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county. Under these unavoidable circumstances I have arranged with the learned Professor to do my best to read his paper for him, so far as time will admit of its being read, and to explain the main drift of the passages which, on account of its length, it will be necessary to leave unread. I shall endeavour to do justice to Professor Kirk's thoughtful essay, which I have carefully read through; and I have only further to express his extreme regret that he could not be with us this evening, and I beg leave to add my own regret at the cause of that absence.

The following is Professor Kirk's paper, which was then partially read by the Honorary Secretary :—

ON THE RELATION OF METAPHYSICAL AND PHYSICAL SCIENCE TO THE CHRISTIAN DOCTRINE OF PRAYER. *By the Rev. JOHN KIRK, Professor of Practical Theology in the Evangelical Union Academy, Glasgow; Author of "The Age of Man Geologically considered in its bearing on the Truths of the Bible," &c. &c.; Mem. Vict. Inst.*

WHEN we speak of Physics and of Metaphysics to ordinary men, we have reason to fear that they are sensible only of certain unintelligible sounds. If their thinking capabilities are at all brought into use, it is merely in the perception of a *mist* which has risen before the mind's eye. Should we expatiate technically on Psychology, or Biology, or Anthropology, launching off perhaps into ever so many other "ologies," the fog only becomes more dense and murky, till the baffled hearer becomes hopeless as to all understanding of that which is addressed to him. The simple-hearted no doubt imagine that we who use these very learned words must understand ourselves, and see all beyond the clouds and darkness which limit their view; but they often *admire* when, if they only knew the real state of the case, their estimate would be very seriously modified. It is in this state of ignorance and simplicity that the common mind is especially in danger from popular philosophy.

There is nothing in the nature of the highest knowledge which renders such ignorance necessary, even in the most lowly of ordinary men. The facts and findings, which go to make up the Science of mind itself, are not so mysterious or incomprehensible in themselves that the intellect of the many may not embrace them. Neither are the facts and inferences, which constitute the knowledge of matter and its laws, so much beyond the common range of thought that they may

not be reached by any one who can understand good plain English. It is required, we think, only that both these kinds of knowledge shall be expressed in such language. And we are strongly disposed to believe that such an embodiment of truth, in easily intelligible words, is as necessary to the real knowledge of the Philosopher as it is to those whom he would teach. As the modern mathematician makes his symbols "think for him," so we fear do some of the most noted men in other departments of Science, allow mere phrases to do the work which belongs to clear and careful thinking. By this they deceive themselves as much as they mislead others, and perhaps even more. Mr. Stuart Mill well says that "the mere forms of logic and metaphysics can blind mankind to the total absence of their substance."* This is strong language, written too by a philosopher of philosophers, and not of common men; but it is sadly true.

In endeavouring, therefore, to make our consideration of this great subject really useful, I will do my best to make my meaning clear and accessible to the common mind. Not that I think this possible without some degree of earnest industry on the part of those who read that which is written, but that all who are willing to give a moderate measure of effort on their part shall enjoy the fruit of that effort in a somewhat increased possession of the truth.

By Physical Science I understand that thought by which material objects are truly represented in the mind. Not, however, such thought as merely agrees with these objects as they exist in nature, but such as is *known* thus to agree. What are called "*hypotheses*" are thoughts which in some cases agree with the objects to which they are related, but so long as they are "*hypothetical*" they do not belong to science, properly so called, inasmuch as they are not knowledge. Reason has as yet failed to lay hold on them—they live only as conjectural notions in the imagination. I cannot help thinking that all such thoughts should be considered as alien to really scientific investigation.

By Metaphysical Science I understand that true thought which represents all such objects as lie above and beyond the material. The student of *pure Physics* has strictly speaking no thought of mind. The student of *pure Metaphysics* has no thought of matter—all his reasonings are of *thought itself*. The student of *truth* takes equally earnest care to deal with all thought which stands to reason, whatever the object of

* *Examination of Sir William Hamilton's Philosophy*, p. 61. Ed. 1866.

that thought may be. His grand aim is to make sure of all thought which corresponds with that which is real, and he finds that he cannot do this without learning of matter as well as of mind, and of mind as well as of matter. To trace, then, the relations to which, in this paper, our attention is directed, we must look candidly and with deep earnestness into all thought of realities which bears upon the doctrine in question.

By the Christian doctrine of prayer I mean neither more nor less in this paper than *man's asking—God's giving as the consequence of that asking—and man's receiving as the consequence of that giving*. The point of thought specially in view is that of GOD'S GIVING, in consequence of man's asking. Our inquiry will virtually be as to whether Metaphysical and Physical Science, in their grand results, are consistent with this idea of God's acting in direct and real consequence of man's asking. No one who knows the influence of Science on the one hand, and of real prayer on the other, will fail to see the vast importance of such a subject. It is philosophical, yet eminently practical, and even, as "divines" would say, "experimental." I mean to treat it as almost, if not altogether, a subject in philosophy; yet as one of those many subjects in philosophy which necessarily thrust themselves into the domain of religion. My aim is to show, how perfectly true Science ever bears out true theology and also true life in man.

In an inquiry like that on which we thus enter, it seems necessary to make as sure as may be that we understand the true nature of knowledge itself. Science is knowledge, but we need to ask what it is "*to know*." This is in itself a vital point in metaphysical investigation, and so forms an appropriate introduction to all that follows. The philosophical writer whom I have quoted above gives us incidentally one of his ideas on this point. Speaking of the inmost nature or essence of a thing which he argues "we cannot know," he says—"If there were such a central property, it would not answer to the idea of an 'inmost nature,' for, if knowable by any intelligence, it must, like other properties, be relative to the intelligence that knows it—that is, it must consist in impressing that intelligence in some specific way, for this is the only idea we have of knowing; the only sense in which the verb 'to know' means anything."*

I must remark, with great humility, that this is far from tolerable English. "A property," we are told, "must consist"

* *Examination of Sir William Hamilton's Philosophy*, p. 14. Ed. 1866.

not in an impression, nor in a capability of impressing, but in "impressing" itself! A noun must be a verb! A quality must be an act, if not a process! And this strange property, or stranger act, is our only idea of knowing! This unmasterable confusion of words must express the only sense by which the familiar verb "to know" has any meaning! We can only guess that Mr. Mill meant to say, that an impression on the intelligence, made in some specific way, is the only meaning of knowledge. But is it so? Would not this notion of knowledge, by taking personal activity out of the idea of knowing, invert the verb "to know?" If that verb does not mean something which is mentally done by the person who is called an "intelligence," but only an impression which is made upon that person, is it not then absurd to say, as every man does when he has satisfied his reason on any point, "*I know?*" Warmth from an external object is simply an impression which that heated object makes upon me; speaking of that impression would it do to say "*I warm*" when the whole truth is that I am warmed? Or, to take a stronger instance, if pain is produced in me, that is an impression made on me as a sentient being—would it do to say in such a case "*I pain*," when the truth is I am pained? So, if knowledge is only an impression made on me as an "intelligence," or as an intelligent being, can it be right for me to say "*I know*," when the truth is I am impressed? If I am only impressed, I am passive; and it must be absurd as we shall yet more fully see, to say I am active, as I doubtless do say, when I use the words "*I know.*"

This is a very important point of truth, and worthy of our best attention, when careful to see the relations both of Metaphysical and of Physical Science. We must, therefore, make as sure of it as we can. An intelligence, as already indicated, is a person. There is no such thing in being, by itself, as an intelligence which is not a person. Intelligence by itself has no existence. It is only the capability of knowledge, belonging to a *being* who is thus capable. An impression on such an intelligence, therefore, is an impression on such a being or person. We are acquainted with at least three kinds of impressions that are made on such a person, in regard to which we should think all are agreed. According to Locke's system of philosophy, which Mr. Mill follows closely, only two of these kinds of impressions are possible as coming directly from the external world, and neither of them is knowledge, nor are both combined that which is properly called by that name. There is one kind of impressions that are made upon the body without their affecting the senses. The patient, for

example, undergoing an operation under the influence of chloroform, is impressed, and writhes, groans, and even screams, as if sensible of agony, and yet is all the while totally unconscious. This impression made on the person is (certainly enough) not knowledge. There is another kind of impressions, which are made when the senses only are affected, but neither is this properly knowledge. Pain, however acute, and pleasure as mere sensation, however pleasant, is not knowledge. Knowledge is thought, but pain and pleasure, merely sensational, are not thought. Such a state as mere sensational consciousness is no doubt an impression upon an intelligence when the sentient being is intelligent; but it is not an impression on the intellect as such, but on the mere sense, and hence it never is properly called knowledge. This truth is fatal to Mr. Stuart Mill's idea as we have quoted it. If there is no "sense" for "the verb to know" but that of an impression made by a material object on an intelligence, then, if we adhere to what we shall yet see to be Mr. Mill's own notions, there is no sense, in truth, for the verb at all!

Mr. Mill is, as we have said, a follower of Locke in the fundamental ideas of what may be called his system of thought; though the additional light which has fallen on philosophy since Locke's time *will* mix itself with the darkness that broods over those who are yet in bondage to his views. Locke's great principle was that "*all ideas come from sensation and reflection.*" He says—"Our observation, employed either about *external sensible objects, or about the internal operations of our minds, perceived and reflected on by ourselves, is that which supplies our understandings with all the materials of thinking.*"* There is much more indicated here than "impressing the intelligence in some specific way." Reflection, or the throwing back of the mind on impressions that have been made upon it, is found in activity, not in passivity like impressions. Yet there is a very serious gap in Locke's system. He says, "Material things as the objects of sensation, and the operations of our own minds as the objects of reflection, are to me the only originals from whence all our ideas take their beginnings." These words make Locke's great mistake very evident. If we carefully observe the facts of the case we shall find that to speak of an "*object*" of "*sensation*" is to speak inconsistently with truth. Sensation, strictly speaking, has no "*object*." It has a cause in the external object by means of which it is produced, but that is not an object to the sensation nor to the man as merely sentient—it

* *Essay on the Human Understanding*, Vol. I., pp. 67, 68. Ed. 1753.

is an object to the man only as intelligent. If, for example, I am dazzled with light, I have a powerfully produced sensation caused by means of the radiance of some luminous substance; but that substance is not in such a case an object to me at the moment. All other capabilities of mind are absorbed in the one state of sensation. I cannot see from the excess of light,—that is, I have no power of attention even, from the overpowering degree of the sensation. In the same manner excessive pain destroys all intelligence in the agonized individual during its continuance. Sensation absorbs him so that he can think of nothing; at certain moments, not even of the pain.

It is, consequently, a fundamental error to speak of the "object" of a sensation. It gives rise to Locke's great error in which he confounds sensation and perception. He regarded reflection as confined in its objects to the states of a man's own mind, and by reflection he means all else in the soul's knowing states besides sensation. He overlooked the fact that sensation in itself fails to connect the intelligence with external objects, and so he reaches the notion that all our knowledge of the external world is "*mediate*"—that it is, in fact, the knowledge of our own states of mind merely. He calls these states of mind with which reflection has to deal "*ideas*." By real ideas he means "such as have a foundation in Nature; such as have a conformity with the real being and existence of things, or with their archetypes."* Locke had a wholesome hatred of "*innate ideas*," and he may be said to have abolished them; but he remained the dupe of the notion which regards such ideas as we acquire, in the light of *things* or beings, that may become OBJECTS of contemplation by themselves. Our knowledge of the external world is, according to this system, only our knowledge of these ideas. Locke found himself landed in real difficulty by means of this notion when he came to the point of "*reality*" in our knowledge. He owns the difficulty. He proposes the question—"How shall the mind, when it perceives nothing but its own ideas, know that they agree with things themselves?" † *That is, how shall we compare two things when we have no knowledge beyond that of one?* He most truly says—"This thought seems not to want difficulty." He endeavours to remove the difficulty in a way in which he must have felt the weakness of his own reasoning. It is not necessary that we should follow him in his effort. It is not true, in fact, that our thought of external objects is *mediate*. The states of our own minds are not the only, nor

* Essay, Vol. I., page 6.

† Essay, Vol. II., page 186.

are they the chief objects of those states of mind which Locke includes in reflection. To see this we have only to notice that sensation does not, as a general rule, call attention to itself, but to an external object. A man who, like Locke, has got his mind twisted into a certain direction of thinking, fixes his attention on the sensation rather than on the external object which produces it, but this is an exception to the rule of human thought. That thought, so far as the material world is concerned, is *not* of sensations, but of sensible objects. It is not mediate but immediate—it is at least as immediate as sensation is immediate.

If one follows this mediate school of mental philosophy, he is led to think of the mind as a pool which is full of fishes, one class of which preys upon another. All that ranges under reflection lives upon all that ranges under sensation. It is lost sight of that in all thinking one state of the mind is exchanged for another. That which is now only sensation, is the next moment attention to the object that has given the sensation. You may say, perhaps rightly, that it consists of two elements, and is of the nature of both sensation and attention, but that does not make it two states of the mind. It is, in fact, only perception, and perfectly distinct from mere sensation. It must also be observed that no one can establish the mediate character of our knowledge by saying that sensation is always first and reflection after. You may as well say, because I see a thing first, and then feel it, my feeling is mediate, while my seeing is immediate. The feeling in such a case is second in order to the seeing, but both are equally immediate. Certainly the one is not through the medium of the other. Just so with attention and that thought of an external object, which sometimes goes before the sensations which that object is fitted to give,—as it often follows some of these sensations. It is true that sensation depends on organs of sense which are part of the external world, but that can never establish the doctrine that thought of this world is thought of our sensations, for all our thoughts depend on organs of thought that belong to this world too. In the history of our states of mind, so far as the material world is concerned, sensations are first—thoughts follow—but neither does that determine that sensations are the only objects of thought, any more than that a person who should hear before he could see would thereby see nothing but his hearing. In cases in which an object gives me sensations first, these sensations, as a rule, are followed by attention to the object (not to the sensations), but the state of mind which amounts to thought of that object is as directly connected

with the object itself as it is possible for the sensations to be. If we are desirous to *know—to make sure* of an external object as we express it—we examine it by means of our senses. We do not examine our sensations, nor do we examine exclusively by means of our sensations. We examine the object by means of the sensations, and also by means of all the other states in which the mind can be brought to bear upon it. You might as well say that a mechanic is working, not upon the machine which he is constructing, but upon some of the tools with all of which he is constructing it, as say that we are reflecting upon our sensations, or our ideas, or both, when thus endeavouring to reach a real knowledge of this object.

I am not, however, to be understood as meaning to argue that our direct thoughts of external objects are knowledge any more than are our sensations. My aim here is to show that we must seek for that which may be truly called knowledge in something else than the mere impressions which are made upon us by the objects of that knowledge. It is to be remembered also, that impressions are as real when made directly on the mind itself as when produced through the organs of the body. The thought which takes place in the man when no external material object whatever is producing any impression on the body, or on the senses, is an impression as real as any sensation that is ever experienced. The facts of mere consciousness, observes Cousin, "can be observed quite as well as those which take place on the scene of the world. The only difference is that on the one hand they are exterior, on the other they are interior, and that, the natural action of our faculties carrying us outward, it is easier for us to observe the former than the latter."* Yet every fact of direct thought in consciousness is not, properly speaking, knowledge. If, for example, a gold-digger in one of his reveries has the thought of a large nugget, which lies hid in a certain piece of rock, raised in his intelligence, or thinking self, and as the result of that thought he goes and finds a nugget in a rock which he never saw or heard of before, it would be very difficult to prove that this thought was produced as either a direct or an indirect impression by the rock in question; but the thought is a real impression on the intelligence. It is in harmony, too, with the object thought of, yet no one will call that impression on this intelligence by the name of knowledge; nor can any one take all the facts of our mental history into account and leave out such directly suggested thoughts. You cannot say that "*the digger*

* Cousin's *History of Philosophy*. Second Series. Vol. II. Lect. XVI.

knew the nugget was there," and yet the true thought of it was in his mind exactly as if he had seen it with his eyes.* We are thus forced away from this notion of knowledge as an impression on an intelligence. No mere impression made on the intelligence in any way in which such an impression ever is made is really knowledge, or the true meaning of the verb "to know;" since even true thought directly impressed on the mind is not knowledge. All these impressions, outer and inner, are but the *raw material*, so to speak, from which knowledge is manufactured.

Mr. Stuart Mill himself gives us the key to another idea of knowledge when he says that—"What consciousness directly reveals, together with what can be legitimately inferred from its revelations, composes, by universal admission, all that we know of the mind, or, indeed, of anything else."† Here manifestly are two very different classes of ideas—direct revelations of consciousness, and *inferences legitimately derived* from these revelations. Whatever is to be understood by such revelations, it must be distinct from the inferences. The first may be impressions made upon the mind; but the second are results produced by the mind's own working and are not mere impressions. There can be no confounding of these two classes of the states of every man's mind, by any one who is careful to think clearly on the subject of knowledge. But there is more than their differing from each other to be noticed, of these classes of mental states. Sensations by themselves, coupled with direct ideas that rise in the intelligence, form a momentous assemblage of such states; but neither the one, nor the other, nor both, as we have already seen, can reasonably be set down as knowledge. It is only when that has taken place which is expressed by the words "*I infer,*" that

* We might take such cases as the following to illustrate this point. A friend of mine was engaged in a lawsuit which cost him great trouble. About a year before it was settled he saw in a dream the postman coming to him with a letter telling him of his success, and he imagined that he brought it in and read it to his wife. The dream was a *perfect representation* of what took place when his agent wrote to him of the termination of the suit. No one would say he *knew* a year before what would occur, and yet he *saw* it all. Another friend has handed me a letter in which a husband says, that on account of his wife's extreme weakness her brother's death had been concealed from her, yet, he says, "she has seen him on his deathbed, and also seen him die." It was all to her as if she had been there, yet they told her it was "only imagination," and she could not say whether they were telling her the truth or concealing it. She could not be said to *know* he was dead.—J. K.

† *Ec. Sir W. Hamilton's Phil.*, pp. 107, 108. Edit. 1866.

we are within the region of that which is rightly so named. As a far abler writer than Mr. Mill says—"Without reflection, man would play only a feeble part in the perception of truth; he, indeed, takes possession of it, he appropriates it to himself only by reflection."* And, as a yet more celebrated writer than either has said—"Whether we wake or whether we sleep we should not suffer ourselves to be persuaded except upon the evidence of our reason. Observe, I say of our *reason*, not of our imagination, or of our senses."† Even if we think of "that which consciousness directly reveals," we must think of something else than sensation, or we cannot find anything in it which can be properly called knowledge, unless we are prepared to confound sensation and thought, and so to make knowledge a matter of the passive senses, instead of a matter, as it is, of the active intellect. And if we are to think of direct suggestion as knowledge, we must, I fear, confound mere vivid thinking with true knowing. Multitudes of the thoughts which at one time are so clear and strong in us that we imagine we know their objects if we know anything at all, turn out to be only delusions. How shall we distinguish between these and those direct thoughts to which we may rightly give the name of knowledge? How shall we even conclude, or know, whether a direct thought is a true intuition or only a fleeting fancy? If we should take the mere thought of personal existence expressed in the "I" or the "me," how shall we know that this is not a mistake? *We must compare and infer.* Apart from this comparison and inference there is, no doubt, thought: but all thought—even all true thought—is not knowledge. Consciousness supplies us with occurrences—matters of fact as occurrences in us—impressions, if you so choose to call them—myriads of impressions in relation to both the outer and the inner worlds, but these, as they are directly supplied, are not knowledge. They must be compared, sifted, and wrought out into thoughts which are the product of reason, or they can never bear the sacred name in a proper use of terms.

It is in this process of comparison, sifting, and working out, that we light upon a full conviction of the truth, that there are two great classes of substances in the universe—the one we call *matter* and the other we call *mind*. But here we encounter a most formidable objection already alluded to incidentally. It is denied that we know any such thing as *substance*. Here we

* Cousin's *History of Philosophy*. Second Series, Vol I., Lect. VI.

† Descartes' *Discourse on Method*.

find the great importance of having settled the meaning of the verb "to know." Berkeley is the great teacher of the non-existence of material substances as such. He says, "It is indeed an opinion strangely prevailing amongst men, that houses, mountains, rivers, and, in a word, all sensible objects, have an existence natural and real, distinct from their being perceived by the understanding. But with how great an assurance and acquiescence soever this principle may be entertained in the world; yet whosoever shall find in his heart to call it in question, may, if I mistake not, perceive it to involve a manifest contradiction. For what are the forementioned objects but the things we perceive by sense, and what do we perceive besides our own ideas or sensations; and is it not plainly repugnant that any of these, or any combination of them, should exist unperceived?"* It is not difficult to see where the foundation of this absurdity lies. Berkeley, in following Locke, takes it for granted that we have no perception of external objects, but only of sensations and ideas in our minds. He has no thought that perception may be a state of the mind as truly and directly produced and maintained by an external object as sensation. He does not even imagine that a sensation itself can be only a temporary state of the sentient being, produced by means of an external material object. If he admits even this, his theory is gone, for the external object must exist in order to its being the means of producing the sensation. It is not difficult, we think, to explain satisfactorily this "strange impossibility," which the philosopher says stood in the way of his even imagining the existence of the world apart from his sensations and perceptions. The pool full of fishes is a fair illustration of his case. He had committed the mistake of imagining sensations and ideas as realities in themselves, and not merely modes of himself as a sentient and intelligent being. He had admitted an ideal world consisting of these sensations and perceptions to come between him and the real world with its "everlasting hills." He had allowed this ideal world to become so vivid and fixed in his imagination that he could see nothing through it. His illusion was so perfect that there was not any thing in his philosophic universe of a real nature but this ideal dream itself. Yet this mistake ought not to mislead any careful thinker. We have in man a being capable of affections from matter, which we call sensations—but capable also of affections from the same matter, which we call ideas, thoughts, perceptions—these affections being nothing more or less than states of

* *Berkeley's Works*, Vol. I., p. 25, edition 1784.

that man himself, resulting from his meeting with material objects and dealing mentally with them. We may as well say that he sees only his seeing, as that he knows nothing beyond the states of his own mind.

Berkeley, as we have seen from his own words, was an unhesitating asserter of the non-existence of material substance, as such. Some modern authors, who follow in his track, are more cautious—we should say timid—in their declarations of his doctrine. Following the principle of “know-nothingism,” which is so acceptable to many, they only say that we do not know such a reality as matter. John Stuart Mill states, as the popular doctrine, that “*all we know* of objects is the sensations which they give us, and the order of the occurrence of these sensations.”* In another sentence he says that, “It may, therefore, safely be laid down as a truth, both obvious in itself and admitted by all whom it is at present necessary to take into consideration, that of the outward world we know and can know absolutely nothing, except the sensations which we experience from it.” † It will be observed that there is a manifest inconsistency between these two sentences—the first admits the “order” of our sensations as well as the sensations themselves; the second excludes “absolutely” that “order.” It will be seen also that they are both utterly irreconcilable with that description of knowledge which we have before quoted from Mr. Mill, when he says that it consists of the revelations of consciousness, and *all legitimate inferences* derived from these revelations. We have, surely enough, consciousness of more than sensations, and legitimate inferences of more than their order of occurrence in the mind. But there is also marked inconsistency between this language as to knowledge, and the first which we quoted from Mr. Mill—that the only sense in which the verb “to know” has any meaning is found in the properties of objects impressing the intelligence. Sensations, as we have seen, are not impressions on the intelligence, not even on an intelligent being as such. They are impressions on the senses only—that is, impressions on a being who might have these impressions if he had no intelligence or capability of thought whatever in his nature. Where there is such confusion of ideas and recklessness of expression it is not cause for wonder that a writer should reach any sort of conclusion either in regard to matter or mind. A “sensation” is certainly not an “inference”—and the “order” in which sensations occur in the mind is not itself a sensation. Neither is any impression on the intel-

* *System of Logic*, Vol. I., p. 64, edition 1865.

† *Ib.*, page 66.

ligence as such capable of being confounded with an impression on the senses. And yet all would need to be one and the same—sensations—ideas of order—impressions on the intelligence traceable to no object capable of affecting the senses—all must be identical—in order to the consistency of Mr. Mill's statements as to our knowledge of substances.

If we rid ourselves of the confusion thus doubly and trebly confounded in the tangled thinking of so-called philosophy, we meet a question which accords with at least one of Mr. Mill's ideas of knowledge.—Is our inference, that substance exists and that qualities are only modes of the being of this substance, a legitimate inference? If it is so, then we *know* that substance does exist, and that sensible qualities are only modes of its existence.

But here it is necessary to be careful that we really understand what we mean by a *mode* of existence. We get at this by passing from the mere abstract idea of a *mode*, or *manner*, to the concrete idea of the mode or manner of being in a particular object. Let us take the case of an elastic ball and its form. It is round, in the form of a sphere. Press it between the finger and thumb, and it is no longer of the same form. It exists at first in the mode of a sphere—then in that of another figure—and when we let it resume its first mode it exists in that again. These mere changeful modes of being are *nothing* apart from that whose mere modes or manners they are. The inference, as to whose legitimacy we are inquiring, is, that the form of the ball is not itself the ball. Here again we come upon another phase of the question.

May I legitimately infer that the affection of sense in me is a mode of my being caused by an external object? If I take up a piece of gold and bring it before my eye I have the sense of its yellow colour. If I remove the gold from the range of vision I have the sense of yellow no longer. If I repeat this double experiment millions of times I have each time the same result. Is it a legitimate inference that this piece of gold is capable of giving me this sensation of a yellow colour? If such a thing as a legitimate inference can be the result of the most perfect induction this is such an inference. What I call yellow in a bit of gold, is only a certain form or arrangement of particles in that gold in virtue of which it transmits the motion which I call light in a particular way—it is only a mode of being in the gold, and the sensation of yellow is only a mode of being in me. The mode in the gold is answered by the mode in me, and as the gold invariably gives me the sensation, I infer that it is invariably capable of doing so. But a capa-

bility is not a thing—it is, as we have seen, only a mode of existence in a thing—the yellow colour is only a mode of existence in the material gold. The whole controversy turns on the *legitimacy of the inference* that there is something which has this mode of existence.

For further illustration let me take up a piece of red-hot iron. Heat is only a mode of existence—as we say a *state* of this iron—it is in fact a mode of the nature of motion. Is it not a legitimate inference from the facts of consciousness, caused by the presence of this hot iron, that there is present in it a *substance*, which is in a state of motion that we call heat? If the inference which replies in the affirmative is legitimate, then we know that there is a substance which we call iron. Connected with this piece of iron there may be any number of facts in sensation, and all these facts in a given order. Do these facts in that order direct the intelligent thinker to infer the existence of the substance? If they do, and that according to all the laws of truth, so that from this direction he concludes that substance is not quality, but that of whose existence all qualities are only modes, then he *knows* that substance exists, and that it exists in these states or modes which we call properties or attributes. To meet this, he who asserts that substance does not exist, or that we do not know that it exists, must show,—and that by an induction of facts more influential than that induction which is opposed to him,—that his inference is legitimate. He must thus overturn the cogent reasoning by induction on which the common sense of mankind itself is based, if he would legitimately keep to his strange ground. We conclude, therefore, that there are substances in the universe, and go on to say that there are two great classes of substances—the one called *matter* and the other *mind*. We are thus led to inquire as to the modes of existence belonging to those substances, or, as some choose to say, their “affections,” so as to understand their relations.

Taking our knowledge as consisting in legitimate inference, and one of the most legitimate of all inferences being that a substance which we call matter exists, and also another called mind, we are met with the question as to how we legitimately infer this distinction of substances? We reply, generally, by a careful comparison of the facts as these become accessible to us. We discover by legitimate inference that the modes of existence belonging to matter are totally different from those which belong to mind. That object whose characteristic mode of existence is found in *feeling* (understanding the word in the so-called philosophic sense) is legitimately distinguished from all objects whose characteristic mode of existence is insensibility.

If I consider the facts accessible to me in relation to a marble statue of a child, and compare them with those accessible facts that relate to a living child, I find it impossible to conclude that the perfect unconsciousness of the statue and the consciousness of the child are modes of existence indicating that both are the same as to substance. Both are substances, but they cannot be similar substances. That which exists as a feeling substance must be essentially different from that which never feels but exists as an insensible thing. I examine the statue millions of times, and may have the record of millions of millions of observations recorded by others, but no fact occurs indicating that one of its modes of being is consciousness. I examine the child as often and have the record of as many observations if you will, and every one of them indicates this consciousness. I infer that there is in the child a substance whose mode of existence, being thus essentially different from that which is in the marble, cannot be philosophically or rationally confounded with the material, and I call this substance *Mind* while I call the other *Matter*. If the examination of facts may issue in the legitimate inference that an unconscious stone is not an intelligent man, because their characteristic modes of being are essentially different, so may the examination of facts legitimately issue in the inference that the substances we call matter are essentially distinct from those substances which we call mind. If a man may legitimately infer that his hat is not his shoes, because it is adapted to his head and not to his feet, then much more may he surely legitimately infer that his thinking mind is not his material body—that substances so essentially distinct cannot be identical.

Priestley may be regarded as the most prominent representative of materialism. He was preceded by Hartley, who resolved all the mysteries of thought on the principle of vibrations in the material nerves.* The materialism of Priestley is very decided. He says—"The principle of perception and thought is not a substance distinct from the body, but the result of corporeal organisation." He also says—"That mechanism is the undoubted consequence of materialism;" and again that—"The self-determining power is altogether imaginary and impossible." He has no wish to be understood within the limits of that which his language expresses. He

* See Hartley on *Man*, vol. i., page 12, edition 1749. His words are—"External objects being corporeal can act upon the nerves and brain, which are also corporeal by nothing but impressing motion upon them."

follows out the notions of his leader to their utmost limit. But we are strongly disposed to think that Priestley was more powerfully influenced by Locke than he was by Hartley—perhaps more influenced, however, by Boscovich than by either. He imagined that this naturalist had demonstrated the *mutual penetrability* of material substances. Light was then regarded as a substance, and not, as now, only a kind of motion in the molecules of substances. It is not difficult to see how this error might lead to the fancy that two particles of matter might be in the same place at the same time. Priestley says, “If the momentum of such a body in motion be sufficiently great, Mr. Boscovich demonstrates that the particles of any body through which it passes will not even be moved out of their place by it.” By “*such a body*” he means one similar to light.* Now, it is quite true that “*such a body*” as is not “*body*” at all, but merely an agitation of the molecules of that which is illuminated, may pass through anything and not displace its particles by taking that place itself. But this is wonderfully different from a real body passing through another real body without displacing its particles, by occupying in its passage their places instead of them. It is on this *penetrability* of matter that Priestley founds his idea that spirit is material. He says:—“I therefore define it (matter) to be a substance possessed of the property of *extension* and of *powers of attraction and repulsion*. And since it has never yet been asserted that the powers of *sensation and thought* are incompatible with these (solidity and impenetrability only having been thought repugnant to them), I therefore maintain that we have no reason to suppose that there are in man two substances so distinct from each other as have been represented.” † The fact that the “*affections*” of matter do not necessarily displace its particles, looked at under the mistaken notion that these “*affections*” were themselves material substances that could pass through solid bodies, without occupying their space in any degree, is the (now exploded) foundation of Priestley’s whole system of materialism. The plan according to which men *refuse to know* whatever does not suit their general notions had not come into fashion in Priestley’s days. It is the grand characteristic feature of the so-called philosophy of our own times. A very remarkable instance of it occurs on this very subject of materialism in Dr. Davey’s book on the “*Ganglionic Nervous System in the Human Body*.” ‡ He traces what he

* See Priestley’s *Disquisitions*, page 24, edition 1782.

† Introduction to *Disquisitions*, page ii.

‡ Dr. Davey on the Ganglionic System, pages 69, 80, &c.

calls the "*formative power*" of even the highest parts of the brain to the ganglions in the sympathetic system; and when he reaches one of these, he says that beyond this some think of something which they call spirit; but he argues that there is no need for such a thing. So, in his view, all the manifestations of mind are effects of ganglionic change!

It will be observed that this is not a matter of mere distinction between qualities and substances, nor of distinction between the material and the spiritual. It is a simple denial of the existence of the spiritual being. Dr. Davey insists that the ganglion has itself the causative force by which all mental as well as material changes are effected! The metaphysician denies that we know anything of the external world but our sensations—that is, when he is in his most contracted mood, for we see he does not always shut us up so tightly; but here the physician denies that we know anything of the inner world beyond our ganglions! He holds that all that we understand by sensation, emotion, and thought, springs from these ganglions! No doubt he is quite prepared for all manner of astonishment which this monstrosity may excite, and not in the least staggered at its absurdity; so we must analyze the case as it stands in its facts. Suppose, then, that I have a handful of good gunpowder and a handful of a substance every way the same with the exception that the sulphur is absent. I put a little bit of red hot wire to the gunpowder, and it explodes; I put the same red hot wire to the other substance, but it refuses to explode. Is it not a legitimate and scientific conclusion that there is a substance in the one mixture which is absent from the other? No one in his right mind will deny the legitimacy of the inference. I may multiply the experiment millions of times, and the same result will necessitate the same inference. The experiment may be varied all over the wide field of material existence, and in every case certain results will be found dependent on the presence of certain substances. These results are modes of being belonging to those substances in certain circumstances—modes of being that can be demonstrated by experiment at all times when such experiments are possible, and that again is more than often enough for all reasonable evidence.

Take then a system of nerves belonging to a human body from which what we call "mind" is absent, and compare it by experiment with one in which what we call "mind" is present. Dr. Davey may give this "mind" any other name he chooses; just as anyone may call the sulphur in the gunpowder anything else he may fancy. Call "mind" "*formative*

power," or call it "*life*" which is at least as good a term, the mere change of words makes no difference in the *thing*. It is not, like motion, a mere mode of existence in the nerves, it is that which gives them motion. We do not contemplate the dead brain as motionless merely, but as lacking that which once moved it. Here then is a nervous system every way perfect so far as the material is concerned, and another perhaps not nearly so perfect, yet the latter is full of sensation, emotion, and thought—are we not scientifically shut in to believe that there is a substance present in this latter case which is absent in the former? It is only trifling in such a matter to say "if we knew all the conditions," or to say "we can conceive of such and such things." The case is before us and in full comparison, as truly as the real and sulphurless gunpowder, and the inference in both cases is equally clear. It is of no use to say we "imagine" a spirit beyond the ganglions;—we imagine nothing,—we *infer* a spirit, as we infer the sulphur in the gunpowder that explodes. No one will say we "imagine" this sulphur,—why then should he say we "imagine" "*mind*"? I am informed by one of the first men in Britain as an experienced authority in mental maladies, that the brain of a man dying in perfect sanity has been compared with that of one dying in madness, and that by no means of which science is possessed, could there be detected the slightest difference between the nervous masses. Is there any inference in science more legitimate than that which would deduce from facts like this, the existence of a substance capable of derangement and distinct from the nervous matter in man? How is it that we conclude that certain substances are in certain combinations of substance? In no other way than by certain effects which show their presence. How do we conclude that a mental substance is present in that combination of substances to which we give the name of a living man? Just by modes of being indicated by their effects, and which belong to no material substance whatever. How does Dr. Davey know that there are ganglions in the human body but by effects which indicate their peculiar modes of existence? How do I know that there is such a thing as a mind in a man with whom I am acquainted? Exactly in the same way:—by the peculiar effects which that mind from its qualities produces not only upon my senses but also upon my thinking and emotional self. We thus reach the reality of mind as a substance just as we reach the reality of matter. We are forced, if we would not be stupidly ignorant, to know that there are two great classes of substances in the universe—two classes because essentially distinct in their

modes of being—the one which we call “matter” and the other we call “mind.”

It is now time to state, that matter never moves or changes itself. It is said to be inert, or in other words to exist in a mode of passivity. This is denied, and the opposite strongly asserted. It is required therefore that we should be careful to understand what we state, and also to verify the truth which is really stated, when we say that matter never moves or changes itself. True knowledge often depends more on a clear understanding of the truth, than on any evidence required to establish its verity.

I have no idea that there is a “*vis inertia*” in matter. A “*vis inertia*” is an absurdity. It is a “*forceless force*.” A piece of lead held in the hand apparently presses that hand downwards. The *force* which so presses downwards is as really force, as is that of the arm which bears the hand upwards. The question in such a case is, not as to a “*forceless force*,” but as to whether that force, which presses downwards, is the force of matter, or, like that which bears upwards, the force of mind. We shall learn more as to this question afterwards—at present I only state that *inertness in matter* does not mean a *force*, but the opposite of a force,—a passivity which requires a force in order to any change whatever taking place in this material substance. But we must explain still more fully.

When we say that matter is *inert* we do not mean that it cannot be put in motion. For example a stone thrown from the hand is matter put in motion. It continues to be in motion after it has ceased to be in contact with the hand. It is not on that account capable of moving itself. It is consequently *inert* or *passive*, as every one understands the word who really knows what it means. A mass of coal on fire is matter in a state of motion; for what is called combustion is only a state of complicated motion in the material which is burning. Certain materials brought together in a certain way enter into this state of combustion, just as the stone enters on its course through the air, when thrown from the hand. But that does not constitute these materials self-moving, any more than the motion of the stone disproves its *inertia* or passivity. As the stone is thrown from the hand, so the materials for combustion must be brought together by a similar agency. A rifle ball passes on its course with a very rapid motion, and with great force, in consequence of the combustion in the rifle barrel. That combustion is a consequence of the explosion of the cap on the nipple, that again of the snap of the hammer on the cap, and so on; but

no part of all this process shows that matter is self-changing or self-moving, inasmuch as the entire process amounts to nothing more than matter put in motion, and continuing in that state of motion till the impulse given it has been expended. The myriad facts that occur in the wide field of experimental chemical science, go all to prove that matter can be put in motion, but not one of these facts admits, I think, of the shadow of a doubt as to the great general truth, that what we universally call matter is incapable of self-change or self-originated motion. It is a grand mistake to think that this truth is in any way dependent on the biassed conceptions of a theorising mind. We have no need here to say that we cannot conceive of this, or we can conceive of that, for we are not looking at abstractions but at experiments. Our belief is of that which actually occurs as distinguished from that which never does occur.

It is held, no doubt, by some that there is "latent force" in matter, by which it is somehow capable of moving and changing itself. If this is to be understood as meaning that matter is capable of being put in motion to such a degree that the motion will prove very forcible indeed, the idea amounts to no more than that a stone is capable of being thrown, and a rifle charge capable of being fired off. It does not even approach the subject of the *inertia* or essential *passivity* of matter. Any quality in a material substance which if first acted on by mind will issue in what is called *force*, is nothing more in careful thinking than that which belongs to a stone of the dullest kind. The spring, for example, which has been bent by a powerful arm, when set free has great force, but this is only like the motion of the stone after it has left the hand. That spring let alone would be just as *inert* and powerless as the stone when allowed to lie on the ground. The Leyden jar charged with electric force, as it may be called, may well enough be looked upon as full of bottled lightning itself, yet not only is that so-called force perfectly *inert* or *passive* till acted on by some mind, but it can be bottled up for use only by such a mind acting upon it.

We come here again, however, upon a theory in physics which, though I confess it is to my thinking of the wildest character, is to be carefully examined, because supported by the influence of the greatest names, and consequently very widely assumed. Its essential element is found in the idea that "force" is itself an entity, and not merely a mode of being in mind. It is not very difficult to understand how such an idea should be the result of a certain habit of thinking, though it is one thing to account for the idea, and

a very different thing to show, as must be done ere it is philosophically accepted, that it is a legitimate inference from fact. If any one is habituated exclusively to the contemplation of motions which he regards as "forces," in an incessant and protracted watching of these "forces" in their action, they may so occupy his thought, as to seem to him the only realities in the universe. The magnetic affection of a piece of iron, for example, called the magnetic force in that iron, may be exclusively thought of, till it seems to the exclusive thinker a substance as real as the iron. It is but a changeful mode of the iron's existence, which might pass away, and the substance be all there as before; but it ceases to be so in the exclusive thinker's state of mind, and becomes itself an entity—in fact becomes a thing while it is only a movement! The abstract idea of force, like the abstract idea of everything else, is nothing but a state of the thinking mind at the time when such an idea is entertained, and the idea of the force of any actual substance is only that of a state or mode in which that substance exists at the time when it has that force; but when anyone has given himself up to exclusive thought of the mere manner of a thing's existence, it soon becomes, as we have said, a thing itself to him. But we are not concerned so much here with the way in which the idea is formed, as with the *legitimacy* of the idea considered as an inference from the facts of nature.

There is what we think a very clear distinction which is of great importance in such investigations as that which we are now pursuing. It is that between force and motion. If we take such a machine, for instance, as that of Mr. Wyld, by means of which the French authorities, as well as our own, are endeavouring to furnish the light-houses along our coasts with the electric light, we have a good illustration of this distinction. This machine, when on a small scale, is driven by the hand—when on a larger scale, it is driven by a steam engine. By the turning of a crank a system of toothed wheels and pinions is set in motion—the motion of these is communicated to a part of the machine which revolves with great rapidity near the poles of a series of powerful magnets, collecting the magnetic currents from them. The ordinary motion is thus allied to the magnetic motion, which is changed into an electric motion, and concentrated in the poles of the machine itself. The result is a stream of electric motion which is almost incredibly powerful. When that stream is changed again into that peculiar movement which we call *light*, it is so strong as to make itself visible on the surface of the ocean at three or four times the distance at which the best lamps with

their reflectors have yet been able to send out their visible rays. If we begin with the immeasurably powerful light of this apparatus, and go back from this along the chain of movements, say till we have passed to the fire of the steam-engine by which the electro-magnetic machine is driven—if we are careful in our mode of inquiry as we go along—we shall find that we have not even the shadow of anything which can be philosophically called *force*. All is only motion. The light is but a state of movement in the atmosphere. The electricity is a similar state in the materials in which it is concentrated for the time. So is the magnetism—*only motion*. So, sure enough, is the motion of the machine from the crank onwards. So is the steam in the steam-engine. So is the heat and the combustion in the boiler and beneath it. So was the collection and the arrangement of the fuel, and the application of the match. So were the movements of the muscles of the person who made all ready. So were the cerebral changes, if you will, that produced the motion of these muscles. True science allows not a thought of anything in all this, but states of motion. There are motions that somehow give manifestation of a truly wonderful force, but, from the first to the last, not one of them, nor all of them put together, indicates that the force resides in them. There is something upon which the starting and the continuance of the whole chain depend. *That in truth*, and that *alone in the case*, is strictly and properly *FORCE*. It is not motion, but *that which puts in motion*. No thinking that is worthy of the name will overlook so obvious a distinction as this, nor can anyone who does overlook it, reasonably expect to reach anything but error as his conclusion, if he pursues such an inquiry as that with which we are here engaged. We shall see how the overlook leads to mistakes and confusion as we go on.

It is no doubt true that men who are held deservedly high in the world's estimation are responsible for the idea that force is matter, and that other first-rank men hold and teach that force is a separate entity which is neither matter nor mind. The notion that force is matter is, I humbly think, the culmination of that which represents force as other than a mode of being. I shall therefore attend to the latter idea before we enter upon the consideration of the former. But here we may remark that we need ever to keep in view that great discoverers of facts in nature are often the very worst reasoners in working out the ideas that are to be truthfully gathered from the facts which they discover. Every man seems to have his own department in which to be useful in promoting the advance of

human knowledge. One observes that which actually occurs, but he depends upon another, perhaps upon several others, for the true interpretation of that which he has observed.

One of the best essays on what is called "force" in nature is by Grove. He styles his subject the "*Correlation of Forces*," and shows, I think, with great conclusiveness of argument, that all the "affections" of matter (as he calls them) are only modes of that state of material substances which we usually call *motion*. What all understand as motion is (as we all know) a state of the moving object generally as a mass; but heat is the same and light also; only these are motions of the molecules or constituents of the mass. Electricity, magnetism, and "chemical affinity," or, as I should prefer to call it, chemical action, are only modes of agitation or motion in the matter affected. All the so-called "imponderables," such as "caloric," the electric "fluid," and the "ether," imagined as filling up the spaces between the atoms of matter, are thus disposed of as nonentities.

Grove speaks of the "*inertia*" of matter, but we are not sure what he means by the word, for he speaks of all matter as in a state of perpetual change. According to one mode or another every atom of the universe is regarded by him as in continual *motion*. He speaks of portions of matter as held in "equilibrium" by equal and opposing forces, and in this alone can we see anything that can be called *inertia* according to his view. So far, however, we find no great reason for adverse comment on his ideas. But when we endeavour to get hold of his idea of "force" he escapes us effectually. He says—"The dynamic theory regards heat as motion, and nothing else."* This is his own theory. So he regards heat as "motion and nothing else." But he says a little further on (page 69) that "We only know certain changes of matter, for which changes heat is a generic name; the *thing* heat is unknown." Then he goes on to say that "heat having been shown to be a force capable of producing motion, and motion to be capable of producing other modes of force, it necessarily follows that heat is capable, mediately, of producing them." We quote these words for the purpose chiefly of showing how loosely even such eminent men will reason. If heat is "motion and nothing else," how can it be "force?" Or, if heat is force capable of producing motion, how can it be that very motion and *nothing else*? Motion is a state of matter—*force is not*, as Grove's own words seem to show, but a property or an energy, by which, as he says, this state of motion

* Grove's *Correlation of Physical Forces*, page 66, edition 1862.

is produced. We must hold that it is nothing short of folly to reason as if that which agitates a body were the agitation which the agitating agent or force produces. Men apologize for such reasoning by saying that they cannot find suitable language in which to convey to the ordinary mind the new ideas which they have found; but the apology is worthless. Let them only have ideas that can be clearly *thought*, and they will soon get the right words by which those ideas can be correctly *expressed*. It is not the words "force" and "motion" with which we have any reason to find fault, but the idea of that which produces motion being motion itself. "Heat is motion and nothing else;" it is a state of matter in motion, and nothing more; the thing heat is unknown; yet this very heat is the force which produces this very motion—that is, heat produces itself! Not that some heat produces more heat, but that one heat produces that very heat!! The words are only too good, for they make the absurdity of the idea perfectly patent.

But there is invaluable instruction on this very subject to be gathered from Grove's teaching in his admirable essay. He gives as an illustration of the correlation of forces, a chain of changes, each link of which is only a peculiar mode of motion. He says—"At my lectures in 1843 I showed an experiment by which the production of all the other modes of force by light are exhibited. I may here shortly describe it:—A prepared Daguerrotype plate is enclosed in a box filled with water, having a glass shutter over it. Between this glass and the plate is a gridiron of silver wire; the plate is connected with one extremity of a galvanometer coil, and the gridiron of wire with one extremity of a Brequet's helix—an elegant instrument formed by a coil of two metals, the unequal expansion of which indicates slight changes of temperature—the other extremities of the galvanometer and helix are connected with a wire and the needles brought to zero. As soon as a beam of either daylight or oxyhydron light is, by raising the shutter, permitted to impinge upon the plate, the needles are deflected. Thus light being the initiatory force, we get *chemical action* on the plate, *electricity* circulating through the wires, *magnetism* in the coil, *heat* in the helix, and *motion* in the needles." He speaks of these successive changes in the state of the matter in hand "as modes of force," when all his reasoning goes to show that they are modes of *motion*, and, as he says in words already quoted, "nothing else." He speaks of light as the initiatory force, though he proves elsewhere that light is not a force at all, but a state of motion or agitation in the molecules of illuminated matter. But it is not with this that

we have chiefly to do at present, but with the positive truth that he is unwittingly teaching. His experiment demonstrates what is exactly to our purpose—namely, that the true initiatory force in the case is that which raises the shutter. This is not light, nor is it any other mode of mere motion; it is an energy which “produces motion.” Without this, *which is really a property of the mind of him who raises the shutter*, even the finely arranged instrument which Grove uses in his very interesting experiment* would be still for ever—that is, the matter which is under experiment, while it is capable of being put in motion by mind, is itself *inert* or utterly incapable of spontaneous change. Grove himself expresses this in one of his own statements. Speaking of an experiment, he says—“A voltaic combination is thus formed, and electricity, heat, light, magnetism, and motion produced at the will of the experimenter.” This “will of the experimenter,” or, as we should prefer to say, this experimenter himself, is transparently the true cause in the case, and in every case in which matter is the subject of experiment. True science, therefore, shuts us up to the great truth that mind alone is possessed of that force which is the true and efficient cause of motion or change in all its modes.

But we must return seriously to the notion that force is matter. The truly great names of Boscovich and Faraday are committed to this wild hypothesis. Faraday says—“Gravitation is a property of matter depending on a certain force, and it is this force which constitutes matter.” This statement expresses the conclusion at which he arrives by a somewhat elaborate argument given in the form of a letter addressed to Richard Taylor, Esq., and dated Jan. 25th, 1844. †

Mr. Faraday’s argument is partly metaphysical. He says, “A mind just entering on the subject may consider it difficult to think of the powers of matter independent of a separate something to be called *the matter*, but it is certainly far more difficult, and indeed impossible, to think of or imagine that *matter* independent of the powers.” This is merely the argument which we have already considered in proving the reality of substance, only it comes under notice in a peculiar phase. We have here to do with what are called “powers,” and two of these are specified in the course of the argument—the *conduction* and *isolation* of electricity. Shellac, for example,

* The ingenious arrangement of materials which form the instrument itself is also the work of the mind, intelligence, and will of its constructor.

† *Experimental Researches in Electricity*, Vol. II., page 293, edition 1844.

is said to have great isolating "*power*"—gold great conducting "*power*." It is held to be impossible to think of these substances apart from these "*powers*," but quite easy to think of such "*powers*" apart from these substances. The case may be just reversed, however, if we make sure of what we really mean by "*matter*," and what by "*powers*." What is called electricity is nothing, as Grove so strikingly teaches, but a peculiar state of motion among the particles of an electrified substance, just as heat is another peculiar state of motion in similar particles. Conduction is nothing but the passing of this peculiar movement from one portion of a material substance to another. Isolation is the arrestment of this peculiar motion so that it does not pass. The particles of shellac do not transmit the motion while the particles of gold do so. But this motion is only a state of these particles and the absence of the motion is equally a state. In themselves the motion and the stillness are absolutely nothing. They can be thought of, apart from that which is in motion, or which is still, only as nothing. As Mr. Grove says, "*the thing heat is unknown*," so certainly the *thing motion* is unknown; so is the *thing electricity*. This is not all. That state of the substance called shellac which is spoken of as the "*Power*" of isolation, and that state of the substance which is called gold which is called the "*Power*" of conduction, are just as little *things* as *heat*. The *things* isolation and conduction, apart from the substances isolated or electrified, are unknown. These states of things can never be things themselves. The difficulty of thinking of a substance apart from its states or qualities, is just the difficulty of thinking of the existence of an object apart from some mode of existence; but that difficulty does not necessitate our converting the mode of being into the being itself, nor of our converting the being into its mode of existence. Our thought of two involves our thought of one, so our thought of existence involves our thought of a mode of that existence. But, as the necessary thought involved in the thought of the two, is just as good a thought as that in which it is involved, so the thought of a mode of existence is just as good a thought as that of existence itself, and the thought of substance as good as that of quality, or mode of subsistence. Mr. Faraday is sadly misled in his thinking for want of perceiving these truths. For example he speaks of—"Molecules of something specially material, having powers attached in and around them,"—as if this were the idea of those who believe in the substantial existence of matter. Now, you can never speak of the motion of a wheel, for instance, as a power "attached to the wheel," or "gathered around it." It is a

mere state of the wheel at the time when it is in motion. Nor can you speak of the circular form of the wheel, in virtue of which it moves in the manner it does, as a power "attached in," or "gathered around" it. Neither is any other attribute, quality, property, capability, or mode of being belonging to the true idea of that wheel, a power attached to it or gathered around it. The wheel, if it exist at all, must exist as something, and so must have some mode of being, but this mere fashion of its existence is nothing, even in thought, apart from the thing of whose being it is the fashion. How then can the electric conduction or isolation of a substance, or that state of the substance which explains its isolation or its conduction be a "power attached in or around" that substance? Such thought, as places the modes of being as powers attached to or gathered around a substance, might pass in poetry perhaps, but is utterly from home in severe thinking. Yet it is only by taking mere states of substances, and imagining that these mere modes of existence are the substances whose modes of existence they are, that Mr. Faraday metaphysically reaches his amazing conclusion and teaches that "force is matter!" Force, as we have seen, and shall yet more fully see, is not even a mode of material existence, belonging as it does exclusively to mind, when considered in true science, and yet by this incredibly loose thinking it is made to seem matter itself! He says that with the view he opposes "a mass of matter consists of atoms and intervening space," but with the view which he adopts, "matter is everywhere present!" He constrains us to inquire what he means by "*where*." The word in relation to matter properly expresses the idea of *Place*. We can think of a place either as empty or full. An absolutely empty place is nothing. A place materially full is *in itself* equally nothing. If matter is everywhere present, it is infinitely *extended*. Matter is then the true *infinite*. This is, we should think, rather difficult of proof. If there is no empty space between its parts that is only that it is undivided if not indivisible—a *vacuum* is then impossible, which, we should think, is also rather incredible. It is certainly not an *unnatural* thought, that when a solid mass is moved to one side its *Place* is empty so far as this removal is concerned. Another mass, one would think, is required to take that place, or that must be empty,—that is, what is called "*space*" must there intervene. Matter is certainly not *necessarily* everywhere present.

But Mr. Faraday's argument is directed chiefly against certain aspects of what is called the "atomic" theory of matter, and against certain statements of this theory it may be

conclusive enough without touching the great question as to substantial existence. It is mainly a physical and not a metaphysical argument against the atomic idea. According to that hypothesis, matter is believed to consist in its "inner nature" of infinitesimal particles called atoms, which are themselves incapable of change, but which in their movements and combinations give the varied qualities to material objects which we observe them to possess. These atoms are regarded as not really touching one another, but moving each within a "space" surrounding it,—all being more or less distant from one another, according to the degree of molecular density in the matter which they compose. It is on a mistake in reference to this "space" that Mr. Faraday founds his argument. He says that, according to the atomic theory, "space must be the only continuous part in matter," for the particles are considered as separated by "space" from each other. Now, "space" in the absence of matter is just the opposite of continuity. Instead of being continuous at all, it is that which, in its essential emptiness, constitutes all breaks in continuity; so far, at least, as matter is concerned. Arguing as if space were matter, and the only continuous thing in material objects, he takes as one example a piece of shellac, which is an insulator for electric agitation, and says that, according to the atomic theory, the "space" between the particles of shellac must be an insulator. But, as Mr. Grove expresses it of heat, the *thing* space is unknown. Empty space is simply the absence of all substance—the idea expressed by the phrase is equivalent to that expressed by the word *nothing*. And this mere nothing, or absence of all substance, cannot, in the sense in which shellac is an insulator, be either an insulator or a conductor. The manifest truth in the case, whether we take one theory of matter or another, is that the particles of shellac are not in a state to move on the approach of the electric wave. They have somehow such a nature that they are like rocks in the agitated tide of electrified matter. It is *this* that constitutes shellac an insulator. This view of the case is, we humbly think, beyond all question, on the understanding that electricity is only a particular kind of motion in the molecules of conducting matter. Faraday, having laid down the mistake which we have thus indicated as his foundation, proceeds to take "platinum or potassium;" and, as these are conductors, he says that, according to the atomic theory, "space" in them must be a conductor! But there is no such "*must be*" in the case. The particles of platinum are moveable in the electric current, and so they readily move on the approach of that peculiar agitation. The space, hypo-

thetically imagined as existing between them, is nothing; and, *as nothing*, it can have nothing to do with the conduction of the electricity. The entire argument, therefore, of this truly great electrician goes for nothing, so far as his reasoning from continuity in "space" is concerned.

There is one part of the argument, however, which calls for a *separate notice*. He finds this upon the statement that "a space which can contain 2,800 atoms, and amongst them 700 of potassium itself, is found to be entirely filled by 430 atoms of potassium, as they exist in the ordinary state of that metal." On the ground of this statement he finds the conclusion that there must be far more space than matter in potassium; "yet it is an excellent conductor." So he says again, "space must be a conductor." But we say also again, that there is no such "*must be*" in the case. The necessity of truth is in the opposite direction. Space, which in the absence of a substance is nothing, cannot be either a conductor or a non-conductor. The particles of potassium pass into a state of electrical agitation on the sufficiently near approach of electrically agitated matter—just as the particles of water become agitated when the wind or tide approaches, and the particles of the massive rock are still—that is the fact as demonstrated by experiment—the space in which they are agitated having neither more nor less to do with the conduction than the space in which the experimenter himself moves has to do with his movements.

There is, however, another notable idea in this remarkable letter of Faraday. He shows that "the volume, which will contain 430 atoms of potassium, and nothing else, while in the state of the metal, will, when that potassium is converted into nitre, contain very nearly the same number of atoms of potassium, *i. e.*, 416, and also then seven times as many, or 2,912 atoms of nitrogen and oxygen besides." He gives another instance of the same thing in another substance, and refers to many others, all proving that a vast number of atoms may and do occupy the space which seems full with comparatively few. He is foreshadowing in these statements that in which the wildness of his speculation is most effectually seen—his denial of the mutual impenetrability of matter. His theory, after Boscovich, is that atoms are not particles of mutually impenetrable substance, but "centres of force," to which centres there is neither length, breadth, nor thickness! They are merely "mathematical points," and need *no space* for their accommodation! Space according to this idea is not even a requirement of material existence! Strictly these centres of force are *nowhere*! That which occupies *no space* is simply

in no place—that is, as I have said, *nowhere!* I do not remember ever seeing such a strange contradiction of ideas solemnly stated as philosophy as we find in this part of the letter. For example, he says, “Doubtless the centres of force vary in their distance one from another, but that which is truly the matter of one atom touches the matter of its neighbours;” and yet he says that, according to his assumption, “matter and the atoms of matter would be mutually penetrable.” The impenetrability of matter simply means that two parts of it cannot be in one and the same place at the same time. According to this theory of Mr. Faraday, not only two particles of this matter, but any number of them, can be in one and the same place at the same time, and that though they vary in their “*distances*” one from the other! We think that nothing can be more certain than that, if the least particle of matter can be in the same place with another particle, and hence any number of particles occupy that same place also at that same time, the masses which the accumulation of these particles form must be just as mutually penetrable as their minutest parts. The mere multiplication of that which needs *no* space for its presence can never call for space, and hence the infinitely absurd conclusion that the earth itself needs no space in which to revolve! But what does this really mean? It simply means, when analyzed, that extension is not a mode of existence in material substances! Space and extension are identical in true thinking, unless you regard space as a mere possibility of extended existence. This is the true notion of the idea in the abstract; and, if substance does not need space, it has not extension! Here we fall back on our idea of knowledge as a legitimate inference from the revelations of consciousness, and ask whether it is such an inference, that material substances have no size? Is it a mistake to imagine that certain objects are really long or short, or deep or high? It will certainly require very powerful chemical experiments to convince us that mankind are mistaken in believing in extension as a mode of material existence. What are the experiments of this most eminent among electricians? He says, “as regards the mutual penetrability of the atoms, one would think that the facts respecting potassium and its compounds, already described, would be enough to prove that point to a mind which accepts a fact for a fact, and is not obstructed in its judgments by preconceived notions.” But what is the fact? Merely that 3,328 atoms will go into a space which seems full with 430! It would be about as powerful reasoning to argue that because a carpet-bag, which one person says is *crammed*, will take in three

times as much again, therefore trousers, boots, stockings, &c., &c., are mutually penetrable; and, having nothing of the nature of size, can exist in the same space at the same time in any quantity! We accept the fact as to the packing of atoms in the potassium as we accept that of the packing of clothes in the bag, but the *conclusion drawn from the fact*—that is the only thing in question, and it *defies belief*. Yet this is the reasoning on which we are called to have the assurance that “force is matter.” He must advance something very different from this wild creation of the untethered fancy, who can rightly claim to set those down as under the domain of prejudice who refuse his theory. We come back, therefore, to our first statement on the point, and abide by the *inertia* or utter *passivity* of matter.

It is at this point in our inquiry that we are prepared for the statement that *mind alone is cause*. Mind is cause in that sense that it originates change; mind alone is true cause, inasmuch as it alone originates motion or any true change, either in itself or in matter. It is, as metaphysicians say, the only “*efficient*” cause.

Here we are met with a flat denial of the statement thus made. John Stuart Mill says: “To my apprehension, a volition is not an efficient, but simply a physical, cause. Our will causes our bodily actions in the same sense, and in no other, in which cold causes ice, or a spark causes an explosion of gunpowder. The volition, a state of our mind, is the antecedent; the motion of our limbs in conformity with the volition, is the consequent.”* Such is the doctrine in defence of which Mr. Mill argues as if the whole thing must turn on what we can or cannot find for the present in “his apprehension.” The question is to be settled by legitimate inference from the facts to which it is related. It may be settled without reference to the “apprehension” of any one, by a careful examination of men and things as they stand in what is called the external world. First of all, a *volition* is nothing apart from a person whose volition it is. Will is nothing but a mode of being in a person who is endowed with will. Will is only a capability of volition as explosiveness (to recur to one of our illustrations) is a capability of gunpowder. Will, however, is the capability of a *person*, and explosiveness the capability of a *thing*.

The essential distinction marked by the words “person” and “thing” is not that merely between the conscious and the unconscious, though that is a most important distinction. It

* *Logic*, Vol. I., page 390.

is as truly that the person *originates* change, while the thing *never* does so. Now there is no induction, as already remarked, more perfect than that which leads us to *mind* as the originator of motion or change. Take Mr. Grove's beautiful experiment, already described, showing the correlation of forces—begin at the last and proceed to the first in the series of changes, and you reach the person who "*at will*" raises the shutter, or allows it to remain closed. You may *imagine* that the volition of this person is the result of a change in the brain, preceding it, but you do not need to imagine any other link in the chain. The movement of the needle is a visible fact—the heating of the helix is a fact—the magnetism of the coil is a fact—the electric motion of the wire is a fact—the chemical change is a fact—the admission of light is a fact—the raising of the shutter is a fact—the motion of the finger is a fact—so is the act of will a fact. But where is the evidence of a material change going before this act of will in the person who raises the shutter? We have nothing to do with Mr. Mill's "apprehension," or with the apprehension of anybody else. We have to do with facts that are palpable to all who choose to look at them. It is only trifling to talk of what one can conceive and another cannot conceive, in a case where the plainest and most unquestionable matters of fact compel all alike to come to one conclusion, or to escape into the region of mere "apprehension" for argument by which to oppose these facts. If matter were capable of originating its own changes it would surely be possible to find at least one instance in which it has been found to do so. But, so far as man can by experiment question this substance, no change, or series of changes has ever been discovered in which a mind, or in other words *a person*, was not at the origin as the first mover. To refer to the changes that go on in nature would be simply to beg the question, should any one say that these are originated by no one. For, when in every case in which it is possible for man to test the nature of material objects, they are found *inert* till moved into change by a person; on what ground can it be proved that they cease to be *inert* when beyond the reach of man?

Mr. Mill speaks of its being more congruous to our natural conceptions to believe that matter acts on mind, than to believe that mind acts on matter. It is of very small moment in a scientific question, what may happen to seem congruous to a man's conceptions. We must look at the facts, and not at our conceptions apart from them. In every case in which we have true access to a chain of facts in the material world, there is a first link beyond which we cannot come. It is that first fact to which special attention needs to be called in every

inquiry as to *cause*. Here, for example, is a timepiece, and we may begin with the pointers, which at this moment have reached the position in which they mark the hour of noon and indicate accordingly. We follow back the motion which has so placed them from wheel to pinion, and from pinion to spring or weight, as the case may be. But, if we follow on, we at length reach the person who wound up the machine. So far as the first fact in the clock's motions is concerned, we reach the mind of that person, but can go no further. The volition, or act of will, on the part of that person is the first fact, and *never in any case* does a movement of matter occupy that first place in such a chain of motions. If we meant nothing more than the first substance to move in every chain of such movements, when we speak of *efficient cause* we should be compelled in true science to assert that mind alone is that cause. To speak of an "assemblage of conditions" as the cause of any effect, may suit for an explanation of language, which has been excessively loosely used and greatly needs explanation; but when we are not in search of an explanation of loosely employed language, but are seeking for the truth itself, we must fix the mind on that which begins the series of changes whose cause we are desirous to know; and as we do so, we find that in every case in which we can reach the first motion in the chain, we land in mind, and are therefore compelled to believe that *mind* was the first mover in the chain, and that *mind alone* is cause.

It is no doubt denied that we have any positive evidence to prove that mind possesses causative energy. It is not easy to know what is understood by such "positive evidence." If a rifle-bullet is seen to pass through a good-sized plank, we imagine that most minds in a state of sanity would accept that fact as positive evidence that there is force or causative energy somewhere in connection with the occurrence. But, if we trace back the chain of motions from which we are able to know that this motion through the plank originally sprang, and if we find that the whole chain would have been non-existent but for the mind that willed to draw the trigger, we should think we have something very like "positive evidence" that causative energy is a property of that mind. You may call that something by which the impulse is originated any sort of name you choose, but it is there in reality as something utterly different from all that merely proves the medium of transmission to the impulse, or movement. It is that which moves, or, at least, is the first to move, as distinguished from that which is moved, or only follows in the wake of the first mover, and it is invariably *mind—never matter*.

It may be well here to consider more fully the reality and true nature of volition. Is there such a thing as true *will*? In other words, is a man conscious of the capability of truly *originating* a line of motion by being the first to move in that line? As an illustration of our question, suppose a chain of changes, such as Grove places before us in his beautiful experiment already described, and in which he says "light is the initiatory force," but in which he shows that "the will of the experimenter" who raises the shutter is really that force. Is this *will* a myth, or is it a real property of the conscious mind? It is admitted that, as regards external objects, we know our sensations. We, then, do at least know our sensations. But do we know these sensations in any manner in which we do not know our volitions? Is not our knowledge in both cases equally immediate and necessary? If I have the sensation of cold, and you insist that I do not infer that I am cold, but that the sensation is matter of direct consciousness, then, if I will to raise my arm, do I any more infer that I *will* than I infer in the former case that I am cold? I am disposed to think that I infer in both cases; but assuredly I am conscious of the one thing as directly as I am conscious of the other. Sensational consciousness is not more real than volitional consciousness; hence, if we may say that we know our sensations as feelings, we may just as truly say we know our acts of will as volitions.

But what is that property of mind with which we are thus as certainly acquainted as we are with our capability of sensation? In our sensations we learn of something without us which produces a certain effect within us. In our volitions we learn of something within us which is followed by effects that lie without us. The "*I feel*" expresses the former; the "*I will*" expresses the latter. Take the case of the scientific experimenter as our illustration again. His instrument, we shall say, is all arranged and ready for action. He sees it—that is sensation; but the instrument is motionless. He feels it merely—that is sensation; but it is yet motionless. So long as he has only sensations from it, the experiment refrains from beginning. All is ready, including his own material organization, which is as necessary to the changes to be effected as any part of the machine, but there is no experiment until he moves in an act of *will*; then the shutter is raised, and all the motions follow. You may just as philosophically say that he knows nothing at all, as say that he does not know of this causative act of his own mind. Then this act is essentially different from all mere effects produced in the mind, such as sensations. It is not part of our consciousness

in the case of any sensation that it might be otherwise than it is, and that in the same circumstances. If touched with a red-hot iron, no one conceives that he may or may not have a sensation of heat; or, when he has that sensation, thinks that it might be just the opposite if he pleased. But every one knows, in a true instance of volition, that he may or may not will, and that he may will otherwise than he does. Even, then, if we admit that we know only of antecedents and consequents, it remains irresistibly evident that the first mover in every series of changes that lies fully within the reach of human observation is the mind in its act of will. But this moving of *mind*, which is the first antecedent, is essentially unlike all mere consequents. It differs from all sensation, not only as one sensation differs from another, but in the very characteristic by which a cause, properly speaking, differs from an effect.

Here, however, we are met by something like the assertion already alluded to, that this movement of mind which we call willing, or volition, is itself only a consequence of material movements. Those who imagine that the only *cause* of which we can properly speak in discoursing of natural objects is an "assemblage of conditions," are strongly tempted to look at the mere "assemblage of conditions" which precedes an act of will as the cause of that act. It is well to keep in mind that, even were this true, it would not in the least degree alter the fact that, in all those chains of material change which we can fairly test by experiment, mind is the first mover. We are, however, led by this notion—that volition is itself only an *effect*—into a totally different field of thought from that in which we observe the facts of the material universe. Our inquiry here is as to the nature of *mind*, not as moving *first* in a chain of otherwise material movements, but as moving *last* in such a chain. We all know that we have abundance of experiments in which the various modes of material movement *follow* the one spiritual movement of will. Here we must call for experiments in which this movement of will forms the closing link, so to speak, in a chain of material motions. A superficial thinker will probably conclude that these are very numerous. He will naturally turn to those cases in which painful material changes issue in volition. He might add to these, however, all cases in which pleasurable changes affect the volitional being. This is not his proper field of testing fact. He must be brought to deal with those other cases in which what may be called the *inertia of mind* is most signally manifest. The "will nots" must be carefully studied as well as the "wills." In the study of these, we think, he will

hardly fail to see that *there is* an element in what we have called the *inertia* of mind which *is not* an element in the *inertia* of matter. The amount of force necessary to move any portion of matter can be mathematically ascertained. To the infinitesimal fraction of an atom's weight (if we may use a hyperbolical and yet truthful mode of expression) force is *calculable* so far as the moving of matter is concerned. Will any man say the same of volition as a movement of mind? If he do, he is bound to prove his affirmation. If he could do so, he would prove that the universal blame which man attaches to wicked volitions is absurd and wrong, and he who opposes his assertion to the universal verdict—or to all but the universal verdict—of intelligence is bound to establish his position by irrefragable evidence, or to surrender it. He must take those myriad cases in which the most powerful and concentrated of all ascertained assemblages of conditions have failed to produce the "*I will*" of the fully determined mind, and he must show what condition, or degree of a condition, was wanting so as to account for the unchanging "*will not*" of the hero, or of the incorrigible. This is a case in which we must respect the truth, that the "*I can conceive*" of the philosopher goes for nothing. It is not one in which a "*may be*" can be accepted for a moment. The "*conceivability*" and the "*inconceivability*," together with the "*may be*" and the "*cannot be*," are not very important in any case of true science, but in this case they can have no place except as indications of something very like perversity. A mass of iron, for example, like the war-ship *Northumberland*, lies dead on the "*ways*." It is known beyond the shadow of a doubt that the amount of force necessary to raise and push her off into the river is mathematically calculated to the hundred-thousandth part of an ounce. This is demonstrable by endless experiments. But we deny that *one* experiment can be mentioned in which the force necessary to produce a volition in a mind is so calculable, and that, because in the case of mind there is the element of that which we choose to call cause itself—not in the sense of "*an assemblage of conditions*," but in the true sense of a producing power, so far as human action goes, as real as that of God Himself. It is the fundamental feature of His own image, as that is found impressed on men. When mind is really studied, as matter is really studied, not in dreamy *conceivings*, but by actual observation of facts, and the careful generalization of their teaching, it is placed beyond all doubt that mind is *cause*, and that this causative faculty belongs to mind *alone*. When we consider the general truth—the result of all the facts that bear on the subject—that

assemblages of conditions, which are in one instance followed by one volition, are in other cases followed by its opposite. It is this which constitutes the incalculable uncertainty of all moral influences, as distinguished from all physical influences. What is the true explanation? Simply that material motions are strictly mechanical, moral movements are not mechanical; that is, *motions* pass into one another in matter *necessarily*, but motions do not so pass into one another in mind. The man, in that which constitutes his manhood in its most essential element, is capable of arresting all movement when it reaches his capability of will, just as he is capable of passing onward, and of originating movement both in mind and in matter too. No careful reckoning of the facts of human experience and observation can miss those in which the man is thus a *first cause* of his own actions.

We are fully aware that men who are (within a certain limit) great in science hold that true causation is found in the will of God alone. Grove, from whom we have already quoted so much, closes his essay with these words—"Causation is the will, creation the act, of God." Such language is but the eloquent utterance of a mistaken idea. The evil result which we trace to a guilty man can no more be traced beyond that man's will in true science, than the act of creation itself can be traced beyond the will of the Creator. The "will of the experimenter," as Grove himself expresses it, is just as real, and just as really the first cause of the succession of changes which occur in the experiment, as is the will of God the first cause of the succession of changes of which he is the author. This is no matter of theory, or of so-called Psychology, but of simple induction, in which the facts guide us infallibly to their result. Take the man who deliberately raises his arm and murders his fellow. You trace all the sad consequences of his *volition* to himself, and you can trace them no further. No "assemblage of conditions" that ever occurred in the universe will account for that act apart from that first motion of mind which we call the volition, or act of will, in that murderer. To be a creator of worlds implies powers by which will may be carried out into the result, creation, which are not implied in the case of the murderer; but powers that are necessary to carry out will to its issue are distinct enough from will itself, and that will in both cases is the same capability of mind. It is not only unphilosophical, but mischievous in the extreme, to hide the real responsibility of man behind the error that causation belongs to God alone. It would be just as good sense to say that *mind* belongs to God only, as that efficient

mind is, in every case coming under our observation, the *first* to move, and that matter never is in any such case the first—this of itself is sufficient to suggest that there is something in this first mover, which is not in any of those that are moved, and in their turn move the others. Even if we could not in any way tell what this difference is, so as to give it an intelligible name, it would be wilful blindness in us to deny that there is a difference. If, as is manifest, no assemblage of conditions in which this moving mind is absent is ever followed by any change, so far as we can interrogate nature on the subject, we are shut up to regard this mind as having something in the nature of a capability of moving as distinguished from that of merely being moved. By fair induction we thus reach the general truth, that a man is the first cause of his own actions, and so the real and responsible author of all the consequents that flow from them.

The subject of "*motives*" comes naturally before us here. Materialists take great advantage of the false notions of their opponents on this point. A "*motive*" is that which *moves*. If something which *necessarily moves the man* in his act of will really exists in every case of volition, then the man is not the *first* to move. But does any such thing as this necessary mover of the man really exist? If it does so, it must be demonstrable. What sort of thing may it be? It must be either a substance, or a state of a substance. No one will contend that a "*motive*" is the former, so it must be the latter. A motive then is a state of a substance, and that substance must be either body or mind. As we have seen, states of the body are followed by acts of will; so are states of the mind. If our induction could be so lame as to be satisfied with this mere antecedence and consequence, then we might set down these states of body and mind as the *movers*, or as the true causes of volition. But by such an induction we might regard night as the true cause of day, inasmuch as night is an antecedent, and day its consequent. Our induction must be full. It must take in at least all *classes* of facts that bear on the point in hand. When we do take in all classes of such facts, we find that so-called "*motives*" as often fail to be followed by volition, as prove to be followed by it. If a motive is that which moves, what then is that which does *not* move? Or, if a motive is that which is followed by motion, what is that which is *not* followed by motion? It is *not* a *motive*. It cannot, to say the least, be that which *necessarily* moves. But the same states of body and mind that are in one case followed by volition, are in other cases followed by no volition. The same

causation belongs only to Him. While mind alone is cause, mind everywhere is cause in so far as it is truly mind. The immense importance of this truth will be seen when we come, as we shall soon do, to apply these principles which we are thus working out to the Christian doctrine of prayer. Losing sight of the fundamental idea of true will in man as well as in God, produces the most disastrous confusion in all that relates to a thorough religion, and in no department more than in that in which we have to do with supplication.

We are now prepared for the statement that mind has power to move and change that which is material; and here again we repudiate the test of congruity or incongruity with what are called "our natural conceptions." To one's "natural conceptions," as he chooses to call his mere ordinary notions, or habits of thought, it is congruous that matter should rule over mind,—to another's habits of thought it is congruous that mind should rule over matter. Such things ought never to be intruded as arguments into science of any kind. When acting scientifically we look for what *is*—not for that which may most easily be conceived. We endeavour to infer legitimately from the field of fact all that may be so inferred. Nor do we look vaguely on that field of fact, but take up the individual occurrences, scrutinizing each in turn, and gathering the general truth from a comparison of the whole so far as thus scrutinized. Say that we are desirous to know the true cause of the great tidal waves that sweep over the surface of the ocean. We do not look vaguely at that ocean, nor loosely reason by looking at individual tides on any particular part of a coast, nor do we look even at particular waves that follow each other, making by inches or losing by inches on the strand. We begin with a portion perhaps of seawater and experiment till we have a somewhat clear idea of its nature. It is fluid—that is, it can be made to *flow*—but is utterly incapable of spontaneous movement. We then legitimately infer that the ocean is not to have the tides ascribed to *itself* as their cause. We must look for that cause elsewhere. If it is not a tide of seawater whose movements we would explain, but a shoal of fishes coming along like a sea of life, and we are desirous to know the immediate or efficient cause of their progress, we take the individual fish and soon find its capability of spontaneous movement. We legitimately infer that this vast shoal is the cause of its own movement. We may look for *conditions* of that movement there, or for its "antecedents" if you will, but not for its cause. We have found that, which in the case of the passive fluid of the ocean, we had not found. As we rise in the scale of

life, this power of self-motion, and through that the power of moving and changing merely material objects, becomes more and more evident.

When we consider the extent to which man changes the material world from the most gigantic of his works to the most minute of his experiments in the laboratory itself, there can be no truth more evident than that mind moves and changes matter—even that frail mind which constitutes the man. It is no drawback to this argument to say that matter resists and often overwhelms man, because that proves only that man's power to move and change matter is *limited*. It tells us of a measure to the power, but no one will imagine that the measure of a thing annihilates the thing itself. Finding that in the human, and even in the animal sphere, the living spirit moves and changes matter; and that with man matter is to so great an extent at his will as Grove says, we are irresistibly led up to the infinitely greater mind in God, at Whose rule its movements and changes must lie infinitely more fully than they are at the will of man. It is not easy to look at a piece of matter and say what change man may not make on it. But when such is the case with the incalculably inferior mind, who shall rationally say what are, and what are not, the possibilities of movement and change in matter which lie at the will of the Infinite One? If we trace the history of human discovery as to matter, we find ourselves in a region of facts in which we constantly seem to be about to reach a limit beyond which human dominion over matter can go no farther, but the horizon is constantly receding. The more we discover the more wide the possibilities seem to be of future discovery. Who shall say what even man may not yet do, in the way of adapting the material universe to himself and to his happiness? But all that he can ever do will be necessarily only an infinitesimal part of what *that mind* can do, to whose originating *fiat* we are compelled to trace the very being of the universe; and this we are compelled to do from the moment when we infer that matter cannot move or change, far less *create itself*. When we have got thus far we have made a great step in the philosophy of prayer. We are now in that field of control within which He is a free and Almighty agent who is requested to act in all cases of true prayer for such things as involve material changes. Here, however, we only glance at that which will appear more fully afterwards.

It is at this point that we come upon the very important subject of "natural law." When we see clearly that mind is efficient cause, and that all minds are such causes, we occupy

a position in which this subject appears in its true limitations. So long as we know only one thing following another—what is called “antecedence and consequence”—in natural changes, we are fully exposed to the notion of an inexorable sameness in those changes. The knowledge of *true will* at once modifies this notion. You may calculate in a given case how water will run, and even how the wind will blow, but who can calculate in any case how a free will shall *decide*? He reckons without his host who studies the so-called “uniformities of nature,” forgetting that the material universe is constantly affected in what are to us its most important changes by moral agencies. Yet this is just how too many reckon, and hence come to fancy a world which is full of variations arising from both human and divine actions, as if it were a mere machine in which no one wheel could ever move except in one direction, and at one unalterable speed. Law represents only the idea of a generalized mode of action. All reasoning on “laws” which is confined to mere order of occurrences, is reasoning on the surface of things. It is like reasoning on the movements of a locomotive, and calculating on a certain speed for the train, forgetting the driver. I have known such a train leaving one of our most important stations and the chief man on the engine so tipsy, that the stoker threw him among the coals, and took his place, going off with the train alone. What if the stoker had been anything but steady? I have known a fine steamer leave one of our harbours and the captain unable to see from the stern to the bow of his vessel. He compelled his men to hold on with full steam till the ship was hard and fast in the mud of the opposite coast! Shipowners have something more to think of than the “antecedence and consequence” of material change. So has the true philosopher. He must see that the freedom of the actors who affect Nature, is as real as the laws according to which material objects are affected. In perfect accordance with the law of gravitation for example, I may raise a weight from the ground, or let it remain at rest, or push it along without raising it. It is not possible to take in the facts of the case as they ever crowd themselves upon us, and yet believe that natural law is anything else than the generalized mode of action on the part of those agents by whom what is called Nature is affected. If you *choose* to look at occurrences only and to ignore actors, you see nothing else but that to which you confine your view; but such limitation of vision is the opposite of rational.

When we fairly enter on the region of fact we find that the idea of an invariable order of succession in nature is only partially true, and, when applied universally, exceedingly deceptive.

He who finds his "inductive logic" on the notion of such an invariable order of succession, is adrift without rudder or compass the moment he leaves the region of inorganic changes. If he live among gases and such simple substances, and observe nothing but the laws according to which they are combined and dissolved when treated in given ways, he will work away tolerably with his defective reasoning; but he must not venture beyond the *inorganic line*. He will find that one part of hydrogen will always combine with eight parts of oxygen, when treated in the proper way for their combination, and that the result will be water. So long as he confines his investigations to such elemental matter his so-called "*law of causation*," as that of invariable succession, will suit; but when he begins to examine the lowest forms that have life, his "*law*" will fail him. Those antecedents whose consequent is a *lichen* or a *sponge* are not invariably followed by a perfectly similar result. One part of hydrogen combining with eight parts of oxygen always issues in water, and in water which is perfectly the same as any other water so formed; but whatever be the nature of that which gives rise even to a *lichen* it introduces *variation* the moment it acts. So strikingly true is this, that men of the most extensive materialistic science have been impressed with the *variableness* of succession in nature, till they are not indisposed to believe that the *lichen* itself may have developed in the course of myriads of ages so that its offspring is found at last to be a *man*! You thus find a votary of science at one time founding his whole fabric of reasoning on an "*invariable succession* in nature," and at another arguing as if the succession had been so *variable* as to account for the production, from some absolutely simple antecedent, of all the measureless variety of the universe! These are the results of that strange fancy, that so possesses us all at times, and in the indulgence of which we refuse to see with more than the half or even the tenth of an eye! We place two pure gases in certain proportions together, and do what is necessary to their combining chemically—the result is the same as it ever has been if the same experiment has been repeated millions of millions of times. But we put a seed into the soil, and from the germ we have a plant strikingly different from that on which the seed grew—strikingly different from those produced by the seeds that grew along with it in the same pod, resulting from the fructifying of the same flower; and all the plants from these seeds will give more or less variety from their seeds in their turn. The astonishing individuality of every living being, whether plant or animal, is dependent on this variableness of succession in nature. A man may as well deny that indi-

viduality, as assert that the order of nature is that of an invariable succession of events.

It can make no reasonable impression against this truth to say that "if we only knew all the antecedents" of any consequent we should find that it had occurred according to an invariable order of succession. This is but a begging of the question, and that in the most beggarly way—of insisting on a conclusion in the face of myriads of contradicting facts. If the same antecedents had always been followed by the same consequents, progress from the most simple to the most complicated forms of being would have been utterly impossible. As really as water is always formed when one part of hydrogen and eight of oxygen combine, so would the same results have always followed the same antecedents, and one invariable round must have been the only history of nature. But the indisputable facts of science, especially of geological science, demonstrate that this has not been the case. Variety of result has been the great law of life. Invariableness has been that of inorganic changes exclusively, and that is shown us only when we confine our attention to purely inorganic movements.

When, therefore, we are told that the changes in the natural world take place according to an invariable order of succession, and that this is the fixed law of nature, we are told what is *transparently untrue*. If such a statement is made in the name of scientific culture, it is made by one who is himself ignorant of some of the most irresistible conclusions of science, or who is oblivious to that very "law of variation" of which scientific men of the first class have tried to make so much. Such an invariable order of succession in nature, when brought to bear against prayer and its answer by God, is nothing but a frail fallacy, paraded in the face of eternal truth. The claim to "culture," to science, or to philosophy, which is associated with this folly, is a claim which is seriously deteriorated by that with which it is thus allied.

Here we come naturally upon that part of our wide subject where we distinguish in a more careful manner between that in which results are uniform and that in which they are not so. In the strictly material region effects occur in chains, so to speak. The creation of a first link is never a solitary occurrence. It involves other occurrences that are evolved in succession when the first takes place. Material objects are so connected that it is impossible to move one without also moving others as a consequence of that movement. In mind, considered in its capability of *will*, the case is otherwise. Everything may be moved round about that mind in its volitional capability, and yet that will may be *still*. This is

not a mere logical deduction from fancied premises, but the resistless teaching of fact. We all know, as we said before, that we can calculate with the precision and certainty of mathematics on the sequences of those purely material motions that follow an act of will, but we also know by abundant experience how impossible it is to calculate on that will itself. One of the fundamental truths of human procedure throughout its whole history is found in the freedom of man as a being capable of will; and that truth is more thoroughly proved by the variety of moral results, than the absence of such freedom in matter is proved by the uniformity of material results. But this constrains us to see that in a world in which there are millions of minds, each capable of true will, and where each within its sphere of volition is perfectly free, there cannot but be an endless variety and uncertainty of result. It is surely, then, anything but scientific to observe the results of material change alone, and to ignore the *causings of mind*. Such procedure can lead only to error. The men who are so anxious to assure us that "everything in nature is uniform," are also the very men who say to us, "if you will only live according to nature;" and they constrain us to estimate that "if" which they so constantly use. They force us to think of the truth which is implied in the "if"—the truth that we do not live according to nature—that truth also involved in that *if*, which is, that we *may* so live, and we *may not*; which again involves the fact of *will*—the fact of the existence of the most uncertain thing in the universe, or even conceivable. It is childish, then, to talk of a "uniform succession of events" in a world in which these millions of minds, or "*wills*," as they are so often called, are constantly demonstrating their freedom and their fickleness. You may think of a train of material changes which is ever so extended; if these changes are to occur, you must have a person who shall put the train in motion, and you may have many persons who will affect it when it is in motion. There lies the uncertainty. On what line of "uniform succession" shall we calculate in such cases? There is no such "uniform succession." Myriads of instances can easily be given to demonstrate the uniformity of mere material and inorganic chains of effects; but, as we have already said, not one instance to prove that the same uniformity belongs to the action of mind in volition. This clears our atmosphere of thought: we see where the uniformity lies, and we see, too, where it is absent. So far as changes are purely material, there is uniformity; but so far as they are the effects of will, they are not so. This is not the teaching of some fine-spun thread of logic, nor the voice in a philosophic dream, but the

“*legitimate inference*” from the facts of the case. And a most pregnant inference it is. For, in view of it, we see that His actings Who is the Great Cause must be varied to meet in true wisdom all the varied actings of created minds, so that in the fresh circumstances perpetually arising, the best that is possible may be ever done.

It is time now to look out beyond the world of merely created minds and things. We have so far anticipated this; but the change of view must be made deliberately and with great care. As we rise from minds that are limited to that mind which alone is infinite, and from those who are imperfect to Him Who is perfect in the fullest sense, we are beset with hosts of metaphysical bewilderings. We are told that we “cannot know,” and yet it is made to appear as if we cannot help knowing. It is said that we *cannot reason*, but we *must believe*! This is not satisfactory to our thinking, so we must try whether reasoning is impossible, as we are told.

There is perhaps no region of thought that more urgently requires reforming than that in which we meet with what men call “the Infinite and the Absolute.” Sir William Hamilton was one of the most influential of all mystifiers in this region, and he has been followed by a disciple who carries his mystifications to an amazing degree of perfection. We cannot help believing that a world of good must spring from any thorough change in this branch of speculation. John Stuart Mill, with all his faults, has done good service here.* Saisset has done yet nobler work in the same direction. † The change wanted seems greatly to consist in a fair distinction between infinity as an overstrained idea, and infinity as a mode of being in one who is properly the Infinite. “The Finite” abstractly is *nothing*. “The Infinite” in the abstract is just as truly *nothing*. A finite person or thing is that which is limited in its mode of being. An infinite person or thing is that which in one or more modes of its being is unlimited. The Omnipotent is unlimited in power; the Omniscient is unlimited in knowledge. But these ideas of infinity do not come up to the ideal—we might say *the idol*—of certain philosophers. They insist that we *must believe* in such an “Absolute and Infinite” as is “the complement of the relative and the finite”—that is, in *such an absolute as has no relations, and such an infinite as suffers no distinctions*! I am not at all sure as to those so-called “*necessary beliefs*.” They remind us of a case in which the

* See his *Examination of Sir W. Hamilton's Philosophy*, pages 42 to 56. Edition 1865.

† See his *Modern Pantheism*, Vol. II., pages 46 to 76, Ed. 1863.

Duke of Wellington was entreated to send home a young officer, because his intended wife *must die* if he was not brought to her. The great soldier most reluctantly declined, but kindly hinted that such illnesses did not generally prove fatal. There are *fancied necessities* in philosophy as well as in love. I think this absurd idea of the Infinite is one of them. May we not deny "absolute" infinity intelligently? May we not imagine that beyond a certain range in the universe there is nothing? Can we not even *think* this? I insist that I can. I can think of a perfect *vacuum*, and that is nothing. You say it is "space;" but it is empty space, and that is *nothing*. It may be truly said to be the possibility of being, but that is not being itself. Where nothing is, something may be; but the nothing is a perfectly good thought. I must believe that the thought of a perfect *vacuum* is as good as any other idea. As easily as I can think of a *vacuum* in a perfectly-exhausted receiver, I can think of a *vacuum* beyond certain limits of the universe. A certain writer has said that if he were on the verge of supposed finite being he could thrust out his arm beyond, and so there must be something into which his arm could be thrust. We may improve on his illustration. If he stood on the edge of being, with only empty space beyond, he might leap into it, and there would then be a live philosopher where there was nothing before; but that would fail to prove the *being of that nothing*. I do not for a moment deny the true Infinite, but I do deny that the Absolute Infinite is a *necessary* idea. It is perfectly easy to conceive of the absence of being from what is called a *place*. The conception is perfectly clear, and just as satisfactory as any true conception can possibly be, so far as the constitution of my mind is concerned, and it is not the conception of being, but the conception of the absence of being—that is, of *nothing*. It must ever be very unsafe to reason from our shifting capabilities of conception. These are one thing to-day and another thing to-morrow.

We might make similar remarks on what is called the Absolute. That is properly the complete or perfect, knowing no defect or flaw. This perfection considered in itself is *nothing*. The word can only truthfully represent the mode of being in some object, and it must refer to certain properties of that object. For example, there is One absolutely good—that is, good without any mixture of badness. He is absolutely wise—that is, wise without any mixture of folly. And so on of every quality that goes to make up a *perfect Being*. If you speak of such an absolute as has no necessary relations, meaning such an absoluteness as must consist in literally every quality, good,

bad, and indifferent, then, though we say it with very great deference, we must think that you merely speak nonsense. We can no doubt think and speak nonsense, only the less we do so the better, especially when we seem to mean to speak philosophy. What is called "*the Unconditioned*," intending by the word to combine "the Infinite and the Absolute," deserves our attention on a similar principle. The "Conditioned" and the "Unconditioned," as mere abstractions, are *nothing*. This must not be lost sight of. It is in what is called the *concrete* that we see the positive absurdity of the notion. To be absolutely "*unconditioned*" is to be and yet not to be, for if one *is*, he is necessarily related to all else that is; and if he is not, he cannot be "*unconditioned*," nor anything else! In the sense of this term, as used by Sir William Hamilton and his followers, existence is just as impossible as it is that "yes" should be "no." For example, it must be existence without a mode of being; and yet it is asserted that its mode of being is this "*unconditioned*" one. Such a being cannot exist as a creator, for in this he must be relative to his creatures. But neither can he exist as necessarily not a creator, for this would imply his dependence on the absence of creative acts on his part! Is not this very notion of the "*Unconditioned*" as a mode of being, when taken in this absolute sense, as pure a *chimera* as ever was imagined? A black that is perfectly black and yet perfectly white is just as rational as a being thus absolutely "*unconditioned*." A nothing which is absolutely nothing, and yet is something, is just as real. Two and two that will always make five is a prince of an idea beside this "*unconditioned*" monstrosity. And yet it is under the spell of such follies that men are "*philosophically*" hindered from taking such views of God as are the groundwork of thought to the little child, who approaches Him with perfect confidence, that he shall not ask any good thing from his kind Heavenly Father in vain! It is needful, however, to come to closer quarters in this part of our controversy.

The three grand inconceivables of Mansel* are examples, and they are, I humbly think, only *blunders*. He says, "By the *First Cause* is meant that which produces all things and is itself produced by none." But a *first* cause which produces a cause cannot in the nature of the case produce "all things." That which has been itself produced as an efficient cause, produces the things of which it is the cause, as really as the unproduced cause produces those of which He is the Cause. The man who sins, and so produces things such as sinning produces, is as

* *Limits of Religious Thought*, page 90, edition 1858.

real a cause as He who produced him. Then again, if the First Cause had not produced causes, he would not have produced "all things." Mr. Mansel's definition is self-destructive. To speak of a First Cause as that which produces "*all things*," is either to speak most loosely, or to ignore the reality of created causes. Then Mr. Mansel says—"By *the Absolute* is meant that which exists in and by itself, having no necessary relations to any other being." So he says again, "a cause cannot, as such, be absolute," and when we ask why? he says—"the cause, as such, exists only in relation to its effect!" Is it the case that a cause, as such, cannot exist *without its effect*? Did not the Great First Cause exist before the creation he called into being? Is not that Being who, as a cause, uncaused himself, produces all other being, absolutely perfect as a cause; and is not his perfection, as such, demonstrated by such effects? Mr. Mansel and those who agree with him confound their own thinking, by introducing elements into their conceptions apparently for the sole purpose of making them inconceivable. What possible connection has the producing of *all things* with the conceptions of a *First Cause*? Does not a *First* presuppose a *second*? And what possible connection has the absence of all necessary relations, such as cause and effect, with the conceptions of the true *Absolute*? Is not the Absolute itself related to the non-absolute? The perfect surely stands in relation to the imperfect. Must we conceive of it as no longer perfect because it does so? Then as to the infinite, Mr. Mansel says—"By *The Infinite* is meant that which is free from all possible limitation—that than which a greater is inconceivable, and which consequently can receive no additional attribute or mode of existence which it had not from all eternity." Observe this "consequently." It is introduced as part of the definition of the Infinite. But the question is forced upon us—What connection has this *consequence* with the Infinite, so far as the additional "mode of existence" is concerned? Every thought of the Infinite mind is a mode of existence; but is it essential to infinity that no fresh thought should rise in that mind? Is divine unchangeableness a stereotyped eternal sameness in every mode of being? When philosophy runs itself up to this, has not philosophy run mad? "How can the Infinite become that which it was not at first?" Such is Mr. Mansel's question. And we ask what can hinder it? If this "Infinite" is not a mere absurd figment of the brain—if it is a living and thinking Being—if, as we know, it is God, Who only is the Infinite, why should not He become the Creator of the soul He forms to-day, and yet be still the Infinite, just because His power is equal

to all that may yet be His will, as it has been equal to all that is past?

Mr. Mansel is here in astonishing harmony with those who were, we must think, very different men. Thomas Hobbes and David Hume are remarkably at one with him in this matter.*

Mr. Mansel says :—“ We are compelled, by the constitution of our minds, to believe in the existence of an Absolute and Infinite Being—a belief which seems forced upon us, as the complement of the relative and the finite. But the instant we attempt to analyse the ideas thus suggested to us, in the hope of attaining to an intelligible conception of them, we are on every side involved in inextricable confusion and contradiction.” † This is not very promising, certainly. But is the case as Mr. Mansel represents it? We have not to go far with his strange argument till we see that the confusion is his simply, and not that of the truth regarding what he calls the Absolute and Infinite One. His first proof of the amazing statement which we have just quoted is that—“ Distinction is necessarily limitation ;” which we instantly deny. We distinguish an infinite object from a finite object, as we distinguish the abstract idea of infinity from that of limitation ; but what ground is there for saying that by such a distinction we limit the one, any more than for saying that by the same distinction we render the other boundless? He says, “ the Infinite cannot be distinguished as such from the Finite by the absence of any quality which the Finite possesses.” That is, an infinite object cannot be distinguished as such from a finite object by the absence of limits in the one which are present in the other. Yet this is just how it is and must be distinguished. The Infinite object has no limits, which the Finite has. It is puerile to say that the infinite is a mere *negative*. It is negative only of the element of limitation. It affirms all the finite and infinitely more. It is Infinite only because of this negation of limit, and not because of the negation of anything else. Why may we not distinguish it as such by this very absence, which is its distinction, whether Mr. Mansel so distinguish it or not? Then he says that the Infinite “ cannot be distinguished by any attribute which the Finite has not ! ” That is, an infinite object has no attributes which a finite object has not ! Surely that whose mode of being is to be within bounds has not all the modes of being which that has

* See Hume's *Essays*, Vol. II., page 136, as to *Faith and Reason*. Also Hobbes's Works. Molesworth's edition of 1841, Vol. II., pp. 212, 216, &c.

† *Limits of Religious Thought*, page 45, edition 1859.

which has no bounds. These are attributes distinct enough, and the very attributes that mould our thoughts of each.

But it is, as we have seen, in Mr. Mansel's extravagant notions of what is meant philosophically by the "Infinite" in which we find the root of his confusion. He says — "The Infinite, if it is to be conceived at all, must be conceived as potentially everything and actually nothing!" He is clearly thinking of the Infinite in the abstract. But that is neither potentially nor actually anything. If what he says is true of infinity as a mode of existence, it must be true of the Being whose mode of existence it is. So God must be potentially everything and actually nothing! But what are the reasons given for this monstrous writing? "For," says Mr. Mansel, "if there is anything in general which it cannot become it is thereby limited; and if there is anything in particular which it actually is, it is thereby excluded from being any other thing." Again, we must remark that if he is writing of the abstract idea of infinity, it can become nothing in general, and it is nothing either in general or in particular. It can only be the manner of being to one who is infinite, and so in itself is nothing and can be nothing. If he is writing of the Infinite One, his language is unaccountable. Put in the concrete and applied to the only Infinite Being it says, that "if there is anything in general which *He* cannot become, He is thereby limited, and if there is anything in particular which he actually is, he is thereby excluded from being any other thing." He cannot become finite; is he thereby limited? To be finite is something in general which he cannot become, but in what amazing way can this set limits to His being? He is in this particular aspect or mode of His existence actually infinite, and cannot be anything else; but in what way does this limit Him? Is it possible to put greater absurdity in language than that we have quoted? But out of what does this absurdity spring? Out of the idea that to *think* of any object is to set limits to that object! So, to think of the Infinite is to set limits to Him, though in the very thought we put these limits away, and think of their *absence* as the grand distinction in the object thought of! Mr. Mansel says again, that "Whatever we conceive is, by the very act of conception, regarded as finite." So when we conceive of an object which has *no limits* we conceive of it as having limits!

When we ask ourselves what aim a writer can have in putting down such extraordinary sentences, it seems that Mr. Mansel imagines he is favouring true religion. But what is all this unaccountable logic intended to work out in favour of a truly religious state of mind? That all-

important point is stated in few words. Mr. Mansel says—
 “If all human attributes are conceived under the conditions of difference, and relation, and time, and personality, we cannot represent in thought any such attribute magnified to infinity; for this, again, is to conceive it as finite and infinite at the same time.” But where is there any difficulty in such a conception? It is not necessary to conceive of an object as infinite in *all* respects, because it is infinite in one. For example, it is not necessary to think God infinitely extended, because we think Him infinitely powerful. His omnipresence is not infinite extension: otherwise, the universe must be conceived of as infinite, as well as the Deity. But Mr. Mansel confounds all such distinctions, and leads on to the notion that “our soundest knowledge” of the Most High “is to know that we know Him not as indeed He is, neither can know Him: and our safest eloquence concerning Him is our silence, when we confess without confession that His glory is inexplicable, His greatness above our capacity and reach.”

If this meant no more than that our thoughts, as they are not infinite, cannot span the full greatness of God, it would be true, but it means that we really cannot judge of anything in God whatever! When, for example, it is said that “*God is love*,” we cannot, it seems, in the nature of things, know what the statement means! We cannot begin, as Christ teaches us, with the love of a prodigal’s father, and reason up to the heart of the absolute Father! We cannot know, it would appear, that what God feels is just what man feels, only God’s love is perfect and man’s every way imperfect! If a theological teacher shall demand that we believe in the most flat contradictions about God we are not to refuse, on rational grounds, because we cannot, on these grounds, know, whether his ideas are true or false! Is not this an attempt, by means of reason, to banish this very reason from the domain of theology? On the part of such writers as Hume it was the attempt to banish theology from the domain of reason. If the attempt is successful in either of its aspects, woe to the soul in which such success is secured. It is left destitute of all but an irrational faith.

There is a modification of these ideas which we have been discussing that constitutes a tremendous bar in the way of true prayer. It represents God, in virtue of His infinity and perfection, as so different from all that we think of Him when prayer seems reasonable, that belief in His responding to our requests must be groundless. The varied notions that go to constitute this bar generally combine in a certain idea

of the Divine *unchangeableness*. If He is regarded in His power over the material universe, that is imagined to have stamped on all matter such an impress, and to have so determined every line of movement from the first, that they can never be altered. If He is regarded in His omniscience, He is imagined to have so foreseen and ordered all, that there is no possibility of change at any point of the world's history. If He is regarded in His wisdom, it is assumed that it would be an impeachment of that wisdom, to think that everything has not been unchangeably fixed from all eternity. If He is regarded in His goodness, it is imagined to be utterly inconsistent with the eternal perfection of that goodness, to think that he will not do all which it is wise and right to do, without our asking him to do it. We are not in this case led into utter absurdity, such as we are brought to face in Mr. Mansel's contradictions; but into a region of metaphysical thought as to God, in which all is made to appear stereotyped and unalterable. True prayer with such a view is rationally impossible. We may go through a sort of exercise which we call prayer, and imagine that we are benefited in some way by that exercise; but the "ask and ye shall receive" of the Saviour's teaching disappears from our thoughts. Where lies the grand fallacy of this notion? It is found, as in all or almost all other cases, in this—*there has been an imperfect induction*. All the facts of the actual history have not been included. All *classes* of facts have not been taken into account. The Omnipotent has created at least one class of beings, one mode of whose existence is expressed by *will*. It is perfectly consistent with the highest idea of omnipotence to believe that He has done so. It would be inconsistent with such an idea to hold that He could not do so. In His omniscience He must have foreseen the perfectly free creature, whose mode of being would embrace this capability of will, and He must also have foreseen this freedom as truly as any of the acts that would flow from it. His wisdom can never be charged with anything so unwise, as the creation of a free creature without scope of really free action. But this would be the very unwise thing which He would have done, if He had created man, and *fixed* the succession of *every* event in the history of the very world in which He placed him. Such a contradiction would be as inconsistent with goodness as with the attribute of wisdom. The divine unchangeableness is not that of absolute sameness in the details of development, but that found in the principles on which that development takes place. Therefore we are shut up to believe, that the notion of everything being stereotyped,

or so unalterably arranged as to exclude all real answer to prayer, is a false notion. Finding the fact of man's freedom, we reason inevitably to that of God's suspending part of His acting upon the acting of the creature. This part of the Divine conduct is not fixed, and that because the perfect *principles* of the Divine character are fixed. God will do exactly that which is wise and good; but what that shall actually be may depend on how the free creature will act in a given case. It is stated by Mr. Mansel as one of his proofs of contradictories in the Infinite that we cannot reconcile foreknowledge and free-will. I see no more difficulty in reconciling *fore*-knowledge and free-will than in reconciling *after*-knowledge and that free-will.

It is necessary to our freedom from such difficulty only that we have a somewhat clear idea of what foreknowledge really is, and especially of how it is affected by the futurity of that which is foreknown. Mistakes on these points no doubt cause great perplexity, but they are only mistakes, and may be easily corrected. Foreknowledge, like all other knowledge, is *thought*. It is such thought as is legitimately derived from the objects to which it is related. If, for example, I may say that I know the sun will appear above the horizon to-morrow morning at a certain hour, in doing so I merely express a thought legitimately derived from the evidence on which I anticipate the event referred to. It is a legitimate inference from certain facts of consciousness, that the sun will so appear, and hence I know that it will, just as I know or legitimately infer from certain other facts of consciousness, that it appeared to-day. If, to take a different case, I say of a man, who owes me a sum of money, and has engaged to pay me on a certain day, that I *know* he will do so at the time appointed, I merely express thoughts which are inferences from other facts of my consciousness, and are real knowledge *so far as they are legitimate inferences*. These thoughts are foreknowledge, as truly as thoughts of things past or present are ordinary knowledge of past or present.

But all such thought is affected essentially by the *futurity* of its objects. The thought of that which *is*, must be essentially different from the thought of that which as yet *is not*. The sunrise of to-morrow has no existence in fact to-day. My thought of that sunrise now, is that of a non-existent event. There is no corresponding reality in nature as yet, for the thought of that which is truly future. So the thought of the payment which has not yet been made, must be the thought of that which has as yet no reality. But this is not all. Events are con-

stantly occurring which need not occur, and which ought not to occur. To deny this is merely to beg the question of necessity as a universal law—it is to deny that either the creature or the Creator is really free. No act of a free agent need occur, and no act of sin ought to occur. The crime which is foreknown as one to be committed to-morrow need not be committed, and ought not to be so. It has as yet no existence—it may never be—and it ought never to be. That thought of it which we rightly call foreknowledge must embrace all this, or it is not knowledge, for it does not correspond with the event said to be known. There can therefore be no foreknowledge of that which depends for its occurrence on a really free agent, which does not imply the thought that it may never come to pass. This is not an affection of foreknowledge arising from the imperfection of the foreknowing mind. It is a necessary affection of all such knowledge arising from the nature of freedom and futurity. The more perfect the mind is which knows, the more certainly must these affect its knowledge. The mind of the Omniscient must, from its omniscience, think of the future as it is, and not as it cannot be. That mind cannot think of the future as if it were a past or a present, for the simple reason that it is neither the one nor the other. Nor can it think of that which may be, and yet may not be, as if it must be. Whatever the true nature of the future is, so of necessity must be the thought of it in the All Perfect mind of God. To say that that which He foreknows must come to pass, is merely to assert *necessity*, and so to deny freedom. If there is freedom, to the extent to which it is, to that extent there is no necessity, and God must know that there is none. He must know that the free act, which he foresees may be, may yet not be. He must know that the free act which he foretells may not occur. Some say it must occur, or his foreknowledge must be at fault and his predictions must fail; but this is only asserting that it is *necessary*, and that he foresees and foretells it *as necessary*. If he foresees and foretells it on the understanding that it is a matter of freedom, then, like Jonah's prediction of the destruction of Nineveh, it may not occur, though he has predicted that it should. There could be mistake in such a case only if the event were foreseen and foretold as *necessary*.

The true difficulty to which Mr. Mansel refers is simply that of reconciling necessity with freedom, so that an event must be, and yet need not be. No doubt that difficulty is great enough, but it need not hamper philosophy any more than the difficulty of regarding something and nothing as the same. Freedom is foreknown as freedom, and necessity as

necessity; and, if we only keep our ideas of both distinct, we need feel no difficulty in reconciling both with foreknowledge, even as that is in the Divine mind.*

The great practical question will be found in the end to be this—what has the Great Dispenser determined as to the conditions on which He will act? Has He made His action in any degree dependent upon man's asking?

But this belongs to moral rather than to metaphysical science. It is clear that there is no physical or metaphysical difficulty in the way of such a suspension. The difficulties appearing to exist are purely imaginary, and the fruit of modes of reasoning whose defects are transparent the moment we take *all* the facts of the case into consideration. Here, as in many other matters, we find a defective science, or a defective logic rather, at the foundation of objections that look terribly formidable in their bearing against Christian truth. The flagrant fault is in the "science." Fault there is none in the Bible doctrine.

At this point we come upon the question as to *miracles*. Is a miracle a suspension of natural law? Hume says, "A miracle is a violation of the laws of nature."† It suits his purpose to say so. However clear our view is of God's agency as actual, and as to a certain extent depending in its acting on human action, we are strongly constrained to believe in His adherence to law. Consequently, when a careful thinker is told of a suspension or infraction of natural law on the part of the Divine Agent, he cannot help feeling as if a serious difficulty were thrown in his way. It is this which we think gives Hume's celebrated argument against miracles the power it has wielded over credulous minds. He says that "a firm and unalterable experience has established these laws." The *fulcrum* on which he rests his lever is what he thus calls "experience." And it cannot be denied that, so far as history records the experience of man, it is no easy matter to find in it a recorded instance of suspension or infraction of a true natural law. If that history records anything it records miracles, but those miracles which it does record are neither suspensions nor infractions of either natural or moral law. Hume is not entirely free from all suspicion of dishonesty, however, in this. He confounds

* The best view of "Divine Prescience" I have seen, is given by Mr. Reddie in his *Fresh Springs of Truth*,—London: C. Griffin & Co. 1865 (pp. 168-179),—a little volume of exceedingly courageous, yet cautious and valuable thought.—J. K.

† *Hume's Essays*, Vol. II., pp. 120, 133, 138, Ed. 1800.

usage with law ; or, rather, he reasons as if the usual course of nature observed by us were equivalent to natural law. The progress of being which we have already noticed is fatal to his mistake. If his argument, consequently, has any force, that force lies in our experience of law, and not of temporary usage. There is no violation of any *law* of nature in any of the miracles of the Bible, though there is in some of them a departure from usage.

Take the case of Christ walking on the Sea of Galilee, and enabling Peter to do the same. Is there in this any suspension or infraction of natural law ? Does any one say that gravitation was suspended ? Then what kept the two bodies from flying off from the surface on which they walked ! If I wade through a stream, and, as I do so, I bear any object that I have with me above the surface of the water, do I suspend or violate the law of gravitation ? Clearly no. I only exert another force sufficient at the time to keep the object I am carrying above the surface. Take, again, the case of the "*withered arm.*" When by an unusual exertion of power the Saviour made the living action pass through that arm, did he suspend or violate any natural law ? We can see no such suspension or violation. We can see an exertion of force which is unusual, but that force is exerted in perfect accordance with all the laws which it ever follows in its most ordinary exertions. The "*vis vitæ*" of the materialist passes from the ganglions, along the various tissues, and affects arteries, veins, muscles, bones, skin, and all else, in perfect accordance with law. Take the dead body that had "*lain four days*" in the tomb, and let the same thing be done to that which is done in this withered arm, and where is either the suspension or infraction of any one law of nature ? Hume's gathering up of his argument is in these words :— "It is experience only which gives authority to human testimony, and it is the same experience which assures us of the laws of nature. When, therefore, these two kinds of experience are contrary, we have nothing to do but subtract the one from the other and embrace an opinion either on one side or the other, with that assurance which arises from the remainder." Who does not see that this vaunted argument goes to smoke, the instant we perceive that no real miracle involves the slightest deviation from natural law ? If it shall be said that usage is violated, we have only to ask if it is contrary to human experience that it should be so ? Is not every variation in nature a departure from usage ? What was that leap which Sir Charles Lyell contemplates when he says, "We may also demur to the assumption that the hypothesis of variation and natural selection obliges us to assume that there was an

absolutely insensible passage from the highest intelligence of the inferior animals to the improvable reason of man."* The departure from usage in which a human being should be born of one of the lower animals would surely be departure enough from what Hume calls experience! And yet that is only an idea produced (in one who has had a very wide experience), by the departures from usage that are in nature. These, however, are no violation of law. *Neither are the greatest of Scripture miracles.* Take a case to our purpose in this inquiry as to prayer. "Elijah was a man of like passions with ourselves, and he prayed that it might not rain." What natural law did he wish suspended? Is the absence of rain the suspension of some natural law? Can Hume's experience, or that of any one else, point out the law of which it is either the suspension or the infraction? But Elijah prayed again that it might rain. And when that cloud, no bigger than a man's hand, at length rose on the horizon, was some natural law broken or suspended? There is not a shadow of a ground for saying so. Human experience of natural law was as perfect all through that famine, and at the close of it when the rain came, as it ever had been; but the *miracle* was not the less real on that account. That agent, by whose power the heavens give rain and withhold it, acted in this case, as in all cases, in perfect accordance with everything that can be called *law*, whether in the sphere of matter or in that of mind: so Hume's great argument is only a great blunder. Hume was fortified in his error by his ideas of "antecedence and consequence" as all that we know of cause and effect; but even here his foundation was a blunder as to fact. He took it for granted that man's "experience" of "antecedence and consequence" in nature has been that of uniformity, which, as we have already shown, is *palpably and egregiously untrue*. When we are asked, therefore, if we expect God to work a miracle in response to our requests, we may reply by asking—what if he should? If it is asked again, if we think He will violate His natural laws to answer us, we may reply that there is no need for any such violation. We can think of nothing we could for a moment desire that would call for his departure by the slightest conceivable degree from any one of these laws.

If we epitomize our discussion and follow out the sound principle on which all the facts of the case come under review, we find ourselves surrounded by a very clear atmosphere of thought as to our great subject. Minds everywhere we see

* *Antiquity of Man*, p. 504, Ed. 1863.

have power to change material things. Minds have power also, to a certain extent, to change other minds, and so to change these other minds as to lead to the change of material things by their mediate agency. If we take any great work which has been effected by men, and go back into its real history so as to note the facts of that history, all this at least is irresistibly manifest. Say it is a great viaduct that now spans a valley, and we run rapidly back over all the occurrences that have issued as their combined result in this vast work, till we reach the first thought to which it can be traced in an individual mind : we have in those facts, beyond all question, instances in which minds acted upon material things—instances in which minds acted on other minds so that these again acted on material things—and instances, moreover, in which chains of minds acted on each other and led to material, as the result of mental, changes. Among these facts we find *askings* as really as any other facts whatever—we find *givings* following those askings—we find *receivings* following those givings ; we find no fact of any kind in the universe that is more real than those *askings*, *givings*, and *receivings*. There is no antecedence or consequence more evident, than that which holds good between those said askings, givings, and receivings. Not that the antecedence and consequence are uniform, for there are *refusings* following askings as well as *givings* ; but with all the lack of uniformity, no one can doubt that in myriads of cases the giving follows the asking as its effect, and is as evidently that effect as is any other consequent the effect of any other antecedent whatever. But among the facts with which we find ourselves surrounded are *askings directed to God*. What is the sole element of difference in the case of these askings ? Matter is matter in this case as in every other in which it is involved—mind is mind also in this case as in every other—only in this case one mind is perfect ; in all others the minds asking and those supplicated are imperfect. Call this perfection infinite, absolute, anything you choose—your words make no alteration on that mind which has all possible qualities that go to make up a Perfect Being. And now comes the question—*Is one of these qualities that of insensibility to askings ?* Beyond the possibility of dispute the askings are there—the *sensibility to the askings and the givings alone are denied*. Man acts upon matter, and upon mind too, when requested to do so. Man refuses to act on matter, and also on mind, though requested to do so. *Is it essential to his coming nearer perfection that he should always refuse ?* No one will say so. Is it essential, then, to the perfection of God that He should *always refuse ?* Is deafness to entreaty a perfection ?

Is the statue of a mother, to which the infant cries in vain, a more perfect being than the *living mother* who acts on the instant the wail reaches her ear? Would it be an element of perfection in God, to be like the statue and unlike the living mother? If true philosophy could annihilate the *facts* of asking, it might greatly alter the case. But it refuses to ignore or alter a single *fact*. Even a falsehood is a fact to a real philosophy; though its object is unreal, it is real itself, and should be weighed as carefully as any other fact. Consequently philosophy is intensely interested in these *askings which we call prayers*—THEY ARE FACTS. They point us irresistibly upward to the All-Perfect One, and compel us to believe either in His giving or in His refusing. He either acts as requested or He does not act. True science leads us to look to other fields of inquiry, and to ask what the facts which lie in them teach us as to His responding, or refusing to respond, to the movements of his creatures. If we till and sow, our labour is worthless, unless One who has command of sun and rain respond. Does He respond? Not so uniformly as to sanction the mechanical idea of His great universe—yet He does respond sufficiently to give perfect confidence to the good husbandman and to call forth the gratitude of every intelligent heart. If we *ask*, does He respond? Not so as to sanction the idea that asking is everything that is required in order to our receiving; but yet he has so responded, as to have kept asking alive in human beings through all the centuries of their stay on earth. Here, however, our work for the present closes. We have traced the outline of the relations to which we have directed attention in Metaphysical and Physical Science, leading along the path of those relations into that field of thought in which we find the needy suppliant asking of the Heavenly Father, and receiving from Him "*that which is good.*" We have found that true science is in perfect accord with such asking, such giving, and such receiving, as are involved in the Christian Doctrine of Prayer. Instead of requiring to lay aside "*reason*" in behalf of "*faith,*" we find the severest logic leading us on to that fellowship with God, which, as man is constituted, is impossible without that interchange of heart between the Divine Helper and the needy children of men, which takes place in sincere supplication on the one side and merciful and gracious giving on the other.

THE PRESIDENT.—Ladies and Gentlemen, it is my duty to move a vote of thanks to the author of this paper, and to express to him our deep gratitude for the diligence, care, and profound thought exhibited in it. It would be presumption for me to say I could follow the paper throughout; but in the

after part of it I entered into the arguments without difficulty, and, considering the great value, in the days we live, of having such subjects thoroughly gone into, I am sure that all here, without any critical examination of the differences of opinion that may well exist upon some points, will join heartily in saying that the learned author of the paper is entitled to our utmost respect and gratitude. (Hear, hear.)

Mr. WARINGTON.—My Lord, we have little time left, and I will therefore begin what I have to say at once, so as to leave as much time for others as possible. It is unpleasant, after the beautiful finish of Professor Kirk's paper, with which all of us must so heartily agree, to turn back to the drier matter of its commencement in the way of criticism ; and yet I am sure Professor Kirk would wish his paper to be criticised, and therefore I do not hesitate to set about the task. Professor Kirk begins with a long metaphysical introduction ; it seemed to me somewhat unnecessary, as being a kind of introduction equally appropriate to every subject whatever which we have to discuss. We must know what "knowing" is before discussing any part of knowledge, and I do not see how it is more needed here than in subjects generally. Passing now to details, I cannot but think there were one or two cases in which our author was rather hair-splitting in his criticism of other writers, and especially of Mr. John Stuart Mill. I am no advocate for Mr. J. S. Mill, and should dissent from his philosophy as much as Professor Kirk does ; but I think Professor Kirk has dealt with him somewhat unfairly, and strained several of his expressions in a manner very undeserved. But of this more presently. I notice, also, one or two scientific errors in the Paper. For instance, Professor Kirk speaks of light as a movement in the atmosphere. Now, light passes with equal ease through a vacuum, and is therefore plainly *not* a movement in the atmosphere. It passes also with ease through transparent solids or liquids in which there is no air. Yet so completely is this erroneous idea ingrained in the Professor's mind, that he speaks of "ether" as being now regarded by philosophers as a nonentity. I should like to know the modern philosopher who thinks so——

Rev. W. MITCHELL.—Does not Professor Grove do so? I rather think in his last work he does.

Mr. WARINGTON.—It may be so ; but I was not aware of it. Then as to the criticism which Professor Kirk gives as to what we mean by "I know." He seems to take it for granted that it must be an action of the mind on something. I confess I do not see why the expression may not have the same sense as "I see, I feel, I hear, I smell," in every one of which cases there is reference to an impression made on ourselves by something without. It is surely false logic to say that because we have certain words, as "pain, warm," &c., which are construed in a more active sense, therefore we may not take "I know" as to be construed in the same manner as "I see, I feel," &c. I do not see any reason why it should not come under this category rather than the other. Professor Kirk chooses to define the verb "to know" in a different sense from that adopted by J. S. Mill and others, which difference in definition constitutes the whole of his criticism, without any reason to

support it, confidently as he may affirm the other sense to be utterly false, and not to include anything resembling knowledge at all. The fact is, there are two kinds of knowledge—knowledge of perception and knowledge of reflection. Mr. Mill takes perception as the essential part of knowledge ; Professor Kirk, on the contrary, regards knowledge as exclusively reflection. He is, of course, at liberty to take the word in any sense he likes ; but to abuse another for taking it in a different sense seems to me rather unfair. Then we come to the question of what our knowledge really consists of. Do we know anything beside the impressions received through our senses ? Professor Kirk says we do—we know something over and above our perceptions or sensations. I am at a loss to know through what medium this further knowledge comes. It is not by seeing or by hearing, by smelling, by tasting, or by feeling—how then ? In what other way but these is it possible for us to come into contact with external objects ? Is there a sixth sense ? If so, what is it ? If there is not a sixth sense, but only five, and all our knowledge of external matter must come through one or other of those five, then the assertion is perfectly correct that we know nothing of external matter but from the impressions conveyed to us through our senses. It does not follow from this that we are therefore to dwell on these impressions as if *they* were the proper subjects of knowledge ; not by any means. We believe, and are right in believing, that these impressions are truthful, *i. e.*, that there is a reality existing which is the cause of the impressions. (Hear, hear.) We fix our minds on that reality then as the true subject of knowledge ; but still it remains true that we know nothing of that reality but *through* the impressions. The relation of man to external nature is, in fact, much the same as that of a general to an army, concerning which he receives intelligence only through his *aides-de-camp*. He receives reports of the different movements going on, the positions of the enemy, and so forth ; and knows and can know nothing of what is going on but through these reports. Yet when he receives one of these reports he does not reason on it, and deal with it as a report, but rather fixes his whole attention on the facts reported, and shuts the report as such out of his head altogether ; if, that is, he believes it to be true. (Hear, hear.) Just in the same way we fix our attention on the objects perceived, not on the perceptions by which we obtain our knowledge, while yet we all the time know nothing of the objects but that which comes to us through our perceptions. The question is not, as Professor Kirk puts it, of a mere sequence between sensation and knowledge, or sensation and inference ; but it is a question of possibility of thought. What possibility have we of obtaining knowledge of anything without us but through our senses ? If there is no such possibility, then Mr. Mill is quite correct in saying that the impressions received by the senses constitute the whole amount of our knowledge, or, to speak more accurately, the materials for our knowledge (hear, hear) ; and as in one of his statements he speaks of knowledge as consisting of our conscious sensations and the legitimate *inferences* from them, I apprehend that the difference which appears to lie on the surface is unintentional, and Mr. Mill's opinion the same as that which all

reasonable persons hold. Then I notice Professor Kirk refers, in a part of the paper which Mr. Reddie passed over, to modes of existence. He says :—

“ It is necessary to be careful that we really understand what we mean by a *mode* of existence. We get at this by passing from the mere abstract idea of a *mode*, or *manner*, to the concrete idea of the mode or manner of being in a particular object.”

I hope that is a misprint, because the process is in reality just the reverse ; we first get the idea of a mode in a concrete object, and then make our abstract. Then as to that illustration, which seems so taking, concerning the gunpowder, and the inference that because power in one case is exhibited on the insertion of a red-hot wire, which is not exhibited in the other, therefore there is some substance present in the one which is absent in the other. Let us alter the circumstances slightly. Suppose we take, in one case, powder in an early stage of its manufacture, when in the form of a solid cake, and we insert a red-hot wire, it also does not explode. We take, however, the same powder, of exactly the same composition, made at the same place, and by the same people, a piece, if you will, of the same cake ; we grind it into small particles, we insert the red-hot wire, it explodes. Now, if Professor Kirk’s argument is logical, we are bound to conclude that there is a distinct substance present in the one case which is not present in the other. The argument leads to a false conclusion ; it cannot, then, be true. (Hear, hear.)

MR. REDDIE.—There is another substance present. There is air between the granulations, after the cake is powdered.

PROFESSOR OLIVER BYRNE.—And it does not become powder until it is milled.

MR. WARINGTON.—It is the same substance exactly——

MR. REDDIE.—It is not *powder*!

MR. WARINGTON.—I merely take this illustration because it is the one which Professor Kirk himself selects. Let me add another. I take a piece of iron which has been magnetized, and another which has not been magnetized. Now, you will remember Professor Kirk lays down as a principle of science, that magnetism and its cognate forces are not entities, but mere modes of existence. In the case of these two pieces of iron, then, the only difference between them is in their mode of existence. There is no substance, according to Professor Kirk, present in the one which is not present in the other, since he denies that there is any substantial entity in magnetism——

PROFESSOR BYRNE.—You cannot trace the magnetism without the iron.

MR. WARINGTON.—Now, in this case, if any one compared the two pieces, he finds at once a property present in the one which is absent from the other. If he applies a bit of iron to the one, it is held fast ; if to the other, it is not. Would not the legitimate inference, then, be, if this line of argument is sound, that there was some substance present in the one which was absent from the other ? Yet, according to Professor Kirk’s principle, this would be false, since magnetism is no substance whatever. I am not saying

that the particular conclusion drawn in the paper is false, nor the line of argument adopted essentially illogical, but simply that in the form in which he puts it, it is a false one, since it leads to a false conclusion. Then, as to the criticism on Professor Grove, as to motion and force. Professor Kirk says that what is called force is admitted to be nothing more than motion. Now, Professor Grove and other scientific men hold that as firmly as Professor Kirk himself. Why, then, do they call it now motion and now force? Because it is regarded in two different aspects. Regarded as existing in any particular thing it is motion. Regarded as passing on into something else, and thereby producing a change in that something, it is force, simply because you look at it under another aspect. If I take a hot bar of iron, and regard it in itself, I say, This iron is in a state of motion. If, now, I bring my hand near to it, I receive part of that motion; it confers motion upon me, it causes the particles of my hand to move also, and so exercises force, and this I apprehend is all that Professor Grove or any one else intends by force as distinguished from motion. Now we come to the great point of the paper, that mind is the true generator of force. Is this so? Let us take the illustration Professor Kirk dwells upon, this delicately-arranged experiment of Professor Grove, in which the raising of a shutter by the hand causes certain changes to take place. Is that raising of the shutter the cause of those changes? Alter the circumstances very slightly, and you will see in an instant that it is not. If a thing is really the cause of any phenomenon, the omission of that thing will inevitably occasion the non-occurrence of the phenomenon. If, then, here, the same effect can be produced without any human being lifting the shutter, it is plain that lifting the shutter is not the efficient cause. Let us suppose the apparatus arranged without a shutter at all, in a dark room, and left to itself. A flash of lightning comes, it is sufficient, all the phenomena are produced, and yet no human being has had anything to do with it. It is plain, then, that the lifting of the shutter in this experiment is not the efficient cause of the phenomena which result, because these phenomena can result as well without the shutter being lifted at all—

Mr. REDDIE.—In that case you must attribute it to another *mind* that caused the lightning. (Hear, hear.)

Mr. WARINGTON.—I repeat, then, the lifting of the shutter is not the cause. What is the cause? The cause is the *light*. It is the light which produces every effect which is seen, and the work which *mind* has to do is simply this—to control at what particular moment, or under what circumstances, the light shall come. The mind does not occasion the light; it simply controls when and how it shall come, directs its path, and so causes it to effect certain objects. The real acting influence is the light, the mind is only directive. But now, to take the other aspect of the illustration. Man, at all events, had arranged the apparatus in order to produce the effect. True; but by what power had he arranged it? By the power of his muscles. And whence came that power? Solely from the combustion of a certain part of his own frame, which he had no power to occasion or to stay.

It is going on always, and all he can do is to *direct* this muscular force, so as by it to attain certain ends ; and except he thus directs it, of course those ends are not attained. (Hear, hear.) It is important that we should know exactly how it is that mind is essential, whether as the directing or the efficient cause. Professor Kirk seems to think as the efficient cause ; but it seems to me only as the directing cause. In the same way, for instance, if I want to light the gas. You may say it is my putting the match to the burner and turning on the gas which causes the flame ; but, no, I may do that as often as I please and effect nothing, if there is no gas in the pipe. The cause of the flame is the combustion of the gas. I simply direct and control when and how it shall take place ; but I am absolutely powerless to cause it except I have all the forces and materials at my command by which the effect is produced. Next, as to the question of motives—how far the motives which control the human will are themselves occasioned by the circumstances in which the man who wills is placed. Professor Kirk argues that they are not so occasioned, because it does not necessarily follow on any given circumstance that the same result shall follow. Now, of course, this theory cannot be expected to hold good in such a case except *every one* of the circumstances present on the first occasion are also present on the second ; and how seldom, if ever, can this be ! Again, it is to be remembered that a man's action is the result, not of one motive acting alone, but of a whole series of motives variously counterbalancing each other. We find the same thing takes place in the natural world. We know that many forces are acting at the same time on every object, and what occurs to that object is the result of all the forces together, and not of any one in particular. Professor Kirk says :—

“The same assemblage of conditions which are in one instance followed by one volition are in other cases followed by its opposite.”

I doubt whether he could bring us a case of the same assemblage of conditions. I should think it was almost impossible to take two men, or even the same man, on two occasions, and expose them to exactly the same influences and conditions, so as to see if the result would be the same. Next, I notice that, further on in the paper, Professor Kirk alters his tone as to the will being an efficient force, and grants that the will is limited, and requires certain powers at its disposal to effect its purposes. He says :—

“To be a Creator of worlds implies powers by which the will may be carried out into this result.”

And again, on the next page :—

“It is no drawback to this argument to say that matter resists and often overwhelms man, because that proves only that man's power to move and change matter is limited.”

Then, a few words as to the variableness which he insists upon in the organic world, and which, he holds, puts the organic world on a different

footing to the inorganic. How is this occasioned? Simply, I should say, by the extraordinary complexity of the conditions which determine the course of events. A number of seeds from the same pod are put in different places, and grow differently. Very true; yet I should be disposed to regard the growth of these plants as being as absolutely regulated by law as any chemical combination, only the law is more complex, the result dependent on a far larger number of minute circumstances, so that it does not appear so uniform, though it may really be completely under the control of law all the time. He says:—

“If we are told that the changes in the natural world take place according to an invariable order of succession, and that this is the fixed law of nature, we are told what is *transparently untrue*. If such a statement is made in the name of scientific culture, it is made by one who is himself ignorant of one of the most irresistible conclusions of science.”

What is the reason that men of science make such an assumption? Simply because, in cases which appear at first sight to have this kind of variability, the progress of science has shown that they are really subject to law; and so analogy would lead us to suspect the same thing in other quarters. For example, of old it was considered that nothing was more variable than the winds; in the New Testament the wind was taken as a type of that which came and went where it listed, yet there is no doubt that the course of science is tending to exhibit these very winds as a result of uniform laws and causes, only the conditions under which these causes act are so complex that they do not appear on the surface to produce a uniform result. In the same way we may expect that the apparent variableness in the vegetable and animal worlds will be found to be as subject to law as the more manifest uniformity of the inorganic world. Simply stating my opinion, I should be inclined to say that the only exception to uniformity is man himself, and that because man is not in harmony with nature, and does not carry on his part in the universe in the manner intended; he is not acted upon by circumstances as he was meant to be, but follows his own will, and is thus the only exception to the great reign of law. I should be disposed, therefore, in spite of Professor Kirk, to hold that what he tells me is untrue, and to declare myself “ignorant of one of the most irresistible conclusions of science;” and I take his epithets cheerfully because I know that they are in this matter quite undeserved. Then, as regards his criticism upon Professor Mansel, as to the knowledge of the infinite and absolute. With the greater part I agree; but I notice one sentence towards the close, which I cannot pass over:—

“Mr. Mansel says again that ‘whatever we conceive is, by the very act of conception, regarded as finite.’ So when we conceive of an object which has no *limits*, we conceive of it as having limits!”

But *can* we conceive of an object having no limits? I have tried hard, and my experience is, that we cannot; and the reason is, that every notion we form in our minds must first come to us as a perception through our senses.

We know no quality as existing which we have not perceived in some concrete being ; for example, we should never know a colour if we had not seen it, and we can form no idea of it until we *have* seen it with our senses. All our notions, therefore, of existing things are limited by our *perceptions* of their qualities. Have we, then, ever come in contact with any existence in such a way that we can perceive its infinity ? We have thus come in contact with finity ; but I certainly never have with infinity, and I doubt much whether any one else has——

Rev. W. MITCHELL.—I think we did the other night. I gave a small demonstration.*

Mr. WARINGTON.—I wish I had been here ; it would have been quite a new sensation ! But it will be said infinity is not a positive, but a negative quality. What, then, is its inevitable characteristic ? That it is limited as a quality by that of which it is a negative. For example, if I name the quality non-redness, I am simply negating redness as far as I know redness ; and I can do no more, for I cannot negative that which I do not know ; my negation is strictly limited by its corresponding positive. So, when I negative finiteness, all I can say is, I have stretched my reason to the very utmost point as regards extension, and still my conception is bounded, still I have got limits ; I believe that my conception herein is untrue, I believe there are *no* limits. Have I grasped the infinite ? No. I have simply denied that anything I can conceive is a sufficient measure of that which really exists ; but as to getting the measure of that, there you utterly fail. At the same time, the application which Professor Mansel makes of that argument is, it seems to me, utterly erroneous ; for he says, because we cannot get a full measure, a perfect conception, therefore we cannot get a true idea at all. But I do not see why, if I have not full knowledge of extension, my knowledge, so far as it goes, is therefore not true. Or why, if I have an imperfect knowledge of love, and cannot grasp its full measure, my knowledge of love should not be a true one so far as it goes. And if so, why must I not have a true knowledge of God, although I grasp not the infinite, the absolute, the First Cause ? (Hear, hear.) But now, to come to the real essence of the paper, the difficulty of reconciling together the uniformity of nature with the effectiveness of prayer. Taking up that thought which I threw out just now, that man alone is out of harmony with nature, what is necessary in order that man should receive those blessings which God originally designed for him ? Why, simply this, that he should place himself *in harmony* with nature and God. And is not that exactly the true efficiency of prayer ? Man by prayer places himself once more in his true position towards God, in such a position, therefore, that he can receive what

* Mr. Mitchell referred to a model by means of which he showed at the last ordinary Meeting the passage of one crystalline form bounded by 8 faces through an *infinite* variety of other forms bounded by 24 faces, and then to another bounded by 12 faces only ; thus visibly producing an *infinite* series of forms in one second of time, and within a finite space.

God originally designed to give him, and this without any infraction of law, but by restoring the true harmony of relation. I am not putting this forth as a new idea, for I believe it is in essence the same as that advocated by Professor Kirk, only expressed in other words. But what is it that is meant by law? I do not think we can take law to exclude usage, as Professor Kirk wishes; that is, the generalization of an observed order of phenomena. We observe a certain thing always follows on something else. And such a generalization we call a law. Although we do not know why it follows, yet we call it a law. But this surely includes *usage* as much as anything else. It seems to me, therefore, that we must still hold that miracles are an infraction and suspension of natural law, in the ordinary sense of the word. It is contrary to the law of nature, as far as we have means of knowing it, that a man by his voice should call another from his grave. The means by which it is done may be in accordance with law. I believe that, in cases of this kind, we should expect to find God violating law to as little extent as possible; but still there is a violation of law: it is not a natural thing that a man's voice should be sufficient. If you say it is no infraction, I fail to see how, in such an event, you get any proof of the supernatural. If you say you do not know what *is* natural, I fail to see how we are ever to know which are miracles and which not. At the same time, we must bear in mind that law with us is not an absolute thing, but relative. There may be far higher laws, of which we know nothing, and we have therefore no right to say that God is infringing law absolutely, but simply natural law as known to us. (Hear, hear.) One hint, in conclusion, as to the way in which the comparison is drawn between man's prayer to his fellow-man and man's prayer to his Maker. I think the analogy between the two has been put too strongly by Professor Kirk. And in this way everything which a man asks his fellow-man is not within his power, even if within his wish, because he has only a limited authority over nature. He has to conform himself to the laws of nature. Now, what are these laws? I believe that these laws of nature are simply our mode of expressing the uniformity which marks God's constant and immediate action upon nature. I do not think we have any right to suppose they are laws implanted and imposed by God on matter, but rather the natural tokens of His own immediate working. Now, grant that to be the true meaning of law, you see at once how different are the two cases. Man, in order to grant any request, must bring himself into conformity with those laws produced by God's immediate action. God has no limits, there is no difficulty on His part, no possibility of infraction of law, because the law is simply Himself, and He cannot infringe His own nature. The difficulty of the question that appears to arise from the existence of natural laws and the uniformity of nature thus falls away entirely, and we perceive that the answer to prayer is really the proper and inevitable result of that same unchangeableness of the Divine nature to which the uniformity is due.

Rev. W. MITCHELL.—At this late hour of the evening I feel it necessary to make my observations as brief as possible. All must acknowledge that Professor Kirk has given us a most important paper on a most important

subject. I well remember the astonishment with which I read, about a year ago, Professor Tyndall's objections to prayer, in his popular work on the Glaciers of Switzerland. He asks, with something like a tone of contempt, how a priest could be so ignorant as to pray for a change of weather. That if he only knew the laws of natural philosophy, he might just as well pray for a miracle that should cause water to run up-hill, as to pray for rain in a time of drought. That the fall of rain was a matter dependent on the position of the gulf stream, the direction of the trade winds, and other things governed by laws as inexorable as those which prevented water running up-hill ;* and, therefore, to pray for fine weather or for rain in a time of necessity was what no highly-cultivated philosopher could do. If this be so, the prayer taught us at our mother's knee from childhood—the petition we address to an All-powerful Father, "Give us this day our daily bread," is one no natural philosopher can ask, nor any one with a highly-cultivated and philosophical mind. Now, if I wanted an antidote for this scepticism, for a man unlearned in natural or metaphysical philosophy, I would refer him to the study of Professor Kirk's paper, which we have heard read this evening. I say this, not as agreeing with every argument used in that paper, but on account of its main scope. Mr. Warrington has criticised with great fairness and clearness many portions of the paper. But such differences of opinion only point out the difficulties of the subject of discussion—difficulties which enter more or less into every subject involving metaphysical considerations. I am prepared to maintain, in opposition to Professor Tyndall, that the cause of any scientific man's scepticism as to the power of prayer arises not from strictly physical, but from metaphysical, difficulties. These difficulties are metaphysical subtleties, the cobwebs men have woven out of their own imperfect minds and imaginations, and set up as incontestable verities. I think Professor Kirk's paper shows that all the philosophical objections urged against prayer resolve themselves into purely metaphysical considerations. You cannot discuss the questions touched upon by Professor Kirk without finding that the scientific objections urged against prayer are not difficulties arising from any truth revealed by God's works, but mere metaphysical puzzles

* Professor Tyndall has repeated his philosophical objections to such prayers as are here alluded to, in the following passage, which concludes his paper on "The Constitution of the Universe" in the *Fortnightly Review*. "A miracle is strictly defined as an invasion of the law of the conservation of energy. To create or annihilate matter would be deemed on all hands a miracle ; the creation or annihilation of energy would be equally a miracle to those who understand the principle of conservation. Hence arises the scepticism of scientific men when called upon to join in national prayer for changes in the economy of nature. Those who devise such prayers admit that the age of miracles is past, and in the same breath they petition for the performance of miracles. They ask for fair weather and for rain, but they do not ask that water may flow up-hill ; while the man of science clearly sees that the granting of the one petition would be just as much an infringement of the law of conservation as the granting of the other. Holding this last to be permanent, he prays for neither."—W. M.

woven by the imperfect brains of men. Were I to venture on a criticism of Professor Kirk's paper, it would be as to his division of all substances (using that term in its metaphysical sense) into mind and matter. In this division, though with great diffidence, I should be disposed to differ from him. I believe there are other verities or existences in God's universe besides mind and matter. I believe forces of various kinds have a real existence; that many of these can neither be resolved into mind (meaning by that term an intelligent substance) nor matter. All that we know of force and matter, so far as mathematical demonstration is concerned, lies in a very narrow compass. For all the purposes of mathematics and of demonstrable natural philosophy, a very simple definition of force and matter suffices. Whatever moves or can be moved is matter, and whatever can cause matter to move is force; but when we quit the domains of pure mathematical demonstration, we soon become involved in purely metaphysical difficulties, those difficulties which are leading, as I believe, such philosophers as Professor Tyndall and Mr. Grove astray. The tendency of natural philosophers who quit the region of pure mathematical demonstration is to confound force and matter as things which are identical instead of being distinct from each other. This has ever been the course of the metaphysical rather than the physical reasoner. The purely physical reasoner has a distinct conception of force and matter as two very different existences which cannot be confounded together. The metaphysical reasoner who would pass beyond the rough practical distinction of force and matter which satisfies all the problems of the physicist is involved at once in metaphysical difficulties. The essence of matter evades all his researches; he meets everywhere the evidence of force; and the effect of force alone is all that his senses convey to his intelligence. He, therefore, as Boscovich did, resolves all matter into what he calls centres of force, and so, quite as effectually as Berkeley, the pure metaphysician banishes all matter from nature. Hence, therefore, metaphysical researches would effectually banish all matter from existence, and land us in a universe of pure force, or what I presume Professor Kirk would denominate pure mind. But do not such metaphysical considerations as these banish, not only the inductions of common sense, but all the real knowledge we have acquired? I cannot prove the existence of matter metaphysically any more than I can prove the existence of mind. There is, however, a practical way of resolving these metaphysical subtleties. If I doubt the existence of matter, I have only to run my head against a wall to get a demonstration that will at once rudely banish any scepticism induced by metaphysical arguments. We have, I believe, as good evidence for the existence of matter as we have for the existence of force; and as good evidence that force and matter are distinct entities as we have for the existence of either. When we enquire, however, whether force is inseparable from matter; whether all matter is not endowed with force and whether there are not forces completely separated from, and not co-existent with, matter, we come upon most debateable subjects far removed from the bounds of strict logical demonstration. If by mind we are to understand an intelligent

substance—using the word substance in its metaphysical sense—I cannot agree with Professor Kirk in his assertion that mind alone is the cause of motion. I believe that intermediate, as it were, between mind and matter, there are forces which are not intelligent agents. Though in this I do agree with him : that all motions or changes induced in the material world by the action of laws regulating the motion and combinations of particles of matter, are ultimately resolvable into the will of that mind—(hear, hear)—namely, that Spiritual Being whom we acknowledge not only as the Great First Cause, but also the Supporter and Sustainer of all things. Just to take an illustration : is light a force, or is it material substance ? If it be a force distinct from matter, then is light an intelligent existence—is it mind ? Now let us view light under the only two hypotheses we have as to its nature. Mr. Warrington spoke of light passing through a vacuum. If so, what passes through a vacuum—that is, through space void of matter ? Is it matter or force ? Upon the emission theory of Newton, light is produced by the emission of matter called luminous matter—matter imponderable, and therefore not subject to the laws of gravitation. This matter can be projected through a vacuum, but not by itself. Of itself it is inert ; it cannot move itself ; or, if once in motion, it cannot change its motion. That which moves it is force, something essentially distinct from the luminous matter itself. Now take the undulatory theory. Here we can have no propagation of light through a vacuum. Light can only be propagated through a *plenum* filled with what is called a luminiferous ether. Light has been called a shiver or vibration passing through this luminiferous ether. But is not this ether, if such exist, matter ? Can it shiver of itself ? Something must cause it to vibrate which is not matter, and which is force. Is this something necessarily mind ? Now we cannot take this single instance into consideration without seeing how soon we are led up from matter to something higher than matter : to something capable of acting on or controlling matter, which is not matter, and which we call force. Who can tell how many different kinds of force are to be found in nature ? Matter also may have force inseparably bound up as it were with its existence. We can conceive every particle of gold or silver having many such forces inseparably united with it. The forces of gravitation, molecular and chemical forces ; forces which make particles of gold and silver combine with one another, or different particles of other material substances according to many laws, of the majority of which we are most likely still ignorant. These forces we may conceive indissolubly united by the Creator with the particles of gold or iron at their creation. Such forces, however, I cannot conceive to be intelligent existences. Nor are they the only forces existent in nature. There are higher forces capable of controlling these forces. I know no force existing, in gold for instance, capable of transferring every particle with which it comes in contact into gold. But if I take the tiniest living seed that ever grew, I find in it certain evidence for the existence of a force far different from the forces inherent or inseparably connected with dead matter. Whatever evidence I have for the existence of chemical or molecular forces in a particle of gold, an acorn

affords just as good evidence for a far higher class of force than these. A potential force, capable under certain circumstances of converting any given amount of certain kinds of matter into a forest of oaks of any given magnitude, and reproducing other acorns *ad infinitum*. This living force I may well conceive from its higher power of controlling the forces of dead, inert matter, as a force of a more powerful nature than these. But this living force, controlling the growth and structure of animate nature, leads us up to a higher force still—the force of intelligent and voluntary agents. Then, again, the mere instinctive intelligence of lower animate nature leads us up to the power and exertion of the will of intelligent agents like ourselves. But are we to stop here, on the confines, as it were, of the exposition of the existence of intelligent mind, which we know experimentally to be so powerful? Man, by the force of his intelligent will, can cause charcoal, saltpetre, and sulphur to combine with each other, and give him a compound with which he can rend asunder the strongest rock. He may tame the lightning, and make it whisper his message from the Old to the New World. Is this no miracle? Is this no invasion of the law of the conservation of material energy? Without the force of man's will actuating the material agents he controls, could these changes of material nature take place? Are there not human miracles the products of human minds? Could a microscope or a telescope be developed by any of the laws of inorganic nature from glass and brass, without the controlling interference of human thoughts, invention and skill? Force is the link, indeed, which binds the world of matter to the world of mind or thought. Each step we take from the forces of inorganic nature to those of animate structure, and from these upwards to the power of force produced by the intelligence of beings armed with the power of exerting free will, leads us up to forces of greater power and intensity. If this be so, are we to stop here? I maintain that such thoughts as these lead us upwards to the Great Power and Mind which is the Creator and Sustainer of all things; that if puny man has by the power and force of his mind an intelligence that can reach the furthest limits of the visible universe, an intelligence that can produce so much, an intelligence that can control so greatly the powers and forces of animate and inanimate nature; I can believe, without any sacrifice of philosophical thought or accuracy, that Almighty God, in answer to our feeble prayers, may indeed control the winds and the waves, and give rain and sunshine, fruitful seasons, and abundant harvests, filling our hearts with joy and gladness. Nay, more, He can work greater miracles than these. He can give us those supernatural graces by which alone our spiritual being can be fitted for an entrance into everlasting blessedness. (Hear, hear.)

MR. REDDIE.—As the issues under discussion are chiefly metaphysical, I should be very glad if a gentleman I see present, the Rev. Mr. Greig, would favour us with some observations on a matter he is so well qualified to discuss.

REV. DAVID GREIG.—My Lord, Mr. Reddie seems anxious that I should say a few words on the paper. This I shall gladly do; but I fear it will be

to little purpose. Although my friends sometimes give me credit for metaphysics, I cannot speak offhand upon that subject, and if I attempted it I fear I should not be intelligible. There is one thing, however, I would wish to say, and that is, that I am very much struck by the value of the paper which has been read to us. (Hear, hear.) I think it exactly meets the great difficulties with which religious matters have been surrounded at the present day. These difficulties I have never regarded as scientific, properly so called: they are metaphysical or philosophical ones. And this paper appears to me to state that philosophical view which is in accordance with Divine revelation, as opposed to that philosophical view adopted by a certain class of scientific men which is opposed to revelation. Mr. Warington has criticized the paper upon a good many points, and it is my misfortune to feel that those points which Mr. Warington has called in question are the very points which I admire most. (Hear, hear.) I am sorry for that. If we take, for instance, the discussion with reference to Mr. Mill's doctrine, which centres in the word "know," the whole point of the question, as between the two philosophies, is summed up in this,—whether knowledge expresses an active power or a passive impression on the mind. If knowledge is simply an impression derived from the senses, I cannot see how you can avoid the conclusion of Mr. Mill,—that conclusion which was first drawn by Bishop Berkeley, with regard to the non-existence of the material world, and afterwards by Hume, with regard to the non-existence of the spiritual world. Mr. Warington appears to assume that all our knowledge is from the senses. If so, by what sense do we know material substance, or our own personal existence? We cannot see the soul, nor hear it, nor feel it——

MR. WARINGTON.—I spoke of external matter.

REV. DAVID GREIG.—Take matter. You cannot feel the substance of matter, you cannot see it. All that you have by the eye is simply an impression of colour, by the hand is simply an impression of resistance, and so on. Now, if all our knowledge is from the senses, how, in these circumstances, are you ever to get beyond impressions? It is impossible. An impression is just an impression: you cannot make anything else out of it. Thus, under this supposition, there is nothing in the world but impressions. You remove God and man and matter, leaving only a series of impressions. I do not see how you can avoid that conclusion. But we take our stand upon that which Professor Kirk has brought out. When we say we *know* a thing, we assume that there is something active in that knowledge. We assume that there is something in the mind which has the power of knowing. The process is this: We receive an impression from sense. The mind is at first buried, so to speak, in the impression, but immediately separates itself from it, sets the impression before it as an object, sits in judgment on it, and draws conclusions. In this way the mind arrives at the conclusion of the existence of a soul in man, and of the existence of an outer nature. (Hear, hear.) There is just one other point I would make an observation upon, the distinction between the laws of nature and the usages of nature. It is a point extremely difficult to make intelligible; but there is a distinction in it,

and it is important. What I would regard as the laws of nature are simply those great forces, such as gravitation, heat, and the laws that govern chemical and organic nature. Now, these I would say are the laws of nature, and the individual events and things in the world are produced by combinations of these laws or forces, and these combinations, I understand, Professor Kirk would distinguish as "usages." That, I think, is an important distinction, because it will be found, as Professor Kirk has said, that there is no law of nature violated by the miracles of Scripture : only the usages of nature are affected by them—

Rev. W. MITCHELL.—And so they are affected by free will existing in beings possessing perfect will, and continually interfering with the ordinary course of those laws.

Rev. DAVID GREIG.—Now, the way in which I would conceive of Almighty God in His relation with nature would be as of a Supreme Personal Being, absolutely free, who can combine according to His will and pleasure the laws of nature. He does not violate His own laws, but combines them for the attainment of His great purposes in the kingdoms of nature and of grace. Just as man, who is a free agent within his limited sphere, can combine laws of nature to attain his ends ; so God, who is absolute and over all, combines His laws for His supreme providential purposes. Further, man is a personal being, and the only relation in which he can stand to God is a personal relation, just as we are in personal relations with each other. Now it will be found, that if you once grant that there is a personal being in man, and that he stands in a personal relation with God, you have granted the principle of miracles. (Hear, hear.) On the other hand, if you deny a personal being to man or to God, and adopt as your theory invariable sequence of events, it will be found that not only miracles but everything else which a man believes in is absurd. (Hear, hear.) I only wish to say further how much I admire the paper which has been read. It is a paper which deserves our best consideration.

The PRESIDENT.—Ladies and gentlemen, I have to announce that from this night we adjourn until our next session ; and that interval, it is hoped, will be well employed by you and other members in endeavouring to extend the influence of our Association, and to secure new members. You see what a vigorous infant the Victoria Institute is. It is, indeed, an infant Hercules, and it has become so because it rests upon a true basis. I hope the influence of this Association will continue to extend. It seems to combine true vital Christianity with the largest adoption of true liberal science ; and I think we shall be enabled to show, by the agency of our members, such as my talented friend, Mr. Walter Mitchell, of whom I cannot speak with sufficient respect, that science and religion go hand in hand, the truth of both coming from the same God, and leading to the same grand destination for the human race. (Applause.)

REPLY BY PROFESSOR KIRK.

IN briefly replying to the remarks offered on my paper, I must, first of all, acknowledge the extreme kindness of the Honorary Secretary in doing greater justice to the essay than I could have done myself, and also the great kindness of the noble President and others in speaking of it as they have done. But I must specially thank Mr. Warington for giving occasion to a discussion every way gratifying to me, and for indirectly adding so much to the force of the argument which I have endeavoured to advance.

As to my long introduction, I must plead that it is only in metaphysical discussions that we meet with questions respecting the nature of knowledge. Chemists, for example, do not trouble themselves as to whether they really know the substances with which they experiment; nor do astronomers inquire whether they see the stars or only their own sensations when observing; but metaphysicians encounter such questions everywhere in their investigations and discussions; and little, indeed, can be understood in the relations of their science until we have somewhat settled ideas as to the nature of knowledge.

I must confess that I am rather astonished at Mr. Warington's remarks on what he calls my "scientific errors." As to light being "only a movement in the atmosphere," my words are—"The light is but a state of movement in the atmosphere:" that is *the* light of the lighthouse of which, in the words referred to, I am speaking, as a movement passing over many miles of ocean. Light is a movement of the substance which is illuminated: it passes through transparent solids and liquids as it passes through transparent air. As to its passing easily through a *vacuum*, that is a matter more easily asserted than proved. If Mr. Warington means by "a vacuum" a space from which air is excluded, while it is full of some other substance, his statement is no doubt true as he means it; but he will, I suspect, find it very difficult to secure a *real vacuum* by means of which to show how easily light passes through it. Should he mean to assert that light passes easily through a space which is empty of all matter I fear his *statement* is self-destructive—and that, too, whether we regard the light as a movement or as a substance. If it is merely a movement, it cannot be where there is nothing to move; and if it is a substance, that cannot be a *vacuum* where a substance is, even if only "passing through." The "erroneous idea" is in Mr. Warington's logic in this case; but I am confident that it is not "ingrained" there! Nor is the "ether," which he fancies, so "ingrained." My words in alluding to this are,—“the ether, imagined as filling up the spaces between the atoms of matter.” This is distinct enough from so-called "ether" which is supposed to exist in the spaces between the celestial bodies, and the positions of the two stand wide apart in philosophy. As far back as 1842, Grove said:—"It appears to

me that heat and light may be said to be affections, or, according to the undulatory theory, vibrations of matter itself, and not of a distinct ethereal fluid permeating it: these vibrations would be propagated just as sound is propagated by vibrations of wood, or as waves by water." Professor Grove quotes himself (as having used this language before such ideas were publicly advanced) in the preface to his great essay on "The Correlation of Physical Forces," which had reached its fourth edition in 1862. In that part of this essay in which the distinguished author treats of light, he says,—“Light was regarded by what was called the corpuscular theory, as being in itself matter, or a specific fluid emanating from luminous bodies, and producing the effects of sensation by impinging on the retina. This theory gave way to the undulatory one, which is generally adopted at the present day, and which regards light as resulting from the undulations of a specific fluid to which the name of ether has been given, which hypothetic fluid is supposed to pervade the universe and to permeate the pores of all bodies. In a lecture delivered in January, 1842, when I first publicly advanced the views advocated in this essay, I stated that it appeared to me more consistent with known facts to regard light as resulting from a vibration or motion of the molecules of matter itself, rather than from a specific ether pervading it.” Mr. Grove mentions Euler as having published a somewhat similar theory.* The arguments advanced by this philosopher, apart altogether from his name, more than warrant us in setting this “ether” down as a nonentity. At the best, besides, it had never more than a hypothetical existence.

It is not necessary that I should do more than notice Mr. Warington's remarks on the nature of knowledge. My words on this point are to the effect that all our “impressions, outer and inner, are but the raw material, so to speak, from which knowledge is manufactured.” Mr. Warington comes to the conclusion that, “the impressions received by our senses constitute the whole amount of our knowledge—or (he adds), *to speak more accurately*, the materials for our knowledge.” So far, therefore, as he speaks “*accurately*,” Mr. Warington says just what I had said; and it would be hypercritical in me to deal with what are merely his acknowledged inaccuracies. Mr. Greig has spoken effectively on the passive and active views of knowledge, as argued in this part of my subject.

As to my remark regarding getting at *what we mean* by a mode, Mr. Warington mistakes me, as if I had spoken of getting at a concrete idea from an abstract, while I speak rather of how we *analyse an abstraction* which we have conceived vaguely. Having risen from the concrete too hastily—or having accepted the abstract at second hand—we need to go back in order to clear up our thinking.

Mr. Reddie has exploded the gunpowder element in the criticism; and I need only repeat that a cake from the interior of which atmospheric air is excluded, is surely a very different substance from a powder with which it is

* Grove's Essay, Preface, p. xi., and pp. 162 and 163.

intimately mingled, and by which it has been *chemically affected* in being so mingled. There is, beyond all question, a substance in the powder which is not in the cake, as truly as there is one in proper gunpowder which is not in that which lacks sulphur.

The two pieces of iron—one magnetized and the other not—afford an illustration of a truth which Mr. Warington does not seem to have apprehended. The magnetic current is passing through the magnetized iron, as the current of heat passes through the proper gunpowder, when a red-hot wire is applied to it. The magnetic “affection” of this iron is the result of its having had the magnetic current introduced to it; just as the explosion of the gunpowder is the result of introducing the “affection” of heat from the wire. The iron which is not magnetized is simply a piece of that metal which has not yet been placed so as to receive the magnetic stream. It is like a portion of good gunpowder which has not yet been fired. It is consequently not in that state of magnetic agitation in which it would attract other pieces. But the instant it has the magnetic current introduced, it is affected, and affects in turn, like the other. We therefore argue that the substances are alike, inasmuch as they are both affected equally and made to affect other masses by that movement which we call magnetism. If two bars are placed equally in a magnetic current, and the one is magnetized, while the other is not, we inevitably conclude that there is something in the one which is not in the other. My argument is therefore perfect.

As to Mr. Warington’s defence of Professor Grove’s confounding “force” and “motion,” I have only to say that I think it is a hasty argument on behalf of loosely employed language. I certainly do not admit that “force is nothing more than motion,” any more than I admit that “cause” is nothing more than “effect;” and I must contend that so long as philosophers are content with that confusion of thought, and of words which mix up force with motion, cause with effect, and law with observed uniformity, they are not likely to enjoy the truth. But I have said enough as to this in the paper itself.

It is, perhaps, more important to speak of Mr. Warington’s idea that mind is only a *directive* cause. His own illustration of “the gas” ought to light him out of the notion. Because the pipe will not light when there is no gas in it—that is, because the gas will not light where it is not; because the gas must exist in order to be in a state of combustion—he argues that when there is gas in the pipe it is not the person who applies the match to it who is the cause of the light! He says, too, that the “combustion is the cause of the flame”! I humbly think that the flame consists of the gas and a portion of the atmospheric air in a state of combustion. The mere state of a thing cannot be the cause of that thing; nor can such state be its own cause. This state of combustion is communicated when a match in the same state is brought near enough to the combustible substance, as a ball in motion communicates its motion to a ball at rest when the one hits the other. It is certainly inaccurate to say that the combustion of the gas is the “cause” of the flame, even as Mr. Warington would have us to use

the word "cause." He might perhaps, in accordance with that use of the word, speak of the combustion in the match as the cause of the combustion in the gas, and that again loosely as the "cause" of the flame in the burner. But if he means to use language with philosophical accuracy, and to think clearly on the subject, he must use the word "cause" in the sense of *the first to move* in the series of motions in question. If he does this, and goes back till he finds out the *first mover* in the lighting of the gas, he will get beyond the "combustion" even of his own brain, so as to fix on that "combustion" which I call his *will*, whatever that may mean. He will find, in truth, that he himself is the responsible *originator* of his actions and their proper consequences, and not merely a *director*, as he imagines.

On the two points of "motives" in the world of mind, and "conditions" in that of matter, Mr. Warington seems to have but one leading idea—it is that "conditions determine the course of events." If I understand him aright, he means, with Mr. John Stuart Mill, that an "assemblage of conditions" is that which alone is properly regarded as a "cause," whether in relation to moral or physical occurrences. Mr. Warington's words are: "It is to be remembered, that a man's action is the result, not of one motive acting alone, but of a whole series of motives variously counterbalancing each other." This exactly expresses Mr. Mill's idea on the subject. The strictly logical effect of this notion is the belief that the universe is a *machine* whose purely *mechanical* movements embrace all those of mind as well as all those of matter. Professor Tyndall gives expression to the state of soul which *craves* this idea. In his article on Miracles in the *Fortnightly Review* for June, 1867, speaking of the relation between "forces" and "phenomena" as "necessary," he says,—“Not until this relation is established is the law of reason rendered concentric with the laws of nature, and not until this is effected does the mind of the scientific philosopher rest in peace.” That is, when put into plain words,—the mind that can rest in anything but the absolute and universally *mechanical* is not that of a "scientific philosopher"! If conditions *necessarily* determine results, so that all natural sequences are matters of pure *necessity*, then there is not only no man—there is no God that determines anything. The "conditions" arise as the *necessary result* of "conditions" that were necessary before them, and so on back to all eternity! So, too, must it be forward to all eternity! And is there no one who may be called a "scientific philosopher" who can rest in peace in any other view of the universe than this? Mr. Warington is very far indeed, I am sure, from entertaining such a view. He does not think out his ideas as Professor Tyndall has thought out his; but so far as he holds that "conditions determine results," and forgets the *personal will*, which alone is true cause, he is on the same track with the believers in a *mechanical universe*, and from whose belief the idea of the living God is effectually excluded.

But this mechanical theory is utterly inconsistent with that observed variation which Mr. Warington has not fully considered, and which is as assuredly a matter of scientific certainty as anything can possibly be. Mr.

Warington says that, "in cases that at first sight appear to have this kind of variability, the progress of science has shown that they are really subject to law; and so analogy would lead us to suspect the same thing in other quarters." He gives the winds as an example of that which has been found to be fixed by invariable law. But if it were true that the fixed laws of the winds had been discovered (as it is not true), that would be only a case of inorganic matter having invariable rules of motion when affected by the action of Him who gives that motion, and could have no such analogy to the laws of life as to lead even to the *suspicion* that these must be of the same nature. But surely Mr. Warington does not mean that we are to take "*suspicions*" for science. He cannot contend that a "*may be*," or that even a "*must be*" in the mind of a "philosopher," is to be set down as truth. *Variation is the law of all living organism*, so far as facts teach us. This is the result of discovery—a result so established as to lead to the idea, which I have noticed in the paper, that even man himself is but the last variety in the ever-varying universe. I may certainly say that, if science has taught us anything, it has taught us that variation is Nature's law of life.

Mr. Warington is dissatisfied with the distinction between "usage" and "law," and he seems to think that we depend on infractions of natural law for our belief of the supernatural. Even in such a case as that in which the dead arose at the command of Christ, he cannot see the supernatural but in the breach of law. But he means by law uniformity of occurrence, and nothing more. The "law" which he contemplates as violated in the miracle is nothing beyond this uniformity "*as known to us*." If he will think at all carefully he will soon see that this is really no law whatever. It is not even usage. One man has observed uniformity of occurrence only to such an extent that another man has observed variation in that which the first has observed to be uniform, and that second man has observed only so far that a third has observed variation in his uniformity, the third has been corrected by a fourth, and so on. A "*law*" to one generation is a "*fancy*" only to the next. A "miracle," in this sense, to one crowd, is only a natural transaction to another. It is such a "law" as Mr. Warington contemplates that "like shall produce like." A man observes this, for example, in a breed of certain animals, and he holds his observation to be that of "a natural law." Another man has had a wider field, or better opportunity of observation, and he has seen an instance of striking *unlikeness* in certain individuals among the produce of the herd. The "natural law" of the former man is seen to be "violated;" in other words, it is seen to be no law at all. No one thinks this so-called "*sport*" a miracle, nor can any one who knows what he is saying call it an infraction of law. It is a departure from observed uniformity—or, as I would say, a departure from usage—though no such departure as indicates the "supernatural." We may surely distinguish between that from which this is a departure, and those *laws* or principles of being itself, from which there can be no departure in the actions of God. Calling the dead to life by the human voice is a departure from usage, such as does indicate the supernatural; not

because it is the infraction of any of these laws, but because it is an act in which all that we call *Nature* is so distinctly shown to be at the will of Him who performs it. In truth *Nature* is only a name for that extremely partial idea which men have of the universe apart from God; and no doubt such an act as this makes sad work of the idea. It is infraction enough of the essential elements of which such an idea is composed, though no infraction of any strictly divine law regulating divine action on either matter or mind.

Mr. Warington says that "there may be higher laws" than those uniformities which are called "usages." I think he may very safely say that there *are* such higher laws, especially when he is thinking of merely material uniformities as the lower. There *must* be higher laws than those which affect the lowest things in the universe; or how are the higher existences to be ruled? There must be moral laws as truly as there are moral beings. And we believe that one of the most momentous of these is that which was obeyed by Jesus before he called Lazarus from the grave, namely, when he *prayed to the Father*.

On the subject of the "infinite" Mr. Warington is, I think, in confusion, because he fails to distinguish between *measuring* and *conceiving*. His words are,—"*Can we conceive of an object having no limits?*" I understand that he argues against the possibility of such a conception. But his argument is valid only against our *grasping* the infinite. He says that he believes in the infinite, but as to getting a measure of it we utterly fail. He seems to argue that, because we cannot get a measure of it, we cannot come into contact with it so as to conceive it as infinite. I cannot admit the validity of such reasoning. We come in contact with multitudes of things of which we have no measure, and that too so as to perceive that to us they are immeasurable. We clearly conceive their *immeasurableness*.

All will easily believe that I am far from delighted to find that I differ in idea from the conclusions of our excellent Vice-President, Mr. Mitchell. And I feel that I must say a few words in reference to that "force" which he believes to be a substance, and which is neither mind nor matter. It may be necessary to explain that I do not think *intelligence* essential to mind, when contemplating the great whole of immaterial being. The self-mover is mind, as I understand the word, whether capable of thought and emotion or incapable of these. If I take the lowest animal in the scale of life which is self-motive, it may be difficult, if not impossible, to predicate *thought* of that creature, yet it has what I understand in this discussion as a mind. The living seed to which Mr. Mitchell refers is not a substance of this nature. There is no force in that seed such as *originates* any change either in itself or in anything else. It is a mistake in philosophy to imagine that a seed exerts any force analogous to that which belongs to what we call mind, even as that is found in the lowest animal. The seed, when placed in the current of certain motions, is put in motion and kept in that peculiar state of agitation in which it is developed and increased as a piece of any other mere matter is developed and increased when brought into contiguous agitations. We know

that the seed does not do any one thing *of itself* as the animal does. We call the changes through which it passes *life*, because they resemble the changes of the truly living creature more nearly than those of inorganic matter, but there is nothing in any or all of these changes of the nature of that self-moving or self-acting which is observed in the animal. It is, I humbly think, in this *self-acting*, and not in intelligence, that we discover the essential quality of true mind. If there is a substance which may be called force, and which is neither matter nor mind, it must be something essentially distinct from all that is merely moved, and also from all that *wills*, or originates motion, in living entities having the power of *volition*. It must not be like the seed, which is only moved in the streams of agitations by which it is surrounded when placed where these agitations prevail; and it must not be like the force of will, which is the essential characteristic of the true mind, whether intelligent or non-intelligent. Can we form a conception of this substance for which so many philosophers contend, and of which a particular school make such an extravagant use?

Mr. Mitchell says truly, that "the purely physical reasoner has a distinct conception of force and matter as two very different existences." But may I not ask whether his conception of "force" is not in very many cases merely a conception of "motion," which he mistakes for force? Was it not this mistake which misled Boscovich and Faraday, and which misleads a host of such men as Professor Tyndall, who follow in the wake of original thinkers more readily in error than in truth? What Mr. Mitchell says of light may help us here. He asks whether it is "a force or a substance." It is neither the one nor the other, but simply *motion*. Were you to adopt the now abandoned idea of a luminiferous ether, it is the "shiver" of that ether which constitutes light. A shiver is not a force but a motion produced by a force.

As Mr. Mitchell rightly says, "Something must cause it (that is the ether) to vibrate, which is not matter and which is force. Is this something," he asks, "necessarily mind?" Let us see. We must leave out the "necessarily," as I am not trying to show *what must be* but only *what is*. Is the true cause of the agitation in a luminous substance actually mind? We shall have help here from Grove's "Correlation of Forces." I hold in my hand, we shall say, an ordinary match, and I stand amid perfect darkness; I bring the match into contact with a suitable surface. Here is *motion*, but not sufficient motion to issue in light. I draw the end of the match quickly over the surface with which I had brought it into contact, and this motion passes into heat, and that into all those other motions which issue almost instantly in that which illuminates. Now we have matter and motion in that instance—one mode of motion passing into another mode—and we have force causing this train of motions—but that force is nothing more or less than the force of *mind*. The conception of the physicist who confounds this force with the motion which it produces may be clear, but it is not correct; and we see the consequences of its incorrectness in the sad conclusions to which it leads those who follow it logically out.

It is held, I think, by all sound thinkers as well as by many that are unsound,

to be inconsistent with true philosophy, when we imagine a cause that is not required to explain all the phenomena in any particular case or class of cases in Nature. But if we imagine a force, in such a case as this of lighting the match, which is neither matter nor mind, we do imagine an unnecessary cause. Motion originated in volition by mind, passes on its course, changing from one mode into another till light appears. There is mind and matter—force of mind and motion of matter—but nothing more. If we rise from the lighting of a match to the kindling of the great sun itself, what reason can we have for interpolating a “force” in that case which is totally wanting in the other? If it is argued that though God kindles the sun, there must be a force or cause then, in the sun itself, such as makes the agitation in that orb go out into space, I reply that this agitation passes to all surrounding objects, as ordinary motion passes from one portion say of water to another, and it passes through all objects that are susceptible of such agitations; but this is essentially unlike that which is, I think, properly called “force,” as that exists in mind, *originating* motion, and accounting for its existence. We have mind and matter—the force of mind and the motion of matter—there; and true philosophy not only asks no more, but refuses to admit any more.

I am glad to see that all who have spoken on the subject see the importance of the metaphysics, or, as I should call it, the philosophy of this great question, and perceive that it is in this region that the difficulties of inquiring minds chiefly lie. It is consequently this same region which we must enter, to deal with those difficulties. In this work I have offered my humble share of effort in the essay in hand.

But I seem to have said enough, and will only add my very warmest acknowledgments of the kind manner in which I have been dealt with by all concerned.