.* He says the body

must be re-organized because there is no future existence without it; and it is the body that is punished and rewarded, for it is the body that acted—acted as independently as any thing can that is governed by the laws of nature. He says the body may be organized out of *any* matter, for all that is necessary to constitute the same person, to all intents and purposes, is to have the same looking body, possessing the same sensorial tendencies.

It is a little curious that materialists must be cried down by *some* christians, when they maintain the only doctrine concerning the constitution of man, that can be made to harmonize with christianity.

Christianity is not to be proved or disproved by our decision concerning the nature of that which thinks, unless the doctrine of soul be *essential* to christianity. The present writer was a firm materialist years before he disbelieved so many of the christian doctrines, that it would be hypocrisy in him to pretend to believe in christianity. But he now feels the same moral obligations towards his fellow creatures that he ever did, and is much more happy in his thoughts concerning death and a future existence, than formerly.—Oh truth! Thou art fair and lovely; there is symmetry in all thy parts; and he that knows thee, is not cold and hot, hot and cold, alternately;—he is not distressed with fears and doubts at one time, and flushed with expectations of unnatural joys at another. Thou causest peace in one's own breast, peace in neighborhoods, and peace between nations. Blood may be shed in the cause of the adversary; but thou wilt ultimately conquer with no other weapon than the pen!

Before closing this chapter, we make some extracts from a pamphlet which we have recently received, entitled "THE SCRIPTURE DOCTRINE OF MATERIALISM." It is written by a masterly pen; but the author is to be reprehended by every

friend of truth and intellectual freedom, for not putting his name to it. In making these extracts, we shall not add any words of our own except in brackets, and the authors own words will *not* appear in the form of quotations, that the reader may the more easily understand what words are his, and what the words of writers from whom he makes extracts.

After this, can it be said, that the separate existence of an immortal soul is the doctrine of Christ? I am lost in utter astonishment at the presumptuous hardihood that can state this doctrine as an essential article of the christian faith! at the impudent intolerance that can cry down a man's character and standing in society—can interdict him like the banished of old, from fire, water and shelter—because examining Scripture for himself, he cannot conscientiously accept as divine truth, the metaphysical reveries of Calvinistic theology!

The question is not, is there any text in the bible that seems to countenance the notion of a soul, (for the bible was translated by persons who took that doctrine for granted;)—the question is, what is the general tenor of the doctrine on the subject laid down by Jesus Christ: does *he* countenance it? The apostles wrote and spoke very figuratively, and frequently in conformity and allusion to the previous notions of those they were addressing. To establish the doctrine of a soul as a Christian doctrine, do not refer me to a few texts that *seem* to countenance it; you must shew it me plainly, clearly, and undoubtedly laid down, explained, and urged by Christ himself: and that I think cannot be done from the Evangelists. All else is evidence so inferior as to have little weight on the question.

All persons conversant with the Scripture, know, that the various and discordant tenets of metaphysical Christianity are founded, asserted, and denied on the license of figurative expression used by the apostles, and principally by St. Paul. In this war of words I desire to take no part, and I therefore appeal exclusively to the gospels.

Of the opinions of the ancient fathers.

I am not possessed of the means of examining and referring to the original works of the fathers, as they are called. I must therefore be content with referring to some summary. Such a one Dr. Priestly has given; but I am aware his au-

thority may be objected to. Lewis Ellis Dupin and Lardner have not attended to this subject as a separate question, and Lardner's quotations are very partial. The only author of repute who has examined all the writings of the Christian fathers with this view, is Beausobre, in his history of Manicheism: an author universally regarded as among the fairest and best qualified of modern days. He too is cited by Priestly, by Rees, and others.

To avoid all reasonable objection, I referred to the article Immaterialism in the larger French Encyclopedie, manifestly written by one who is not a materialist. I translate briefly from that article; stating however that his representation will coincide with that of M. Beausobre.

"Some moderns suspect that as Athanagoras admitted a spirit in the formation of the universe, he was acquainted with spirituality, and did not admit a corporeal Deity, like almost all the other philosophers. But by the word spirit (*pneuma*) the Greeks and Romans equally understood a subtile matter, extremely dilated, intelligent indeed, but extended, and consisting of parts. In effect, how can they believe that the Greek philosophers had any idea of a substance purely spiritual, when it is clear that all the primitive fathers of the church made even God Almighty corporeal; and their doctrine was perpetuated in the Greek church even to later times, and was never renounced by the Roman church till the time of St. Augustine." (about six hundred years after Christ.)

The author of the article proceeds, by means of quotations from their works, to show that the following fathers were materialists, viz. Origen whom Jerom reproaches for his notion that God himself was material; Tertullian, who wrote a book De Anima expressly to prove the mortality and materiality of the human soul; Arnobius; St. Justin; Tatian; St. Clement of Alexandria; Lactantius; St. Hilarius; St. Gregory Nazianzenus; St. Gregory Nyssenus; St. Ambrose; Cassian; and finally John of Thessalonica, who, at the Seventh Council, pronounced it as an opinion traditionally delivered by St. Athanasius, St. Basil, and St. Methodius, that neither angels, demons, nor human souls, were disengaged from matter. The writer forgot Melito, bishop of Sardis; but here is a list quite long enough. It proves nothing, except that in the early ages of the Christian church, and for near six hundred years, Materialism was not heresy, but quite

otherwise. Indeed, St. Austin says, that he himself was for a long time of this opinion; owing to his difficulty of conceiving the pure spirituality of God himself.—Are these metaphysics of any use or value to a Christian, on the one side or the other? I consider them as vain speculations, unproductive of practical benefit.

The Apostles' Creed of uncertain composition, but ancient, requires us to hold an essential article of the Christian faith. What? the resurrection of the soul? No, "the resurrection of the body, and the life everlasting." Amen.

That the doctrine of the non-existence of a separate immaterial Soul, distinct from the human body, and disjoined from it at death, is a doctrine published and avowed by dignitaries of the church of England.

I apply this to the well meaning, but not well instructed portion of my fellow citizens. I am not about to prove my point by an appeal to the bench of bishops. But I say that doctrine is not Atheism, Deism, or Infidelity, which some of the bench of bishops avow, which others doubt about, and which none complain of as heretical or dangerous.

Dr. Edmund Law, Arch Deacon of Carlisle, Master of Peter's College in the University of Cambridge, (a seminary for finishing the education of young men.) wrote a treatise on the nature and end of death. To the third edition of this work, now before me, published in 1775, he added an appendix on the meaning of the original words, translated *soul* and *spirit* in the Holy Scriptures; showing that no part of the bible gave countenance to the doctrine of a separate soul, or of an intermediate state of being between death and judgment. He refers to Bishop Sherlock, the Rev. Mr. Taylor of Norwich, and Mr. Haller, in the following close to that appendix.

Extract from the Appendix to Considerations on the Theory of Religion, by Edmund Law, D. D. Archdeacon of Carlisle, and Master of St. Peter's College, Cambridge, third edition, 1755. With an Appendix concerning the use of the word Soul in Holy Scripture, and the state of death there described.

"The intent of this appendix, containing an examination of all the meanings that the words translated SOUL, in the Old or New Testament, appears to have, is to show that the

doctrine of a separate immaterial, immortal soul, is not a Christian doctrine : that it is not fairly deducible from the Christian Scriptures , and it is contrary to their general tenor." Dr. Law, after this summary, goes on to say, page 398 : " This may serve for a specimen of such texts as are usually alleged on the other side of the question ; (viz. by the Immaterialists,) all of which, will, I believe, appear even from these short remarks upon them, to be either quite foreign to the point, or purely figurative ; or lastly, capable of a clear and easy solution on the principles above mentioned. Nor can such ever fairly be opposed to the constant obvious tenor of the sacred writings, and that number of plain express passages already cited." . . . page 400. Give me leave, says Dr. Law, to subjoin the sentiments of a very pious and worthy person, eminently skilled in Scripture language, the Rev. Mr. Taylor, of Norwich, who is pleased to write as follows : " I have perused your papers, &c. They comprehend two points ; one point upon the *nature of the human soul or spirit*, so far as revelation gives us any light ; the other concerning the *state to which death reduces us*. From the collection of Scriptures under the first of these points, I think it appears, that no man can prove from Scripture that the human soul is a principle which lives, and acts, and thinks, independent of the body..... Whatever the metaphysical nature, essence, or substance of the soul may be, (which is altogether unknown to us,) it is demonstratively certain that its existence, both in the manner and duration of it, must be wholly dependent on the will and pleasure of God. God must appoint its connection with and dependence on any other substance, both in its operations, powers and duration. All arguments therefore for the natural immortality of the soul, taken from the nature of its substance or essence, as if it *must* exist and act separate from the body, because it is of such a substance, &c. are manifestly vain. If indeed we do find any thing in the faculties and operations of the mind to which we are conscious, that doth show it is the *will of God*, we should exist in a future state, those arguments will stand good. But we can never prove that the soul of man is of such a nature that it can and must exist, live, think, act, and enjoy, &c. separate from, and independent of the body. All our present experience shows the contrary. The operations of the mind depend constantly and invariably upon the state of the body, of the brain in

particular. If some dying persons have a lively use of their rational faculties to the very last, it is because death has invaded some other part, and the brain remains sound and vigorous. But what is the sense of REVELATION ? You have given a noble collection of texts, that shew it very clearly. The subject yields many practical remarks, and the warmest and strongest excitements to piety."

After this extract from Mr. Taylor's letter, Dr. Law closes his appendix in these words : " But it might look like begging the question, should I draw out all these in form, together with the consequences of this doctrine in regard to either Papist or Deist, till the doctrine itself, so long decried by the one, and so often disgraced by the other, shall appear free from the prejudices attending it, and be at last understood to have a fair foundation in Scripture, by which we Protestants profess to be determined : and when we have duly examined them, may possibly discern *that the natural immortality of the human mind is neither necessarily connected with, nor to a Christian any proper proof of, a future state of rewards and punishments.*"

After this Dr. Law was raised to the see of Carlisle.

Dr. Watson, Bishop of Landaff published a collection of tracts for the use of young clergymen. The following is an extract from his preface.

Extract from a preface to a collection of Theological Tracts, by Richard Watson, D. D. Bishop of Landaff, and Regius Professor of Divinity in the University of Cambridge, 1785. *Dedicated to the Queen.*

Page 14, 15.—" Want of genuine moderation towards those who differ from us in religious opinions, seems to be the most unaccountable thing in the world. Any man who has any religion at all, feels within himself stronger motive to judge right, than you can possibly suggest to him : and if he judges wrong, what is that to you ? To his own master he standeth or falleth : his wrong judgment, if it affect his own salvation, cannot affect yours ! For, in the words of Tertullian, *nec alii obest aut prodest alterius religio.* . . . . Still you will probably rejoin, there must be many truths in the Christian religion, concerning which no one ought to hesitate, inasmuch as without a belief in them, he cannot be reputed a Christian—re-

puted! by whom? by Jesus Christ his Lord and God, or by you? Rash expositors of points of doubtful disputation; intolerent fabricators of metaphysical creeds, and incongruous systems of theology! Do you undertake to measure the extent of any man's understanding except your own; to estimate the strength and origin of his habits of thinking; to appreciate his merit or demerit in the use of the talent that God has given him, so unerringly, as to pronounce that the belief of this or that doctrine is necessary to *his* salvation?"

. . . . Page 16.—"But there are subjects on which the academicorum may be admitted. I apprehend without injuring the foundations of our religion. Such are the questions which relate to the power of evil spirits to suspend the laws of nature, or to actuate the minds of men; *to the materiality or immateriality of the human soul, to the state of the dead before the general resurrection, the resurrection of the same body, the duration of future punishments, and many others of the same kind.*"

It may be remarked that even *materialists* of former times appear to have had a vague notion of something in a man's head, which may properly enough be called soul. But *modern* materialists know of nothing which the word soul can, with the least propriety, be used to signify; and knowing that the use of thingless names as though they were not such, only serves to keep alive erroneous notions, they make no use of the word soul.—They discard it as so much old trumpery invented in ancient days, of no other use than to blind men's eyes, when they are searching after truth. Men are strangely deceived by words; they do not seem to regard the precept of Locke, "not to take words for things, nor suppose that names in books signify real entities in nature, till they can frame clear and and distinct ideas of those entities." If we could only once get rid of the metaphysical language now in use, there would be no more mystery about the functions of a man's head, than there is about the operations of a cotton factory.

But so far as it respects future existence—so far as it respects all religious doctrines, materialism is materialism. whether we use the word soul or not. And so far as it respects religious doctrines, that immaterialist who should maintain that the soul is in an unconscious state when separated from the body, is on the same footing with the materialist.

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CHAPTER XXXI.

On a Future State.

It is with diffidence we broach the subject before us. It is touching an interesting question, the negative or affirmative of which, can neither be proved or disproved by any evidence that man can draw from the book of nature.*

Those who firmly believe that the bible is the word of God, be them materialists or immaterialists, can want no further

* As we have spoken of the Book of Nature and of Good's Book of Nature, in this work; it may be well enough to show distinctly what we mean by the Book of Nature. We do not mean a paper book, written by Dr. Mason Good, nor any other paper book, but the universe—the created universe whose author is God. It is this book which teaches us the power and goodness of God; it is this book which teaches all ages and nations the same lessons; it is this book which teaches us all the physical facts that we know. These are the facts which we think over in connection with human statements, when we are said to judge or reason concerning such statements; and whatever we find to disagree with these facts appears to us irrational, *i e.* we do not believe it —And *we* are just fools enough not to be hypocrites—we openly avow our opinions though they may differ from the opinions of those who examine only one side of a question.

From what we have now said, the reader may discover a similarity of meaning in the two following expressions—What reason teaches us—What the book nature teaches us.

assurance of a future existence than what they have in the New Testament. The doctrine of resurrection is therein clearly and expressly avowed; and if any one want any further evidence of a future existence than what he has in this testament, it is clear that he does not firmly believe in the christian religion. Yet there are *some* who would be glad to find evidence of this pleasing doctrine in the book of nature. And as there can be no harm in believing in a future state, even if there never will be any such state, *provided* such belief do not prove a cause of less happiness or more misery in this life than we should otherwise experience, we shall glean what evidence we can from the book of nature in favor of it.

Perhaps we shall remove doubts and fears concerning a future state, as much by showing there is no evidence against such state, as by advancing all the arguments we can in favor of it. *That* then will be our first object.

— — — — — Really, we know not what to say—we seem to lack ideas; we cannot think of any thing which any man is short-sighted enough to bring forward as an argument *against* a future state of existence. We think we have shown correctly and satisfactorily what personal identity consists in; and if we have, such difficulties as might arise before it was satisfactorily shown what personal identity consists in, will not now be urged. According to our views it is of no consequence what becomes of the matter which composes our bodies at the time we die. It matters not if the same identical matter compose a thousand human bodies in succession, at the time they die. We say all that is necessary to constitute the same person, to all intents and purposes, is a like looking body, with like sensorial tendencies, organized out of *any* matter. And no one who believes in a God, will doubt his power to re-organize, or to organize such bodies at some future period.

That like looking men with like sensorial tendencies as those

that died at some former period have not yet been re-organized, is no evidence that such men will not be re-organized at some future period; but if men who died at some former period, had yet been re-organized to our certain knowledge, it would be some evidence to us, that other dead men will be re-organized. However, the lack of this evidence *for* a future existence, is no evidence *against* it. Suppose a man should be born in the summer, possessing as good a share of knowledge as any other man, except what is acquired by experiencing the changes of seasons; would such man, in a few days or weeks, judge from what he had experienced that there will be a winter? would he judge there will be short days, long nights, freezing weather and snow upon the ground? He certainly would not--judging only from what he had witnessed—putting human testimony aside—he would say there will be only warm days, longer than the nights, and the surface of the earth will be covered with green vegetables. Yet his having never experienced a winter and his judging there will never be such a season, would be no evidence that there will be no winter. So our having never witnessed a re organization of persons who formerly existed, and all our lack of belief that men will be re-organized, are no sort of evidence that they never will be.

Ten, fifty, or an hundred thousand years, compared with eternity, are as a moment compared with an age. The world is yet in its infancy; it has but just began to be; but a small part of it is yet brought into a state of cultivation; men have not yet arrived to the highest degree of perfection that their present natures admit of; they are grossly ignorant and superstitious compared with what they will be in a few centuries after intellectual freedom is obtained. These things considered, we are very far from having any reason to suppose that men would be re-organized and an end to the changeable

state of things would be put, by this time, if it were the intention of the Almighty that they ever will be.

Now if there be no evidence against a future state; and if we were to admit that there is no evidence in favor of it, the question as to our future existence would come under the common head of, *It may be so*, or, *It may not*. It would be a question concerning which we must be opinion-neuter, there being no evidence *for* nor *against*. But if any evidence in favor of a future state can be adduced, then have we so much reason to believe in a future state. That some such evidence can be gleaned from the book of nature, we shall now attempt to show.

We find that every thing—unless we except man—appears to be formed for something beyond its present existence, for some other purpose than merely that it may exist. By means of the heavenly bodies, the sun, earth, &c. vegetables exist; vegetables give support to animals; one animal is subservient to another, this to another, and so on, up to man. Now are we to say that man who is buried six feet below the surface of the earth, is an exception to this rule?* and are we to suppose that the existence of man in this life, is the highest and ultimate object of God? Is the God of nature a God that is so far pleased with the groans, the toys, the songs and supplications of mortal men, that these are the ultimate objects for which he created and suffers to exist, the stupendous universe? We can see no higher objects if the present existence of man be his last.

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* Should it be said that there is nothing in the nature of things which requires that man should be buried to such a depth as not to enrich the soil, or be food for other animals: and if he were not thus buried, he, like all other beings, would answer some purpose beyond his present existence; it might be replied that he would then answer no purpose superior to present human existence.

Again, how many infants die which answer no purpose but to bring sorrow to their parents.—Should it be said that they are brought forth, and they die, as the necessary consequences of the present nature of things, and that God has no particular designs in their birth or death,—the question may be asked, why is the present nature of things such that human beings must experience much affliction? Can we suppose that an Almighty Being suffers the nature of things to be such that there must necessarily be much human misery, merely for sake of this misery? Or does this misery have some connexion with a future state? It is said that nothing is in vain; and is not this misery suffered to be, that men may know in a future state what misery is, and thereby be more happy under the same circumstances than if they had no notion of such a thing as misery? Is it not rational to suppose that God, who is the cause of men being born into this world under such circumstances that there is a CAUSE for every one of their actions, ultimately intends the happiness of all, and that one of his ways of bringing about this happiness, or, if you please, of increasing it, is to first teach men what misery is—teach them by experience, the only way in which they can be taught?

That God may be equally good to all men, a future existence seems to be necessary: we think it must be admitted that some men experience more misery in proportion to their happiness in this life, than others. We do not believe that man has any claims on the Almighty for a future and happy state of existence, for any thing he does in this life. So on the other hand, we do not believe that man deserves a future state of misery for any thing he does in this life; but that God may be equally good towards all men—that all men may enjoy equal shares of happiness in proportion to their shares of misery, a future existence is necessary.

The vast superiority of man over the brute creation, and his capability of improvement in knowledge and virtue, appear to us to argue a little in favor of his future existence.

Another consideration which may have some weight with one who is not an atheist, is the wonderful display of God's sovereignty which a reorganization of all human beings that ever did or will die, would be. One can scarcely picture to himself the greatness of such a thing. It would be an occasion of a thousand fold more astonishment and heartfelt gratitude than the creation of the universe ; for at that time we may suppose there were but few to wonder and rejoice. It would most firmly convince *every one* that there is a God. Only conceive of millions of millions of human beings, of all ages, tongues and nations—parents and children, brothers, sisters and friends, at one time coming to life, and beholding each other ! We should then behold the men of former ages, concerning whom we have read with so much interest ; should be informed of the important events that had occurred since our death ; and should find that the God of nature did not create man merely to see him *squirm* in this world of toil and pain. Then should *we* (infidels) be overjoyed in finding that we were not to depart from our friends into regions of endless torments, and being the more happy on being thus disappointed, we should see that the God of goodness suffered Adam's children to scare one another with *hell-fire and damnation*, for the same purpose that he suffered other causes of misery to exist ! Then should we love and praise God with all our powers—then should we be in the kingdom of heaven, every one of us, altogether, with great rejoicing and thankfulness of heart !—Ah, yes : the God that made the universe had some higher object in view, than a short and sorrowful existence of men.

CHAPTER XXXII.

On Human Happiness, Good and Evil, Morality, &c.

Human happiness CONSISTS in agreeable conscient actions of the nervous system of human beings,—be these actions, actions of the organic and cerebral extremities of the nerves alone ; or of nerves and the sensorium together ; or of the sensorium alone. When these actions take place only in the organic and cerebral extremities of nerves, they constitute agreeable *sensations ;* when they take place in nerves and the sensorium together, they constitute agreeable *perceptions ;* and when they take place in the sensorium alone, they constitute agreeable thoughts.

That portion of happiness which consists in agreeable sensations and perceptions, is generally called *pleasure.* As all sensations and perceptions are a higher degree of consciousness than mere sensorial actions or thoughts ; that portion of happiness called pleasure is more vivid than mere sensorial happiness. But in proportion as it is more vivid, its duration is more transient ; for it is attended with a greater wear and tear of the system, which wear and tear not only disenables the system for being the subject of agreeable conscient actions, but often gives rise to conscient actions of a different and opposite nature, constituting misery.—*Nervous happiness* or pleasure is like the flash of shavings ; but sensorial happiness, like the burning of coal, is less vivid and more permanent.

The CAUSES of happiness may be divided into two classes, *immediate* and *remote.* The immediate causes are impressions upon the senses and sensorial tendencies ; the latter are causes of sensorial happiness, the former of nervous happiness, or pleasure. The remote causes of happiness are very numerous and varied : whatever conduces to our health is of this class ; and what people mean by honor, wealth, power, &c., belongs to this class of causes ; though, indeed, we are not so happy in possessing these things as we are in the act of obtaining them.

It is often asserted, and has been maintained by philosophers, that God is almighty ; and that he wills the happiness

of mankind. But admitting there is any human misery—and there is certainly an incalculable amount of it—to unsophisticated common sense one of these opinions concerning the Deity must be erroneous; or at least the assertion, that he wills the happiness of mankind must be taken in a certain limited sense: we must understand by it, that he wills such happiness of mankind as they actually experience, and not perfect, unmingled happiness. It would be highly absurd, if not a contradiction in terms, to say that things are not as an *Almighty Being* wishes them to be.

Just so certain as there is any such thing as human misery, just so certain the Deity is not almighty, or does not will the *perfect* happiness of mankind. It avails nothing to say man is as happy as he can be under the present nature of things; for an almighty Being who is the Author of nature might have had the nature of things different—might have decreed that no disagreeable action take place in a man's nervous system—or may still have it different. As little does it avail to say that man is a free agent, and brings his misery upon himself; for man is not a free agent, unless actions occur in his head and muscles without causes; and admitting him to be a free agent, we could only say he brings his misery upon himself because his nature is such—which nature an Almighty Being may change or might have caused to be different. It amounts to nothing to imagine a devil into existence, and say that he is the author of human misery; for an Almighty Being may destroy even a *real* devil, or might have prevented his existence at all. The means that proud man has invented, to reconcile the sentiment of God's omnipotence with the sentiment of his willing the perfect happiness of mankind, are truly laughable—as much so as one's getting into a basket and trying to lift himself up.

We hold that the Deity is Almighty, but does not will the perfect happiness of mankind. And instead of virtually maintaining that he is not Almighty, and imagining enemies of his into existence who, notwithstanding all his pains to subdue them, are still frustrating his noble designs with great success, we thank him for our present existence which, notwithstanding all our present pains and expectations of a better after this, is so dear to us that we are exceedingly loth to part with it. And we hold that our present misery is intended as a means of

rendering us more happy in a future state than we otherwise should be, under the same circumstances.

Where is the evidence that the present state of things is not as God wills or wishes it to be—where is the evidence that he wishes our perfect happiness? Archdeacon Paley tells us, that :—

"When God created the human species, either he wished their happiness, or he wished their misery, or he was indifferent and unconcerned about both.

"If he had wished our misery, he might have made sure of his purpose, by forming our senses to be so many sores and pains to us, as they are now instruments of gratification and enjoyment; or by placing us amidst objects so ill suited to our perceptions, as to have continually offended us, instead of ministering to our refreshment and delight. He might have made, for example, every thing we tasted bitter, every thing we saw loathsome; every thing we touched a sting; every smell a stench; and every sound a discord.

"If he had been indifferent about our happiness or misery, we must impute to our good fortune (as all design by this supposition is excluded) both the capacity of our senses to receive pleasure, and the supply of external objects fitted to produce it.

"But either of these (and still more both of them) being too much to be attributed to accident, nothing remains but the first suposition, that God, when he created the human species, wished their happiness; and made for them the provision which he has made, with that view, and for that purpose.

"The same argument may be proposed in different terms, thus: Contrivance proves design; and the predominant tendency of the contrivance indicates the disposition of the designer. The world abounds with contrivances; and all the contrivances which we are acquainted with, are directed to beneficial purposes. Evil, no doubt, exists; but is never, that we can perceive, the object of contrivance. Teeth are contrived to eat, not to ache; their aching now and then is incidental to the contrivance, perhaps inseparable from it; or even, if you will, let it be called a defect in the contrivance; but it is not the object of it. This is a distinction which well deserves to be attended to. In describing implements of husbandry, you would hardly say of the sickle, that it is made to cut the reaper's fingers, though, from the con-

struction of the instrument, and the manner of using it, this mischief often happens. But if you had occasion to describe instruments of torture or execution, this, you would say, is to dislocate the joints; this to break the bones; this to scorch the soles of the feet. Here pain and misery are the very *objects* of the contrivance. Now nothing of this sort is to be found in the works of nature. We never discover a train of contrivance to bring about an evil purpose. No anatomist ever discovered a system of organization calculated to produce pain and disease; or, in explaining the parts of the human body, ever said, this is to irritate; this to inflame; this duct is to convey the gravel to the kidneys; this gland to secrete the humour which forms the gout. If by chance he come at a part of which he knows not the use, the most he can say is, that it is useless; no one ever suspects that it is put there to incommode, to annoy, or to torment. Since then God hath called forth his consummate wisdom to contrive and provide for our happiness, and the world appears to have been constituted with this design at first, so long as this constitution is upholden by him, we must in reason suppose the same design to continue."

But we are not altogether satisfied with the learned Doctor's reasoning. When he speaks of our happiness and misery in the first sentence of the preceding quotation, we wish he had informed us whether, when God created the human species, he wished them to be *totally* happy or *totally* miserable; or only as happy as we are and as miserable as we are. If this last be his meaning, we can agree with him,—we can admit that when God created the human species, he intended them to be both happy and miserable, alternately as we are. But if he mean *perfect* happiness and *perfect* misery, then we have two things to say. First, as we are somewhat happy and somewhat miserable, "God hath called forth his consummate wisdom to contrive and provide for our happiness" in vain;—he is not almighty, he cannot accomplish even his own wishes and designs. Second, this sentence of Paley, though advanced as if it were a self-evident proposition, is very far from being such. If God neither wished our perfect happiness, nor perfect misery, it does not follow that he "was indifferent and unconcerned about both." We might as well say of a grey piece of cloth, the maker of it wished it white, or he wished it black, or he was indifferent and unconcerned

about either. We should not say this—we should say he wished it not white, and he wished it not black, but he wished it grey. Just so we say of our present state, it is *grey*, and is just what the *Almighty* wished it to be when he "called forth his consummate wisdom" in creating the universe, of which man is a part.

Paley remarks that the world abounds with contrivances, but among the whole there is not one contrivance of nature's God for the express purpose of producing misery; and this he thinks is sufficient evidence that God wills the happiness of mankind. But Paley does not seem to come to the point concerning this matter.—All misery is confined to the nervous system: it is a disagreeable consciousness—a disagreeable conscient action of the brain, or of the brain and nerves together; and the question is, did he who is the Author of our being, and of all things around, so constitute the nervous system that disagreeable conscient actions may be excited in it; and has he created any things which are capable of exciting these actions? If so, then he is the author of our misery in the same sense he is the author of our happiness. There may be more things which give us pleasure, than there are that give us pain—though few if any things are created expressly and exclusively for either—and man may be the subject of much more happiness than misery; but there is nothing under heaven which argues that God wished the perfect happiness of mankind. On the contrary, we have sufficient reason to believe that he is able to render us perfectly happy, and to accomplish every thing he wishes to, notwithstanding all the brain-begotten devils that be.—We shall show presently why many deists and believers in a supernatural religion are so loth to admit that He, who is the Author of our nature, and of all things around, is the Author of our misery, in the same sense he is the Author of our happiness.

The words *Good* and *Evil*, like all other words, are of human invention. They are both general terms. Every thing which is productive of human happiness, is good; every thing which is productive of human misery, is evil. All things are good or evil, according to circumstances; or in other words, what is good—what is productive of happiness—on one occasion, may be evil—may be productive of misery—on another. Perhaps there is nothing under heaven that is invariably

good or invariably and purely evil, under all circumstances hence it is common to say of a thing, it is good in its place, or it is good, if you make proper use of it. But if it be believed that a thing in the long run and *broad run*. is productive of more happiness than misery, it is called good, though under some particular circumstances it may be productive of some considerable misery. So if a thing be productive of some happiness, but much more misery, it is pronounced evil. No one would think of calling the sun a bad or evil thing because it sometimes burns one's skin, or parches the ground in a drought: but distilled spirits are generally and justly accounted evil, for they are the cause of more human misery than happiness.

Vice and *Virtue* are words which we propose to use in a more limited sense than the words good and evil. We consider virtue and vice as bearing the same relation to good and evil, that pleasure bears to happiness. Virtue and vice constitute only a *part* of good and evil. They consist in those actions of men which are productive of happiness and misery.

The word virtue, then, is a general term comprehending all those human actions which tend to human happiness, either by actually giving rise to it, in those cases in which it could hardly be said the person is either happy or miserable, or by relieving misery when it exists, or by preventing its existence. And the word vice is a general term, comprehending all those human actions which tend to human misery, or indeed wanton misery of any sentient being.

Such being the meanings which we attach to the words good and evil, virtue and vice, or virtuous and vicious; we see why many are loth to admit that God is the author of our misery in the same sense he is the author of our happiness. It seems to be the same as saying that God is evil or vicious; but we must remember that almost every thing produces both happiness and misery—the same thing being good in one particular instance, though not in another. Consequently there is a good in the particular, and a good on the whole. Whatever in the long run and broad run is productive of more happiness than misery, must be, and is, pronounced good; although it may be the cause of some, even much, misery. It follows, then, that if there be more happiness than misery among created beings, the Author of them is really and absolutely good, and not evil, any more than the sun, which, though it parch

the ground in a drought, and for a few days in the summer render those in a southern climate uncomfortable, is essential to our existence and all that we enjoy.

The author of our being is *good* and almighty, notwithstanding he has been so very good to us, that some proud fellows took it into their heads that he never intended, and is displeased at, whatever is productive of human misery; and have degraded his character—as it respects his power—by imagining enemies of his into existence to account for this misery, which enemies are continually frustrating the designs and wishes of the ALMIGHTY; notwithstanding, with much ado, he has succeeded in getting the immaterial beings into chains! Away with these absurdities, and let us embrace the solid truths which reason discovers.—We need not fear of representing the Deity in a more degrading point of view than he has been represented.—When we come to know that our misery in this life is only intended to render us more happy in a future, we shall have reason to exclaim, the goodness of God is past all conception.

As many things are productive of such a mixture of happiness and misery, that it is not always clear whether in the end they give rise to more of the one than the other, we must often reason [think over facts] to determine whether a thing is productive of more happiness than misery; hence arises the science of ethics or morality. Those who are extensively acquainted with the nature and relations of things, and are able to discover the distant consequences of certain courses of conduct, may discover consequences of certain actions or principles of action which other men do not learn from the book of nature. Hence some men may teach others in some cases, what is productive of more happiness than misery, or more misery than happiness—may convince them what is virtuous and what is vicious, when they would otherwise be in doubt or mistaken.

But no man, however learned, has ever existed in a future state, or *knows* that any course of conduct in this world of causes and effects, will have any influence on our future happiness. He may speculate about this matter, and so far as his speculations appear reasonable, so far will men believe; for to believe in a low degree and to have a thing *appear reasonable*, are the same thing:—what *appears probable* or *certain* to any one, he believes in still higher degrees; and what one

knows, he believes in the highest possible degree. But a man cannot bring any book of human authorship, informing us of a connexion between our conduct here and our happiness hereafter, which is any more to be depended on than a book which may be written nowadays ; for there are men now living who can see as far into the consequences of human actions as any man that ever lived.

If any man bring forward a book whereby to regulate our conduct, and pretend that it is of divine origin, he must first prove this, before he can expect we shall regard it with blind faith—faith not founded on reason and evidence. We know there are three or four books in the world which have been brought forward with such pretensions ; but there is nothing to substantiate the divine origin of either of these books, except their own contents. If on examining these books we discover any thing supernatural in them—any marks of divinity in them—we must suppose that they originated from a source superior to the natural creature man ; but if we discover nothing supernatural in them—nothing but what may be of human origin, then we have no evidence that they are of divine authority.—The earth, and every thing else which we know that man could not make, we consider a production of nature's God ; but we never believe that God has any immediate agency in the production of any thing which man may make, unless we except these books. We know that these books relate miracles ; and miracles are supernatural events ; but the relation of an event is nothing supernatural, be the event what it may. Neither is it supernatural or uncommon for men to be deceived, or to relate falsehoods knowingly. There are no miracles in any book, but merely the relation of miracles ; and in determining whether a relation of a miracle be true or false, we know of no surer and better rule, than to inquire with ourselves, which is the most rational supposition—which the most frequently happens—that men are deceived or lie intentionally or that events occur contrary to the laws of nature.—If the Book of Nature tell us one thing, and a paper book the contrary, then one or the other must be false ; and as God is the Author of the Book of Nature, we cannot hesitate to say the paper book is false and not of divine origin, unless we can believe that the Deity tells us one thing in his universal book, and the contrary in a book

which is known but to a small part of the human beings that have been, are, and will be.

Now as it is not known that our conduct in this life, will have any influence on our happiness hereafter, we th nk it proper to consider morality and religion as two distinct things —the one as having relation to our happiness in this life, the other as consisting of doctrines and speculations concerning our future existence. Religion may concur with morality, or include it, as one thing includes another; but still they are distinct things, and a man may be moral if not religious, and religious (according to our definition of religion) if not moral. He may believe and profess to believe certain doctrines, opinions, statements, &c.; and yet he may not act in conformity to those principles which are, or are believed to be, productive of happiness in this life. If religion be nothing but morality, then is it nothing better or worse than morality; but if it be something besides morality, then is it something distinct from it.

According to these views, if it be a *religious* doctrine that certain courses in this life are necessary to our happiness in the future; then, as the future will be infinitely longer in duration than the present, whoever believes such doctrine acts consistent with his belief in pursuing such courses and in striving to have others pursue them, even if he sacrifice all worldly enjoyments and render all around him unhappy in doing so. The glorious end he has in view justifies the means. It is purchasing a pearl of great worth, without any thing like an equivalent—he mortifies the flesh to be sure, but then it is to ensure the everlasting happiness of the "soul," which is as great a reward as the most selfish man could ask.

But the mere moral man aims at the happiness of the human family (including himself of course) in this life; and doing what he can to render his own days long and happy, as well as those of his fellow creatures, he trusts, unconcernedly, that He who is the author of nature and his present happiness, and he who cannot punish his creatures but for some good purpose, will deal mercifully with him in a future state of existence. But to return to the consideration of virtue.

We have said that virtue consists in those actions of human beings which tend to human happiness. Perhaps it will be said that human actions may be productive of happiness although the actor or agent did not act with the intention of

producing such effect, but perhaps even with the intention of producing pain; and if so, we cannot call his action virtuous. Consequently in giving a definition of virtue, we ought to include *intentions* as well as actions. But what is an intention but an action of that which intends—what is it but an action or actions of that which thinks—what is it but actions of the sensorium? In saying that virtue consists in actions of human beings that are productive of happiness, we would be understood to include actions of the nervous system as well as muscular. The muscular actions of any man are not generally the immediate cause of happiness in others, and his nervous actions—his intentions—are one link more remote in the chain of causes that give rise to happiness in others, than his muscular actions; but still they are as truly actions of him as the motions of his limbs: they are actions which operate in producing the effect [happiness] through the medium of his muscles.

Perhaps it will be further objected to our definition of virtue, that a man's actions may prove a cause of misery in others, though he intended nothing but happiness. To this we would reply:—We do not determine whether a thing be good or virtuous, by the effects it may have in some few particular cases; we take into consideration its *general* tendency—we consider what effects such a thing *generally* produces. Consequently if a man's intentions be such as are generally productive of happiness, we call them virtuous, although on account of some unforeseen circumstance they be productive of the reverse, in some particular case. If a man intend to render a fellow being happy, his intention is such as generally has this effect, and is, therefore, a virtuous intention. So on the other hand, if a man intend to render a fellow being miserable, his intention is vicious although it may prove a cause of no misery, but much happiness, even in this fellow being. Consequently, in determining whether a man's intentions be virtuous or vicious in any case in which he acts, we do not so much regard the consequences of his action, as the circumstances under which he acts. If these circumstances be such as to lead us to believe that he intended happiness, and not misery, we say his intentions were virtuous, and himself meritorious.

Those actions of human beings which are productive of more happiness than misery, are truly and absolutely virtu-

ous, and these actions constitute virtue; but owing to circumstances which give rise to a difference of education, in the widest sense of the term, men in all ages and countries may not wholly agree as to what is productive of more happiness than misery—may not wholly agree as to what is virtuous and what is vicious. Hence in some places a man may be considered meritorious for doing that which in other places he would be condemned for doing; and he may feel that he does right—may feel a sense of approbation in doing what others would feel remorse or disapprobation in doing.

However, men in all parts of the world believe very nearly alike as to what is virtuous and what is vicious—what it is right for them to do, and what it is wrong for them to do. This is the case, because all men are chiefly taught what it is right and what it is wrong for them to do, by one and the same universal book the book of nature. Paper books are not necessary to teach them what actions of others are necessary to produce happiness or misery in themselves; nor to teach them that men are very nearly alike as to what renders them happy or miserable. It is only in a few instances that, by pointing out the remote consequences of certain actions or principles of conduct, some men may teach others what is productive of more happiness than misery, or more misery than happiness—what is right and what is wrong for them to do—what is virtuous and what is vicious—what they ought to do and what they ought not to do.

We hold that what a man *ought* to do, it is *right* for him to do, and what it is right for him to do, it is *virtuous* in him to do; and what is virtuous is productive of happiness, the grand object of all human beings.

The question now arises, why *ought* men to do that which is productive of happiness. The answer is, because it is productive of happiness. This is the answer which must ultimately be given, let us give as many other answers before we are compelled to give this, as we can devise. Those who believe in a future state of rewards and punishments—and indeed those who do not—may say that we ought to practice virtue, ought to do that which is productive of happiness, because it is the will of God that we do so; but why ought we to obey the will of God? Because we shall be happy here or hereafter, if we do, and miserable if we do not. This is the most cogent answer that can be given to the question, why

ought we to obey the will of God? But in this case, the highest inducement to perform a certain deed—that which renders it obligatory on us to perform it—is the consequent happiness.

Should any one presume to say, that the Almighty is pleased at some of our actions, and displeased at others, and that we ought to perform certain actions because they please the Almighty; then happiness would be the end and inducement of performing such actions: the happiness however would be that of the Deity—deistical happiness, instead of human. But we can hardly bring ourselves to say that the happiness of the Almighty is at all dependent on the dependent worms of his creation.

We do not believe in acts of disinterested benevolence;—we believe it would be contrary to the laws of volition for a man to do a *voluntary* act which he does not desire to do; and to gratify a desire is to gratify self. Those who maintain that we often do acts of kindness without any selfish motive, rely much on the fact that we often fly to the relief of a fellow creature in distress before we have had time to reflect on the good that will result to us from doing so. But the advocates of the selfish system may reply, that the succession of thoughts is so rapid, that it is impossible for any to say, with certainty, that we ever fly to the relief of any one on seeing him in distress, before we have had time to think over several thoughts. They may say, also, that we have previously found out that it gives us pleasure to help one in distress—that it causes such one to feel grateful towards us, and we feel well in knowing that one feels grateful towards us. Consequently when we see a person in distress, there is no more need of our stopping to consider whether it will be conducive to our happiness to help him, than there is of our stopping to consider whether we had better exert ourselves to prevent our falling into the fire, when we are in danger of it. Again, it may be said, that owing to the principle of association, it gives us disagreeable consciousness to see a fellow being in distress; and by giving him relief we relieve this disagreeable consciousness, that is, render ourselves more happy, or if you please, less miserable.

We do not say that we always think of self, any more than we think of the king of England, when we fly to the relief of another; but we say that if we were every way just as happy n not relieving the distresses of a fellow being as in relieving

it, we should have no desire to relieve it; and that we never do a voluntary act which we have no desire to do.—If to maintain this be to maintain a selfish system of morality, then we maintain such system.

But although we do not believe in acts of disinterested benevolence, (using these terms in a strict philosophical sense,) still we would not say it is *right* for a man to perform a certain action—that he *ought* to perform it—that it is *virtuous* in him to perform it; because by performing it he increases his *own* happiness solely; and especially if he increase it at the expense of another's happiness. But we say an action is virtuous—is an action which the agent ought to perform—is an action, for performing which the agent is meritorious, when in the long run and broad run it increases the sum of human happiness more than it increases the sum of human misery.

Perhaps it will be asked if a man ought to do an act which renders himself less happy, provided by doing so he render two or more as much more happy as he does himself less. To this we answer, he is under no higher obligation to do so, than he is to practice virtue. We should not call him vicious—we should not call him a producer of misery—if he did not perform such act; but he would be virtuous if he did. As it happens, the nature of things is such that a man very seldom renders himself less happy by rendering others more so, provided he act with the intention of doing what he thinks is right—what he thinks will be productive of more happiness than misery in the long run and broad run. A man may render a highwayman more happy by assisting him to escape justice, and may bring misery upon himself by doing so; but he does not do what he thinks is right when he does this; that is, if he know the highwayman to be such; but if he do not, law does not require him to be punished for the act.—Let us offer a few more remarks concerning disinterested benevolence.

Although to gratify a desire is to gratify self, and although we do not do any voluntary act which we do not desire to do, (except it be from habit, which by the by we never should acquire if we never acted, and never should act in the first place if we had no desire to act,) still different men may do similar acts from different motives—if indeed it be proper to call acts similar, when the motives are different.—One may act with a view of receiving a recompense which he does not

derive from within, but a recompense at the *expense* of him whom he assists: if he do not expect ready cash, he may expect some good turn from him sometime or other, and would not assist him on any other principle. Another may do a like act, not with a view of receiving any pay in those things which men love to keep, as money, goods, privileges, &c.; but with a view of causing one or more to feel grateful towards him—to think well of him—or to prevent the misery he would experience in not acting. Such one performs an act which has much more the appearance of disinterestedness than the act of him who acts with the view of receiving a recompense in those things which men toil and fight for; but it is not an act which the agent has no interest in performing. This is a world in which we are all in pursuit of happiness; and that we may not hinder but help each other along, we are so constituted that we experience a disagreeable consciousness whenever we do that which, by the book of nature or otherwise, we are taught to believe is opposed to the general happiness of mankind; and so constituted as to experience an agreeable consciousness whenever we do that which we believe has a reverse tendency. And as we believe those actions for which the agent claims no recompense, in those things which men toil for and love to keep, are productive of more happiness than those which are *sold* for an equivalent in those things which men toil and fight for; we experience a more distinctly agreeable consciousness in contemplating such actions, than in contemplating those for which the agent claims a recompense in those things which men are loth to part with. Such actions as the former, we call acts of benevolence; but as we have said, they are not acts in which the agent has no interest, and consequently not acts of *disinterested* benevolence.

We do not say that any part of us is constituted expressly and solely for the intent that we may experience a disagreeable or an agreeable consciousness whenever we contemplate those actions of ourselves or others which we believe would be, are, or have been, productive of misery or happiness. We say that our constitution being such as it is, such consciousness is one of the *many* effects that are to be traced to such constitution.

An action is witnessed by us, or described to us; it is an action which we know to be, or believe to be, productive of

happiness ; the circumstances relating to it are such that we believe the agent intended this happiness ; and an emotion arises in us, which we call a sense of approbation towards the agent. But why does it arise, and what is the nature of it ? Is it the *immediate* effect of witnessing or hearing of such action, and does it arise in *all* men on witnessing or hearing of such action ? Or does something intervene between witnessing the action and the existence of the emotion, which intervening something may be different in different men, and perhaps wholly wanting in some ? The emotion would not arise were it not for those laws of the nervous system—those ultimate facts relative to the nervous system—on which our other emotions depend. Were it not that those actions of the sensorium which are in some way related, occur in connexion, and likewise that on the occurrence of certain sensorial actions, conscient actions of nerves in or about the epigastric region arise, such emotion would not arise on witnessing the action. The mere optical perception of one person murdering another, is no more disagreeable than the mere optical perception of one person kissing another. If a man could be produced with a well organized system, but *entirely* destitute of sensorial tendencies, the sight of one person murdering another would no more excite a disagreeable emotion in him than the sight of one person kissing another, or one person wrestling with another. It would not even suggest a single thought ; it would excite an optical perception, and produce a sensorial tendency—this would be all.

But owing to what we acquire by EXPERIENCE, to wit, our knowledge, our sensorial tendencies—which, by the by, may be, nay are, different in different men—the optical perception of one person murdering another, may be followed by such conscient actions of the sensorium and of nerves, as constitute a disagreeable emotion ; and this emotion, together with the idea of the agent who intentionally kills, constitutes what we call a sense of disapprobation towards such agent.

Some have used the word virtue to denote only those actions which, when contemplated, give rise to a sense of approbation ; but according to this use of the word, an action is virtuous or not virtuous, depending upon the knowledge and *nervousness* of those by whom it is contemplated.

CHAPTER XXXIII.

A Brief Sketch of the Opinions of several Ancient and Modern Philosophers, concerning the Constitution and Phenomena of Man : Given partly for the purpose of showing that the Hypothesis of Soul gave rise to the Sceptical Philosophy of Berkley and Hume.

I do not know that any ancient philosopher ever questioned the existence of something which the word soul may with propriety be used to signify : it appears that all took the existence of some such thing for granted. But they thought differently concerning its nature, and speculated not a little concerning the way and manner in which it is affected by external objects. Some maintained that it is of a spiritual, and others that it is of a material nature. Those who held that it is material, disputed to which of the four elements it belongs ; whether to earth, air, fire, or water. Some held that it consists in part of all these elements ; and that it perceives earth by the earthly part ; water by the watery part ; and fire, by the fiery part of the soul.

" The most spiritual and sublime notion," says Dr. Reid, " concerning the nature of the soul, to be met with among the ancient philosophers, I conceive to be that of the Platonists, who held that it is made of that celestial and incorruptible matter of which the fixed stars were made, and therefore has a natural tendency to rejoin its proper element."

From this it appears that the most " spiritual" notion of the ancient philosophers concerning the nature of the soul, is, that it is made of " matter!" and of matter too, as gross perhaps as that of which this earth is formed.

" It must be obvious," says Dr. Good, in his Book of Nature, vol. 2, " that there never is, nor can be, any direct communication between the mind and the external objects the mind perceives, which are usually, indeed, at some distance from the sense that gives notice of them. Thus, in looking at a tree, it is the eye alone that really beholds the tree, while the mind only receives a notion of its presence, by some means or other, from the visual organ. What then is the medium by which such communication is made, which in

duces the mind, seated as it is in some undeveloped part of the brain, to have a correspondent perception of the form, size, colour, smell, and even distance of objects with the senses which are seated on the surface of the body ; and which, at the same time it conveys this information, produces such an additional effect that the mind is able at its option to revive the perception, or call up an exact notion or idea of these qualities at a distant period, or when the objects themselves are no longer present ?"

" The principal systems that were started among the philosophers of Greece to explain the origin and value of human knowledge, were those of Plato, of Aristotle, of Epicurus, and of the sceptics, especially Pyrrho and Arcesilas ; and the principal systems to which they have given birth in later times, are those of Des Cartes, Locke, Berkley, Hume, Hartley, Kant, and the Scottish school of Common Sense, at the head of which we are to place Dr. Reid.

" I had occasion to observe, in our first series of lectures, that it was a dogma common to many of the Greek schools, that matter, though essentially eternal, is also, in its primal and simple state, essentially amorphous, or *destitute of all form and quality whatever* ; [we can as readily admit that such matter is eternal, as that *nothing* is eternal ;] and I further remarked, that the ground-work of this dogma consisted in a belief that form and quality are the contrivance of an intelligent agent; while matter, though essentially eternal, is essentially unintelligent. Matter, therefore, it was contended, cannot possibly assume one mode of form rather than another mode ; for if it were capable of assuming any kind, it must have been capable of assuming every kind, and of course of exhibiting intelligent effects without any intelligent cause.

" Form, then, according to the Platonic schools, in which this was principally taught, existing distinct from matter by the mere will of the Great First Cause, presented itself, from all eternity, to his wisdom or *logos*, in every possible variety; or, in other words, under an infinite multiplicity of incorporeal or intellectual patterns, exemplars, or archetypes, to which the founder of this school gave the name of *ideas ;* a term that has descended without any mischief into the popular language of our own day ; but which, in the hands of the schoolmen, and various other theorists, has not unfrequently

been productive of egregious errors and abuses. By the union of these intellectual archetypes with the whole or any portion of primary or incorporeal matter, matter immediately becomes embodied, assumes palpable forms, correspondent with the archetypes united with it, and is rendered an object of perception to the external senses; the mind, or intelligent principle, however,—which is an emanation from the great intelligent cause,—*never perceiving any thing more than the intellectual or formative ideas of objects as they are presented to the senses;* and reasoning concerning them by those ideas alone."

"The only essential variation from this hypothesis which Aristotle appears to have intruded into his own, consists in his having clothed, if I may be allowed the expression, the naked ideas of Plato, with the actual qualities of the objects perceived; his doctrine being, that the sense, on perceiving or being excited by an external object, conveys to the mind a real resemblance of it; which, however, though possessing form, colour, and other qualities of matter, is not matter itself, but an insubstantial image, like the picture in a mirror; as though the mind itself were a kind of mirror, and had a power of reflecting the image of whatever object is presented to the external senses. This insubstantial image or picture, in order to distinguish it from the intellectual pattern or idea of Plato, he denominated a *phantasm.*"

"Epicurus concurred in the doctrine that the mind perceives sensible objects by means of sensible images; but he contended that those images are as strictly material as the objects from which they eminate; and that, if we allow them to possess material qualities, we must necessarily allow them at the same time to possess the substance to which such qualities appertain. Epicurus, therefore, believed the perceptions of the mind to be real and substantial effigies, and to these effigies he gave the name of SPECIES, in contradistinction to the insubstantial PHANTASMS of Aristotle, and the intellectual or formative IDEAS of Plato. He maintained that all external objects are perpetually throwing off fine alternate waves of different flavours, odous, colours, shapes, and other qualities; which, by striking against their appropriate senses, excite in the senses themselves a perception of the qualities and presence of the parent object; and are immediately conveyed by the sentient channel to the chamber of the mind, or

sensory, without any injury to their texture : in the same manner as heat, light, and magnetism pervade solid substances, and still retain their integrity."

"With Aristotle and Epicurus Des Cartes contended that the mind perceives external objects by images or resemblances presented to it : these images he called, after Plato, *ideas* ; though he neither acceded to the meaning of this term as given by Plato, nor allowed with Aristotle or Epicurus that they proceed from the objects themselves, and are transmitted to the mind through the channel of the senses ; so that the precise signification he attatched to this term is not clear." He contended, "that the mind has a large stock of ideas of its own, implanted by the hand of nature, and not derived from the world around us : ideas, therefore, that are strictly innate, and may be found on being searched for, though otherwise not necessarily present to the mind's contemplation."

As to Mr. Locke, strange as it may appear to those conversant with his writings, it has been contended by some that he did not consider an idea as any thing distinct from the mind ; but we think Dr. Reid was correct in classing Locke with the ideal philosophers. The passages quoted from Locke, by Dr. Thomas Brown, in his Philosophy of the Human Mind, to show that Locke did not consider ideas as any thing distinct from the mind, appear to us to prove no such thing ; especially when we consider that, according to Locke, the mind at birth is as destitute of ideas as an unwritten sheet of paper is destitute of words ; that the mind receives ideas by the senses, their proper inlets ;* that it compares them, compounds them, splits them up, trims off their excrescences and stores them away for future use. "To ask," says Locke, "at what time a man has first any ideas, is to ask when he begins to perceive ; having ideas and perception being the same thing." From this passage it appears that perception is *hav-*

* "Methinks," says Locke, "the understanding is not much unlike a closet, wholly shut from light, with only some little opening left to let in external visible resemblances or ideas of things without. Would the pictures coming into such a dark room but stay there, and lie so orderly as to be found upon occasion, it would very much resemble the understanding of a man, in reference to all the objects of sight, and the ideas of them."—*Human Understanding, Book* ii. *chap.* 11, § 17.

ing ideas; but it does not appear that ideas are nothing distinct from the mind. *What is perception?* Why, it is *having ideas*, which are things that a new-born babe possesses not though it possesses a mind or soul.

The following passage of Locke seems more than any other to favor the opinion that he did not consider an idea as any thing distinct from the mind.

"The other way of retention, is the power to revive again in our minds those ideas, which after imprinting have disappeared, or have been as it were laid aside out of sight; and this we do, when we conceive heat or light, yellow or sweet, the object being removed. This is memory, which is, as it were, the store-house of our ideas. For the narrow mind of man not being capable of having many ideas under view and consideration at once, it was necessary to have a repository to lay up those ideas, which at another time it might have use of. But our ideas being nothing but actual perceptions in the mind, [*alias*, our perceptions being nothing but ideas actually in the mind,] *which cease to be any thing when there is no perception of them*, this laying up of our ideas in the repository of the memory, signifies no more but this, that the mind has a power in many cases to revive perceptions, which it has once had, with this additional perception annexed to them, that it has had them before. And in this sense it is, that our ideas are said to be in our memories, *when indeed they are actually no where*, but only there is an ability in the mind when it will to revive them again, and as it were paint them anew on itself, though some with more, some with less difficulty; some more lively, and others more obscurely."

On the whole, it appears to us that Locke considered ideas as something distinct from the mind—if not pictures or images of things—something which we acquire by way of our senses or by "reflection;" but still when they are not perceived, when they are "laid aside as it were out of sight," and not "under view and consideration," they are something so unlike ideas in the *mind's presence chamber*, that they cannot properly be called ideas; for an idea, as he has defined it, is "whatever a man observes and is *conscious* to himself he has in his mind;" consequently *as ideas* "they are no where,"—"ideas ceasing to be any thing (to the man that possesses them) *when they are not perceived.*"

At any rate, if Locke did not consider ideas as something

distinct from the mind, his Essay on Human Understanding is a book of metaphors, and in a philosophical point of view, by no means worthy of the praises that have been bestowed upon it.

"Is not," says Sir Isaac Newton, "the sensorium of animals the place where the sentient substance is present; and to which sensible species of things are brought, through the nerves and brain, that there they may be perceived by the mind present in that place?" And says Dr. Clark, in one of his letters to Leibnitz—"Without being present to the images of things perceived, the soul could not possibly perceive them. A living substance can only there perceive, where it is present. Nothing can any more act, or be acted upon *where* it is not present than it can *when* it is not present." Says Dr. Portersfield—"How body acts upon mind or mind upon body, I know not; but this I am very certain of, that nothing can act, or be acted upon, where it is not; and therefore, our mind can never perceive any thing but its own proper modifications, and the various states of the sensorium, to which it is present: so that it is not the external sun and moon which are in the heavens, which our mind perceives, but only their image or representation, impressed upon the sensorium. How the soul of a seeing man sees these images, or how it receives those ideas, from such agitations in the sensorium, I know not; but I am sure it can never perceive the exteral bodies themselves, to which it is not present." "The slightest philosophy," says Mr. Hume, "teaches us that nothing can ever be present to the mind, but an image or perception; and that the senses are only the inlets through which these images are conveyed; without being able to produce any immediate intercourse between the mind and the object. The table which we see seems to diminish, as we remove farther from it: but the real table which exists independent of us, suffers no alteration: it was therefore nothing but its image which was present to the mind. These are the obvious dictates of reason." "The mind," says Monboddo, "is not where the body is, when it perceives what is distant from the body, either in time or place; because nothing can act but *when* and *where* it is. Now, the mind acts when it perceives. The mind therefore, of every animal who has memory or imagination, acts, and of consequence exists, when and where the body is not; for it perceives objects distant from the body, both in time and

place."—"I suppose," says Malebranche, "that every one will grant that we perceive not external objects immediately and of themselves. We see the sun, the stars, and an infinity of objects without us; and it is not at all probable that, upon such occasions, the soul sallies out of the body, in order to be present to the objects perceived. She sees them not therefore by themselves: and the immediate object of the mind is not the thing perceived, but something that is intimately united to the soul; and it is that which I call an idea: so that by the word idea, I understand nothing else here but that which is nearest to the mind when we perceive any object. It ought to be carefully observed, that, in order to the mind's perceiving any object, it is absolutely necessary that the idea of that object be actually present to it. Of this, it is impossible to doubt. The things which the soul perceives are of two kinds. They are either in the soul, [wonder how things can be *in* an unextended thing] or they are without the soul. Those that are in the soul, are its own thoughts; that is to say, all its different modifications. The soul has no need of ideas to perceive these things. But with regard to things without the soul, we cannot perceive them but by means of ideas."*

From what has been advanced in this chapter, the reader not only learns to what difficult questions and wild notions, the hypothesis of soul has given rise; but he is prepared to see in what way this hypothesis has given rise to the sceptical philosophy of Berkley and Hume. In the first place there is a soul in a man's head, which perceives and thinks; the question now arises—How can the soul perceive objects exterior to the body, and in many instances quite distant from it? "Nothing can act where it is not, any more than when it is not. Now the soul acts when it perceives;" and it is excited to act by that which it perceives. Of course, it must either sally out of the brain to the object; or the object must enter the head to be present to the soul in the brain; or something must pass from the object into the brain to be present to the soul. But it is quite unlikely that a man's soul flies away to the sun in the east, when he sees the sun, and the next instant—the man turning round—flies away to the mountain in the west; and it is also rather difficult to admit that the sun itself enters the

* The quotations in the foregoing paragraph, may all be found in Stewart's Philosophy of the Human Mind, pages 46, 47, 48.

brain, for to say nothing of its size, and the velocity with which it must move, it cannot be in but one brain at a time—yet millions may see the sun at the same instant; consequently the necessary conclusion is, that when the soul perceives an object, something passes from the object into the brain, to be present to the soul—a something which by different philosophers has been called by the different names of idea, phantasm, species, image, and impression. But by whatever name it be called, it is that which is present to the soul when it perceives; and indeed it is the only thing that the soul does perceive; though for convenience sake, we say we perceive the object which gives it off.

Thus we see that the hypothesis of soul gave rise to the hypothesis of ideas or images, as things distinct from the perceiving soul and the external objects said to be perceived. Now says Mr. Hume, we have no evidence at all, and never can have any, that any thing more exists than the perceiving thing, and the images or impressions perceived. We talk about the sun, moon, and other objects without us, but we can have no evidence that there are any such things—we do not see them, we do not feel them—the seeing, feeling thing perceives nothing but images or impressions, which may—for aught any one can say to the contrary—exist independent of any thing more gross and substantial; and it is quite beneath a philosopher to admit the existence of any thing of which there is no evidence. Indeed, Mr. Hume did not stop here; but so far as I can learn from other authors, his train of reasoning proceeded thus:—As to the existence of matter or body, it is entirely out of the question, it is what no reasonable man or philosopher can possibly think of contending for. There is nothing in nature but mind and perceptions of mind—perceptions diversified, indeed, by being sometimes stronger, and sometimes weaker, and which may on this account be properly distinguished by the names of impressions and ideas. But how do we know that there is any mind—how do we know that there is any thing but impressions and ideas? This is the utmost we can know, and even this we cannot know to a certainty: for no body but fools will pretend certainly to know or believe any thing. These ideas and impressions follow each other, and are therefore conjoined; but we have no proof that there is any necessary connexion between them. They are a "bundle of perceptions" that suc-

ceed each other with inconceivable rapidity, and are in perpetual flux; and hence I myself of to-day, am no more I myself of to-morrow, than I am Nebuchadnezzar or Cleopatra. See Good's Book of Nature, vol. 2, p. 246.

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CHAPTER XXXIV.

*A Refutation of Professor Stewart's Argument for the existence of Soul or Mind.**

"The notions we annex to the words matter and mind, as is well remarked by Dr. Reid, are merely relative. If I am asked what I mean by matter, I can only explain myself by saying it is that which is extended, figured, coloured, moveable, hard, soft, rough or smooth, hot or cold—that is, I can define it in no other way than by enumerating its sensible qualities. It is not matter or body which I perceive by my senses; [so said Mr. Hume!] but only extension, figure, colour, and certain other qualities, which the *constitution of my nature* [rather an ambiguous expression] leads me to refer to something that is extended, figured and coloured. The case is precisely the same with respect to mind. We are not immediately conscious of its existence; but we are conscious of sensation, thought and volition; operations which imply the existence of something which feels, thinks, and wills. Every man too, is impressed with an irresistible conviction that all these sensations, thoughts and volitions, belong to one and the same being, to that being which he calls himself; a being which he is led, by the *constitution of his nature*, to consider as something distinct from his body, and not liable to be impaired by the loss or mutilation of any of his organs.

* Having never seen Dr. Reid's Essay on the Active Powers of Man I know not whether this argument for the existence of mind ought to be credited to him, or to professor Stewart; but this I consider of little consequence—not regarding the argument as creditable to any philosopher. I find it in Stewart's Philosophy of the Human Mind, p. 10.

"From these considerations, it appears that we have the same evidence of the existence of mind, that we have of the existence of matter,—nay, if there be any difference between the two cases, that we have stronger evidence for it, inasmuch as the one [the mind] is suggested to us by the *subjects of our consciousness*, and the other merely by the objects of our perceptions."

Well, reader, what do you think? You must know that almost all men whose opinions concerning the subject are of much weight, (I mean phys ologists,) are decidedly of the opinion that there is no such mind in existence as Stewart speaks of; and yet of the two, it is rather more evident that there is, than that there is any thing without our skulls,—we are taught so by the *constitution of our natures*.

It appears very clear to me, that when professor Stewart wrote the foregoing passages, he did not think of every thing that relates to the subject; or else he was endeavoring—and knowingly too—to support a feeble cause by sophistry. He is all wrong,—so completely so, I scarcely know where to begin with him.

I define matter, *a combination of properties*:—take from any kind of matter, the property of extension and impenetrability, and every other property that may be present, and nothing would remain. And he that asserts that matter is some unknown thing distinct from the properties which it is said to possess, asserts that, in support of which there is not the least shadow of evidence,—we defy him to bring the least tittle. But Stewart says that *he* can define matter in no other way, than by saying it is that which is extended, figured, coloured, moveable, hard, soft, &c. Well, then, let us take this definition of matter—let it be remembered that whatever is extended, figured, moveable, &c. is matter. Now Stewart admits that he can perceive extension, figure, colour, hardness, &c. by his senses, and yet says he cannot perceive matter!* Is not this—I seriously ask—is not this a mere quibble? Yea, to be sure, the existence of a soul to be proved by a quibble. Because the grammatical construction of our language is such

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* According to this doctrine, the proposition, *a stone is matter, and man perceives a stone*, is a false one. Either a man does not perceive a stone, or else a stone is not matter—a strange perversion of language this, to say no more.

that we cannot speak of the *properties of matter*, without speaking as though these properties belong to something besides what they constitute; it is taken for granted that this something has a real existence; and by it the existence of a soul is to be demonstrated even more plainly than the nose upon your face. We are told—what we flatly deny, and challenge the asserter to prove—that this something, this "essence of matter," or "matter itself," does really exist, although we can neither see, hear, feel, taste, or smell it; *ergo*, a soul exists, although we can neither see, hear, feel, taste or smell it! A fine way of reasoning this, for those who cry out against hypotheses and begging questions. I might as well say, giants exist, although no man ever saw or felt a giant; therefore Tom Thumbs exist.

Let us examine the professor's reasoning, bit by bit.—"We are not," says he, "immediately conscious of the existence of mind, but we are conscious of the existence of something which feels, thinks, and wills." Granted. "Every man too, is impressed with an irresistible conviction that all these sensations, thoughts, and volitions, belong to one and the same being." Granted. "To a being which he calls himself." Granted. "A being which he is led, by the *constitution of his nature*, to consider as something distinct from his body." False. "And not liable to be impaired by the loss or mutilation of *any* of his organs." False.

Stewart may speak for himself, and I will speak for myself. For my own part, I am not led by the constitution of my nature, to consider that being which I call *myself*, as something *distinct* from my body; and I have a "shrewd suspicion" that my readers will say the same for themselves. If so, it will appear that the *constitution of Stewart's nature* is rather an odd one.

As to *myself* being impaired by the loss or mutilation of any of my organs," I grant that the loss of my toes or my ears would not destroy my personal identity, or my belief that I am the same man that did a certain deed ten years ago; but I have a very shrewd suspicion that that part of me which thinks, that part in which my *inward* identity is to be found, would be very much impaired if my brain should be crushed.

Before I proceed any farther, it is best to show what Stewart means by the word soul or the word mind, (as all philoso-

phers, so far as I know, mean the same thing by either word,) for it sometimes happens that when a reasoner finds that he cannot go forward, he attempts to back out, by altering the meaning of a word. Stewart means by the word mind or soul, an immaterial thinking thing which exists independent of the body, though in the body while it is alive ; and which may fly away and think independent of the body, of course after the body is dead. He does not say explicitly that it is extended or unextended—" whether it be seated in the brain, or spread over the body by diffusion ;" but as immaterialists generally admit that the mind is unextended. and located in the brain. and as Stewart does not advance a different opinion, we may fairly conclude that he considered the mind as unextended and seated in the brain.*

Should a man say that, whatever thinks is mind—why, in this way. he could show that mind exists ; and in this way he might make out that every name has its thing. He may say that the word giant is not a name without a thing. but that giants exist. I may dispute him, and after much disputation, he may end the controversy by saying he means by giant, a man about six feet in height, who weighs about 160 pounds. When by argument. I compel my antagonist to use a word in a different sense from what he did at the commencement, I consider him as vanquished.—The mind is a thinking thing which has a being independent of the body, or there is no mind. To say that the mind is the brain or the sensorium, or the sensorial tendencies, or the conscient actions of the nervous system, is to force on us an old word which has been used as the name of a thing which does not exist. and to beg of us to admit that it means something, when there is nothing for it to be the name of,—nothing but what has got other and more appropriate names.

Stewart says, that of the two, we have stronger evidence of the existence of mind, than of the existence of matter, inasmuch as the former is suggested to us by the *subjects of our consciousness ;* and the latter merely by the *objects of our per-*

* In Stewart's Philosophy of the Human Mind, p. 47, he makes the following remark—" This phrase of ' the soul *being present* to the images of external objects,' has been used by many philosophers, since the time of Des Cartes ; evidently from a desire to avoid the absurdity of supposing images of extension and figure can exist in an *unextended* mind."

ceptions. This is as much as to say, the existence of mind is suggested to us by the subjects of our consciousness; whereas we have no evidence of the existence of a horse, for instance, but merely that we see, feel, and often hear, a horse!!

I will not at present take into consideration the expression, "subjects of our consciousness;" but remark that Stewart appears to have considered consciousness as absolute proof of the existence of mind; that is, of an immaterial thinking thing which exists independent of the body. But what is consciousness? A conscient action of the two extremities of a nerve, is consciousness; or a conscient action of the sensorium, alone, is consciousness—to sense, to perceive, or to think, is to be conscious: there is no consciousness, when a man neither sees, hears, feels, tastes, smells, nor thinks. Now in the name of truth, I most humbly ask if the simple act of thinking any thought, seeing any object, feeling any body, &c.; does inform us *what thinks*?—inform us to such a degree of certainty, that we can no more doubt, that an immaterial, independent mind thinks, than we can doubt the existence of a horse when we see and feel a horse!

By knowing the effects of diseases and injuries of the brain, and of divers experiments on the nervous system—in short, by what knowledge I have of the animal economy, and of things in general, I am convinced that the brain thinks; but by the simple act of thinking any thought, or experiencing any sensation, I cannot for my life determine the precise part of it which thinks. My consciousness does not inform me whether it be the *medulla oblongata*, the *thalami nervorum opticorum*, the pineal gland, or some other particular part. But my reason tells me—that is, by thinking over certain harmonizing facts relative to the subject, I believe—that thinking goes on somewhere in the lower and central part of the brain.

Had Stewart defined mind—*whatever it be that thinks, or is conscious*, then consciousness would have been the same evidence of the existence of mind, that he has supposed it to be. But as Stewart and other immaterialists consider the mind as some immaterial thinking thing, distinct from the body, consciousness or thinking is not the least whit of evidence of the existence of any such mind, and of course, no evidence of the existence of any mind.

As to the existence of mind being suggested to us by the

subjects of our consciousness, I would inquire what are the *subjects* of our consciousness? When a man thinks, what, I ask, is the *subject* of his consciousness? Is it the sensorium or the man who is conscious; or is it the action of the sensorium which constitutes the consciousness; or is it the *external object* which first excited this action?

Excepting these three things, I defy any man to show that it can be any thing at all. Now we cannot suppose that Stewart believed that a man's brain is the subject of his consciousness for *his* brain is *one* subject, but Stewart speaks of *subjects*. If we say that the conscient action of the brain is the subject of the man's consciousness, then the same thing not only constitutes consciousness, but is the *subject* of consciousness. Finally, if there be any meaning in the expression "subjects of our consciousness," these subjects must be things which we think of, or think about, and these are the precise things that are the "objects of our perceptions," in almost all cases. And I must confess that a stone, or any thing else which I *think about*, goes as far in convincing me that I have a soul or mind, as the simple act of thinking.

In this place I may notice an anecdote which I once saw in the Boston Recorder—an anecdote in which there is nothing solid but something specious—though I have reason to think that some short-sighted persons thought it contained an irrefragable repartee. I can only relate it as I can remember it. It was in substance as follows:—

A physician asked a methodist preacher if he ever saw a soul? No. Did you ever hear a soul? No. Did you ever taste a soul? No. Did you ever smell a soul? No. Did you ever feel a soul? Yes. Well, says the physician, there are four evidences against one that there is no soul. Said the preacher in his turn. Did you ever see a pain? No. Did you ever hear a pain? No. Did you ever taste a pain? No. Did you ever smell a pain? No. Did you ever feel a pain? Yes. Well, says the preacher there are four evidences against one that there is no pain, yet you know there is pain, and I know there is a soul.

We here see that the preacher commits the same *blunder* that Stewart has done; he not only takes consciousness as proof that consciousness exists—a thing that no man will deny, but he makes consciousness a proof that a soul exists, when it is not the least whit of evidence of any such thing.

We do not tell the preacher that he did not know that something feels, thinks, &c.; but that he did not know whether this something be a material organ or an immaterial thing of which no man can ever have any idea.

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CHAPTER XXXV.

Professor Lawrence's Lecture on the Functions of the Brain

As the opinions of Professor Lawrence concerning the constitution of man, are—with the exception of other physiologists—of more weight than the opinions of all the world besides; we think his lecture on the functions of the brain cannot fail of being highly interesting to most of our readers. Therefore we shall give it in his own words, without addition or substraction :—it stands in no need of comment.

"There would be little inducement to compare together the various animal structures, to follow any apparatus thro' the whole animal series, unless the structure were a measure and criterion of the function. Just in the same proportion as organization is reduced, life is reduced; exactly as the organic parts are diminished in number and simplified, the vital phenomena become fewer and more simple: and each function ends, when the respective organ ceases. This is true throughout zoology; there is no exception in behalf of any vital manifestations.

"The same kind of facts, the same reasoning, the same sort of evidence altogether, which show digestion to be the function of the alimentary canal, the motion of the muscles, and various secretions of their respective glands, prove that sensation, perception, memory, judgment, reasoning, thought—in a word, all the manifestations called mental or intellectual, —are the animal functions of their appropriate organic apparatus, the central organ of the nervous system. No difficulty nor obscurity belongs to the latter case, which does not equally affect all the former instances: no kind of evidence connects the living processes with the material instruments in the

one which does not apply just as clearly and forcibly to the other.

"Shall I be told that thought is inconsistent with matter; that we cannot conceive how medullary substance can perceive, remember, judge, reason? I acknowledge that we are entirely ignorant how the parts of the brain accomplish these purposes—as we are how the liver secretes bile, how the muscles contract, or how any other living purpose is effected;—as we are how heavy bodies are attracted to the earth, how iron is drawn to the magnet, or how two salts decompose each other. Experience is, in all these cases, our sole, if not sufficient instructress: and the constant conjunction of phenomena, as exhibited in her lessons, is the sole ground for affirming a necessary connexion between them. If we go beyond this, and come to inquire the manner how, the mechanism by which these things are effected, we shall find every thing around us equally mysterious, equally incomprehensible—from the stone which falls to the earth, to the comet traversing the heavens,—from the thread attracted by amber or sealing wax, to the revolutions of planets in their orbits,—from the formation of a maggot in putrid flesh, or a mite in cheese, to the production of a Newton or a Franklin.

"In opposition to these views, it has been contended that thought is not an act of the brain, but of an immaterial substance, residing in or connected with it. This large and curious structure, which, in the human subject, receives one fifth of all the blood sent out from the heart, which is so peculiarly and delicately organized, nicely enveloped in successive membranes, and securely lodged in a solid bony case, is left almost without an office, being barely allowed to be capable of sensation. It has, indeed, the easiest lot in the animal economy: it is better fed, clothed and lodged than any other part, and has less to do. But its office—only one remove above a sinecure—is not a very honorable one: it is a kind of porter, entrusted to open the door, and introduce new comers to the master of the house, who takes on himself the entire charge of receiving, entertaining, and employing them.

"Let us survey the natural history of the human mind,—its rise, progress, various fates, and decay; and then judge whether these accord best with the hypothesis of an immaterial agent, or with the plain dictates of common sense, and

the analogy of every other organ and function throughout the boundless extent of living beings.

"You must bring to this physiological question a sincere and earnest love of truth; dismissing from your minds all the prejudices and alarms which have been so industriously connected with it. If you enter on the inquiry in the spirit of the bigot and partisan, suffering a cloud of fears and hopes, desires and aversion, to hang around your understandings, you will never discern objects clearly; their colours, shapes, dimensions, will be confused, distorted, and obscured by the intellectual mist. Our business is, to inquire what is true; not what is the finest theory; not what will supply the best topics of pretty composition and eloquent declamation, addressed to the prejudices, the passions, and the ignorance of our hearers. We need not fear the result of investigation. Truth is like a native rustic beauty; most lovely when unadorned and seen in the open light of day. Your fine hypotheses and specious theories are like the unfortunate females who supply the want or loss of native charms, and repair the breaches of age or disease, by paint, finery, and decorations; which can only be exhibited in the glaring lights, the artificial atmosphere, and the unnatural scenery of the theatre or saloon. Whenever it is thoroughly discussed, truth will not fail to come like tried gold from the fire. Like Ajax, it requires nothing but day-light and fair play.

"Reason and free inquiry are the only effectual antidotes of error. Give them full scope, and they will uphold the truth, by bringing false opinions, and all the spurious offspring of ignorance, prejudice, and self interest, before the severe tribunal, and subjecting them to the test of close investigation. Error alone needs artificial support: truth can stand by itself.

"Sir Everard Home, with the assistance of Mr. Bauer and his microscope, has shown us a man eight days old from the time of conception,—about as broad, and a little longer than a pin's head. He satisfied himself that the brain of this homunculus was discernible. Could the immaterial mind have been connected with it at this time? or was the tenement too small even for so etherial a lodger? At the full period of utero-gestation it is still difficult to trace any vestige of mind; and the believers in its separate existence have left us quite in the dark on the precise time at which the spiritual guest

arrives in his corporeal dwelling, the interesting and important moment of amalgamation or combination of the earthly dust and the etherial essence. The Roman Catholic church has cut the knot, which no one else could untie; and has decided that the little mortal, on its passage into this world of trouble, has a soul to be saved; it accordingly directs and authorizes midwives, in cases of difficult labor, where the death of the infant is apprehended, to baptise it by means of a syringe introduced into the vagina, and thus to save it from perdition!!!

"They whose scruples are not quite set at rest by the above mentioned decision of the church, nor by being told that the mind has not yet taken up its quarters in the brain, endeavor to account for the entire absence of mental phenomena at the time of birth, by the senses and brain not having been yet called into action by the impressions of external objects.

"These organs begin to be exercised as soon as the child is born: and a faint glimmering of mind is dimly perceived in the course of the first months of existence: but it is as weak and infantile as the body.

"As the senses acquire their powers, and the cerebral jelly becomes firmer, the mind gradually strengthens; slowly advances, with the body, through childhood to puberty; and becomes adult when the developement of the frame is complete; it is, moreover, male or female, according to the sex of the body. In the perfect period of organization, the mind is seen in the plenitude of its powers; but this state of full vigor is short in duration, both for the intellect and the corporeal fabric. The wear and tear of the latter is evidenced in its mental movements: with the decline of organization the mind decays; it becomes decrepit with the body; and both are at the same time extinguished by death.

"What do we infer from this succession of phenomena? the existence and action of a principle entirely distinct from body? or a close analogy to the history of all other organs and functions?

"The number and kind of the intellectual phenomena in different animals correspond closely to the degree of developement of the brain. The mind of the Negro and Hottentot, of the Calmuck and the Carib, is inferior to that of the European; and their organization is also less perfect. The large cranium and high forehead of the orang-utang lift him

above his brother monkeys ; but the developement of his cerebral hemispheres and his mental manifestations are both equally below those of the Negro. The gradation of organization and of mind passes through the monkey, dog, elephant, horse, to other quadrupeds ; thence to birds, reptiles, and fishes ; and so on to the lowest links of the animal chain.

" In ascending these steps of one ladder, following in regular succession at equal intervals, where shall we find the boundary of unassisted organization ? Where place the beginning of the immaterial adjunct ? In that view which assimilates the functions of the brain to those of other organic parts, this case has no difficulty. As the structure of the brain is more exquisite, perfect, and complex, its functions ought to be proportionally so. It is no slight proof of the doctrine now enforced, that the fact is actually thus : that the mental powers of brutes, so far as we can see, are proportional to their organization.

" We cannot deny to animals all participation in rational endowments, without shutting our eyes to the most obvious facts ; to indications of reasoning which the unprejudiced observation of mankind has not failed to recognise and appreciate. Without adverting to the well known instances of comparison, judgment, and sagacity in the elephant, the dog, and many other animals, let us read the character drawn by *Humboldt* of the South American mules : ' When the mules feel themselves in danger, they stop, turning their heads to the right and to the left. The motion of their ears seems to indicate that they reflect on the decision they ought to take. Their resolution is slow, but always just if it be free ; that is to say, if it be not crossed or hastened by the imprudence of the traveller. It is on the frightful roads of the Andes, during long journies of six or seven months, across mountains furrowed by torrents, that the intelligence of horses and beasts of burthen displays itself in an astonishing manner. Thus the mountaineers are heard to say, I will not give you the mule whose step is the easiest, but him who reasons the best.' If the intellectual phenomena of man require an immaterial principle superadded to the brain, we must equally concede it to those more rational animals which exhibit manifestations differing from some of the human only in degree. If we grant it to these, we cannot refuse it to the next in order, and so on in succession to the whole series ; to the oyster, the sea ane-

mone, the polype, the microscopic animalcules. Is any one prepared to admit the existence of immaterial principles in all these cases? If not he must equally reject it in man.

"It is admitted that an ideot with a mal-formed brain, has no mind: that the sagacious dog, and half-reasonable elephant do not require any thing to be superadded to their brain: it is allowed that a dog or elephant excels inferior animals, in consequence of possessing a more perfect cerebral structure; it is strongly suspected that a Newton or a Shakspeare excels other mortals only by a more ample developement of the anterior cerebral lobes; by having an extra inch of brain in the right place; yet the immaterialists will not concede the obvious corollary of all these admissions, viz. that the mind of man is merely that more perfect exhibition of mental phenomena which the more complete developement of the brain would lead us to expect; and still perplex us with the gratuitous difficulty of their immaterial hypothesis.—Thought (it is positively and dogmatically asserted) cannot be an act of matter. Yet no feeling, no thought, no intellectual operation, has ever been seen except in conjunction with a brain; and living matter is acknowledged by most persons to be capable of what makes the nearest possible approach to thinking. The strongest advocate for immaterialism seeks no further than the body for his explanation of all the vital processes of muscular contraction, nutrition, secretion, &c., operations quite as different from any affection of inorganic substance, as reasoning or thought: he will even allow the brain to be capable of sensation.

"Who knows the capabilities of matter so perfectly, as to be able to say, that it can see, hear, smell, taste, and feel, but cannot possibly reflect, imagine, judge? Who has appreciated them so exactly, as to be able to decide that it can execute the mental functions of an elephant, a dog, or an ourang-outang, but cannot perform those of a Negro or a Hottentot? To say that a thing of merely negative properties, that is, an immaterial substance, which is neither evidenced by any direct testimony, nor by any indirect proof from its effects, does exist and can think, is quite consistent in those who deny thought to animal structures, where we see it going on every day!

"If the mental processes be not the funtions of the brain, what is its office? In animals which possess only a small part

of the human cerebral structure, sensation exists, and in many cases is more acute than in man: what employment shall we find for all that man possesses over and above this portion—for the large and prodigiously developed human hemispheres? Are we to believe that these serve only to round the figure of the organ, or to fill the cranium?

"It is necessary for you to form clear opinions on this subject, as it has immediate reference to an important branch of pathology. They who consider the mental operations as acts of an immaterial being, and thus disconnect the sound state of the mind from organization, act very consistently in disjoining insanity also from the corporeal structure, and in representing it as a disease not of the brain, but of the mind. Thus we come to disease of an immaterial being! for which, suitably enough, moral treatment has been recommended.

"I firmly believe, on the contrary, that the various forms of insanity—that all the affections comprehended under the general terms of mental derangement—are only evidences of cerebral affections, disordered manifestations of those organs whose healthy action produces the phenomena called mental; in short, symptoms of diseased brain.

"These symptoms have the same relation to the brain, as vomiting, indigestion, heart burn, to the stomach; cough, asthma, to the lungs; or any other deranged functions to their correspondent organs.

"If the biliary secretion be increased, diminished, suspended, or altered, we have no hesitation in referring to changes in the condition of the liver, as the immediate cause of these phenomena. We explain the state of respiration, whether slow, hurried, impeded by cough, spasm, &c. by the various conditions of the lungs and other parts concerned in breathing. These explanations are deemed perfectly satisfactory.

"What should we think of a person who told us that the organs have nothing to do with the business; that cholera, jaundice, hepatitis, are diseases of an immaterial hepatic being; that asthma, cough, consumption, are affections of a subtile pulmonary matter; or that in both cases the disorder is not in bodily organs, but in a vital principle? If such a statement would be deemed too absurd for any serious comment in the derangement of the liver, lungs, and other organic parts, how can it be received in the brain?

"The very persons who use this language of diseases of the mind, speak and reason correctly respecting the other affections of the brain. When it is compressed by a piece of bone, or effused blood or serum, and when all intellectual phenomena are more or less completely suspended, they do not say that the mind is squeezed, that the immaterial principle suffers pressure. For the ravings of delirium and phrenzy, the excitation and subsequent stupor of intoxication, they find an adequate explanation in the state of the cerebral circulation, without fancying that the mind is delirious, mad, or drunk.

"In these cases the seat of the disease, the cause of the symptoms, is too obvious to escape notice. In many forms of insanity, the affection of the cerebral organization is less strongly marked, slower in its progress, but generally very recognizable, and abundantly sufficient to explain the diseased manifestation,—to afford a material organic cause for the phenomena—for the augmented or diminished energy, or the altered nature of the various feelings and intellectual faculties.

"I have examined after death the heads of many insane persons, and have hardly seen a single brain which did not exhibit obvious marks of disease; in recent cases, loaded vessels, increased serous secretions: in all instances of longer duration, unequivocal signs of present or past increased action: blood vessels apparently more numerous, membranes thickened and opaque, depositions of coagulable lymph forming adhesions or adventitious membranes, watery effusions, even abscesses: add to this, the insane often become paralytic, or are suddenly cut off by apoplexy.

"Sometimes, indeed, the mental phenomena are disturbed without any visible deviation from the healthy structure of the brain: as digestion or biliary secretion may be impaired or altered without any recognizable change of structure in the stomach or liver. The brain, like other parts of this complicated machine, may be diseased sympathetically; and we see it recover.

"Thus we find the brain, like other parts, subject to what is called functional disorder; but, although we cannot actually demonstrate the fact, we no more doubt that the material cause of the symptoms or external signs of disease is in this organ, than we do that impaired biliary secretion has its

source in the liver, or faulty digestion in the stomach. The brain does not often come under the inspection of the anatomist, in such cases of functional disorder; and I am convinced, from my own experience, that very few heads of persons dying deranged will be examined after death, without showing diseased structure, or evident signs of increased vascular activity.

"The effect of medical treatment completely corroborates these views. Indeed, they who talk of and believe in diseases of the mind, are too wise to put their trust in mental remedies. Arguments, syllogisms, discourses, sermons, have never yet restored any patient; the moral pharmacopœia is quite inefficient; and no real benefit can be conferred without vigorous medical treatment, which is as efficacious as in the diseases of any other organ.

"In thus drawing your attention to the physiology of the brain, I have been influenced not merely by the intrinsic interests and importance of the subject, but by a wish to exemplify the aid which human and comparative anatomy and physiology are capable of affording each other, and to show how the data furnished by both tend to illustrate pathology. I have purposely avoided noticing those considerations of the tendency of certain physiological doctrines, which have sometimes been industriously mixed up with these disquisitions. In defence of a weak cause, and in failure of direct arguments, appeals to the passions and prejudices have been indulged; attempts have been made to fix public odium on the supporters of this or that opinion; and direct charges of bad motives and injurious consequences have been reinforced by all the arts of misrepresentation, insinuation, and inuendo.

"To discover truth, and to represent it in the clearest and most intelligent manner, seem to me the only proper objects of physiological, or indeed of any other inquiries. Free discussion is the surest way, not only to disclose and strengthen what is true, but to detect and expose what is fallacious. Let us not then pay so bad a compliment to truth, as to use in its defence foul blows and unlawful weapons. Its adversaries, if it has any, will be despatched soon enough without the aid of the stiletto and the bowl.

The argument against the expediency of divulging an opinion, although it may be true, from the possibility of its being perverted, has been so much hackneyed, so often employed

CHAPTER XXXVI.

Some of the Difficulties that attend the Hypothesis of Soul, but do not attend the Doctrine of Materialism.

One of the greatest absurdities ever admitted by men, is the existence of an unextended being. It is astonishing that any man of common sense, should give his assent to such a whim. We should think that before any man would admit the existence of an unextended being, he would disregard all facts,—abandon all reasoning, and boldly assert that the soul is extended. Yet it appears that philosophers have not done this ; but have regarded the difficulties that attend the idea of the soul being extended, and freely admitted that it has neither parts nor extension. But passing by this difficulty, we would ask where the soul comes from ?—Oh, from the celestial regions, to be sure. Well, then, is it a part of the *immaterial* Deity himself—who by the by we must suppose to be unextended and destitute of parts ; for if the want of the property of extension be essential to the immateriality of one being, it must be to another—or is it something made by the Deity ? And if the latter, were all souls made at the time the Deity created *all* things, or are souls made as there is a demand for them ?—which demand is sometimes greater, and sometimes less, as we may well suppose,—depending altogether on the *accidents* that befall certain individuals ! But if all souls were made at the time the Deity created all things, what are they about before they enter human bodies ? It is probable that they can think before they enter the body ; if they cannot, what reason have we to suppose that they can after they fly away from it ? If our souls did think before they entered our bodies, they cannot remember that they did, now they are in our bodies ; and if our souls cannot remember in the body what they thought out of it, why should we suppose that after they get out of it, they can remember what they thought while in it ? And if, after the soul gets out of the body, it cannot remember what it thought while in the body, why should it be rewarded or punished for what it made the body do ? It would be like punishing Sam for the deeds of Thomas ; or like punishing a man for deeds which he can have no idea of ever doing. Again, how can hell-fire, or any other agent, operate upon an unextended thing so as to reward it or punish it ? Do you tell me that there is no reward-

ing or punishing until after the body is reorganized? Why, then, all this fuss and contention with religionists about the existence of souls, since our future happiness, after all, depends on the reorganization of the body?

Are all souls originally alike? If you say so, then you give organization nearly as much credit as the materialist contends for; since it is difference of organization that makes all the difference between a Newton and an idiot, or a Newton and a flea.* If not alike, we cannot suppose it is a matter of indifference what soul enters this or that infant's brain; and the question arises: what sorts out and directs the proper souls to the right brains,—the male souls to the male brains, and the female souls to the female brains; the Hottentot souls to the Hottentot brains; and the European souls to the European brains? Do you say that God directs them? Pray, what are your notions of the relation that subsists between the Creator and the events of the universe? Did not God so organize the universe that all *natural* events take place by virtue of this organization—though God is the first cause of all things, is he the immediate cause of any natural event? does the fire snap, does water run down hill, does the brain think, because the Deity is continually exercising his influence to produce these events?—is God, as it were, a slave to his own creation? or, like a skilful artist, did he not so organize this wonderful machine, the universe, that it continues in harmonious operation without his immediate agency; and will thus continue, until it be stopped by the same power that created it? Any other supposition but this last, would be absurd and degrading. Now the generation and growth of the material body, are natural events—they are not miracles—we can trace their connexion with other natu-

* Abernethy, in his very unsuccessful crusade against his brother professor a materialist, not only admits that the brain is as much an organ of thought, as the liver and stomach are organs for the secretion of bile and gastric juice, but says:—"It seems to me more reasonable to suppose that whatever is perceptive [meaning his *percipient principle*, which is but another name for soul,] may be variously affected by means of vital actions transmitted through a diversity of organization, than to suppose that such variety depends upon original differences in the nature of the percipient principle." See his Reflections on Gall and Spurzheim's System of Physiognomy and Phrenology, p. 75, to be found in the second volume of his Surgical and Physiological works.

ral events. But between the generation of a homunculus, and the starting of a soul from the celestial regions, we can trace no connexion.—The soul is started and directed by the *immediate* agency of the Deity, and of course, this event is a miracle. And a perfect and entire man, according to the immaterial hypothesis, is not altogether a natural production; but he is brought into being, partly by natural operations, and partly by miracle!

After the soul is snugly nested in the brain, what does it do? Answer, it perceives, thinks, judges, &c. Now beasts, birds, fish, and insects, perceive, and almost all of them evidently think; and to think is essentially the same, as we have shown, as to judge, reason, &c.—judging is but a mode of thinking; and animals judge differently, because they possess different sensorial tendencies. Now what will you do with the souls of beasts, fish, and insects? If the soul be necessarily, and in its very nature immortal, then all souls must continue to live, (if any body can tell what the life of a soul consists in,) whether in the body or out. But if the soul be not naturally immortal—and we have not even scripture testimony that it is—what reason has it for flattering itself that it will exist and be conscious after the body is dead, any more than the body has for believing that it will exist in a future state—which body has the assurance of scripture, at least, that it will be reorganized.

How does the soul seated in the brain, perceive objects exterior to the body, and in many instances quite distant from it? You have already seen that some supposed that the soul quits the body, and flies to the object; and others, that some image, species, or phantasm, flies from the object and enters the brain, to be present to the soul: which last supposition is the *branch* that gave rise to the sceptical philosophy of Berkley and Hume. But if it should be said that when a man sees, (to say nothing of other perceptions,) rays of light excite an action in his optic nerves and brain, and this action of the brain excites an action or change (no matter which word you use,) of the unextended soul—yes, an *action* of an *unextended* soul!- and that this action constitutes the seeing; I would ask why we should not say that the actions of the optic nerves and brain constitute the seeing, and not suppose the existence of an inconceivable something of which there is no evidence.—It is just as conceivable that an action of an

organ constitutes a sensation or a thought, as that an action of something else constitutes a thought.

Again, how does a thing which possesses no parts, see, hear, and think, at the same time? Different parts of an extended thing, may exist in different states, or take on different actions, at the same time; but if a certain state or action of an unextended thing be essential to the existence of a certain sensation, and another state or action, to the existence of a certain other sensation; then it is absolutely impossible for this unextended thing to be at one time in such state as to constitute both these sensations: but we can see, hear, feel, and even think, at the same time.—Remember what is said in the chapter on sensation and perception.

Furthermore, if an unextended soul, seated in the head, be that which is conscious, how does consciousness or feeling—which is generally a much higher degree of consciousness than mere thinking—exist in the foot, or any other member; and this too even while thinking is going on in the head? Nothing can be conscious *where* it is not, any more than *when* it is not; now we KNOW that we often experience feelings in different parts of our bodies at times when the soul cannot be in such parts; for thinking is at the time going on in our heads; and not only this, but an unextended thing cannot be in two different parts of our bodies—to say nothing of the head—at the same time. Should any one have the hardihood to assert that the soul extends throughout all nervous ramifications that take on conscient actions, or in other words, possess sensibility; I would just ask him to imagine what a queer shaped thing it is, and how it would look, if by some chemical agent the nervous system should be dissolved, and the soul at the same time be endowed with the power of reflecting light. Methinks it would look somewhat like a snarled skein of yarn, or a horse's tail that needed combing. I would ask, too, what becomes of that part of the soul which is *cut off* when a man has a leg amputated! and what makes the soul grow, so as to keep pace with the growth and extension of nervous system?

The immaterialists have not informed us at what period the soul enters the brain; but those of modern times maintain that when it does enter, it is as destitute of ideas as an unwritten sheet of paper is of words; (and for my own part I cannot conceive how an unextended thing can ever contain or possess ideas, or any thing that can give rise to ideas;) but

presently the brain begins to act upon it—now it is that it begins to perceive, to have ideas, and to think; and now it is that they regard the soul as a fiddle, and the brain as the fiddler that plays upon it—the perceptions, thoughts, &c., constituting the music. But after a time the child becomes a man, and the man becomes insane; the physician now proceeds to bleed, blister, physic, and salivate, just as he does in other *bodily* diseases; and finally cures the insanity; or, the man dying, an obvious disease of his brain is discovered. The immaterialist now begins to reason. The soul, thinks he, is an immaterial, indivisible, immortal thing; now can we suppose that such a thing is ever sick? or can we suppose that a sick soul, if there ever were such a thing, is to be cured by calomel, jalap, and blistering plasters? No, this would be absurd—an immortal soul is never sick—the truth is, the brain is the instrument by which the soul operates; and when the instrument is out of order, the best musician in the world cannot play upon it so as to make harmonious music. Thus we see that at one time the immaterialists tell us that the brain plays upon the soul, at another, that the soul plays upon the brain—first one is the fiddle and then the other, just as the difficulties attending the immaterial hypothesis seem to require!*

* Dr. John Armstrong, in his work on Fever, says, page 360, 361, "It might be shown by familiar facts, that the brain is the principal organ through which the operations of the mind are performed; and it does not, as many have supposed, necessarily involve the doctrine of materialism to affirm, that certain disorders of that organ are capable of disturbing those operations. If the most skillful musician in the world were placed before an unstrung and broken instrument he could not produce the harmony which he was accustomed to when the instrument was perfect; nay, on the contrary, the sound would be discordant; and yet it would be manifestly most illogical to conclude, from such an effect, that the powers of the musician were impaired, since they merely appear to be so from the imperfection of the instrument. Now what the instrument is to the musician, the brain may be to the mind, for aught we know to the contrary: and to pursue the figure, as the musician has an existence distinct from the instrument, so the mind may have an existence distinct from that of the brain; for in truth we have no proof whatever, of mind being a property dependent upon any arrangement of matter." It evidently never came into Armstrong's head that there is no such thing as mind. Had he said, we have no proof that a man's ability to think, is dependent

CONCLUSION.

Now, reader, as we have got through with the argumentative part of this work, if you please, we'll have a little chitchat together, and I will then leave you to your own cogitations. I presume you have been interested in perusing this work, or you would not have arrived to this place. I cannot believe you have used me so unfairly as to tumble over the leaves, reading a little here and a little there, with no other view than to find something to refute or condemn; if you have, fire away! but be careful that you do not shoot at a shadow—many a time has an author been combatted, because he was not attentively read and rightly understood. But if you are a lover of truth, (as all *profess* to be,) and have been interested in perusing this work, because you believed I was doing something to further the cause of it; you will be pleased, I think, to know a little more about me, and how I came to be such an *infidel* as I am.—Now then you shall have a little bit of my history. As it respects the "inner man," I am a sort of self-made creature, not yet 29 years of age. I suppose my books would excite more notice, were I some big professor, with a head of grey hairs upon my shoulders; but as I have all along endeavored to tell you the truth, *boldly*, I do not intend to alter my hand now, for any pecuniary consideration. At Templeton, this state, (Mass.) I was born and bred a farmer. My parents are still living. They never enjoyed any advantages for acquiring knowledge, though I believe they possess pretty well organized brains. They brought me up in the "fear of the Lord," and, *with much ado*, taught me the Westminster Catechism, for I was a confounded dull scholar until 14 or 15 years of age After this period I made some proficiency in figures and the English grammar, considering my opportunities; for I worked like a good fellow on the farm, at least 9 months in the

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on any arrangement or combination of matter, I could contradict him flatly, for we have just as much proof that it does, as we have that gold is yellow, heavy, and ductile. At page 362, he says, "Madness is indeed an awful malady, and might at first sight convey the impression, that mind itself is liable to the changes and decay of our material structure, but it surely only shows the intimate connexion it has with matter: *for I have seen no case of this disease in which there were not previously the most distinct evidence of some disorder in the brain to which the madness might be referred as a consequence.*" I adduce this last quotation as evidence, if further evidence be needed, that it is the brain that thinks.

As to Dr. Armstrong, comparing the brain to a fiddle or any other musical instrument, we have no objections, but it is very strange that he should not be aware, that it is played upon by the impressions made upon our senses.

year, until 17 or 18 years of age. From this age to that of 21, my health was such that I could not labor. During this time I spent nearly three months in an academy, where I studied the mathematics and the English language; and I never studied any other language under the tuition of any one, with the exception of Dr. Charles Adams, of Keene, N. H. Being under his care as a patient for a few weeks, he spent a few hours, during this time, in hearing my lessons in the Latin grammar. A short time before I was 21, I married. My father in law, Mr. Richard Stuart, of Winchendon, Mass. possessed Paine's Age of Reason, and spoke highly of it; but I cared not a fig for it—did not read it: I supposed it a *bad* book, and its author a very *wicked* man. Mr. Stuart, too, was, and still is, a materialist in reality; but in those days I knew not what materialism is—I remember asking him one day what he supposed becomes of the soul when a person dies: he gave me no answer but this:—What becomes of the blaze of a candle when you blow it out? Soon after 21 years of age, I began to study medicine, under very unpropitious circumstances, first with Dr. Charles Wilder of Templeton; then with Dr. Stephen Batcheller of Royalston: and lastly with Dr. Amos Twitchell of Keene, N. H.—in the mean time attending two courses of medical lectures at Hanover, where I received the degree of M. D. 1824. While with Dr. Batcheller, I read Bichat's works. This author maintains that some of the passions have their seat in the thoracic and abdominal viscera,—a doctrine with which I was not satisfied. Here I began to cogitate concerning the constitution and phenomena of man. So far as I can remember, I had a notion something like this:—That the soul or mind is nothing that comes from the celestial regions; but something which the brain forms, or to which it gives rise, as the liver does to bile; that ideas come by way of the senses; and when they are in the mind, they are *real* ideas, or rather, the mind sees them or is conscious of their existence; but they soon dodge out into some part of the brain; but may be brought back again into the mind by the memory. I believed that the passions must have their seat in the nervous system, and that every man would believe so too, if it could be shown how they influence the action of the heart, the secretion of bile, &c. upon this supposition. This I thought I could do; therefore I concluded to write my graduating thesis on the passions. Before I undertook to write this thesis, matters so turned out, that I was safely lodged in Worcester jail, for the no less heinous crime than that of being instrumental (as was *supposed*) in depriving a parcel of worms of their dinner. Here I was without books, excepting Good's Study of Medicine. At the time of entering the jail, where I remained two months, I firmly believed in the existence of souls, and although I supposed them to be formed by the brain, I believed that they may exist in-

dependent of it, as bile may exist independent of the liver. I believed that something which I can call *myself*, will exist in a state of consciousness, immediately as it respects *time*, after Charles Knowlton dies. I did not know that any man ever doubted the existence of soul? I knew there were, or had been, materialists in the world; but I supposed they held, that the soul is "formed of the finest, lightest, smoothest, and most moveable material elements, and hence exquisitely etherialized and volatile" Strange as it may appear, I did not understand from Good's remarks concerning Professor Lawrence's hypothesis, in the proem to the third volume of his Study of Medicine, that Lawrence disbelieved the real existence of soul or mind. Under these circumstances I began to write my thesis on the passions; I soon met with insurmountable difficulties —the soul appeared to be much in my way. At last thinks I, as I lay on my couch one night, what if I should put the soul entirely aside for the present—say that an action of the brain is a thought, and an action of the brain and a nerve together, a sensation; and see how we can explain matters and things upon this supposition? Good George! how things were altered—every thing was now plain and easy; the very facts which before puzzled me, now helped me. I lived light and regularly, took no stimulus, my brain was in an excellent thinking condition; and I soon hit upon several of the more important principles of this work. I supposed I had made a new discovery; yet I could hardly believe that *I* had hit upon a truth which thousands of learned searchers had failed to discover. But having never got hold of any work written by a materialist, until within ten months from the present time; it is not two years since I was satisfied that any one ever believed there is no such thing as a mind (either material or immaterial) distinct from the brain.

There is scarcely a sentence of mine in this work, but what I have composed within the last 12 months, and under circumstances that would prevent most men from sleeping. For the last four months, instead of correcting its errors, as I ought to have done, I have been almost wholly employed in other business. I never obtained Lawrence's work, until the present was chiefly written; nor Brown's Philosophy, until about fourteen months ago.—Brown helped me to language, but I cannot say but that my notions concerning power, cause, and effect, were much the same before I read his work as now.

I mention these things to show that I did not receive my opinions by *inoculation*; but that they are the natural and irresistible conclusions to which the physical facts known to me, give rise.

P. S. It was 14 months ago, that out of mere curiosity, I obtained the *bad* book I have mentioned: I shall only add, I was very much disappointed in the work.

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