completeness. Moreover, when two actions take place simultaneously, they form a sort of link between them, so that if one of them is afterwards repeated the other gets repeated with it. That is what we have to remember chiefly as to the character of the brain.

Now let us consider the other class of facts and the connexions between them—the facts of consciousness. An eminent divine once said to me that he thought there were only two kinds of consciousness—to have a feeling, and to know that you have a feeling. It seems to me that there is only one kind of consciousness, and that is to have fifty thousand feelings at once, and to know them all in different degrees. Whenever I try to analyse any particular state of consciousness in which I am, I find that it is an extremely complex one. I cannot help at this moment having a consciousness of all the different parts of this hall, and of a great sea of faces before me; and I cannot help having the consciouness, at the same time, of all the suggestions that that picture makes, that each face represents a person sitting there and listening or not, as the case may be. And I cannot help combining with them at the same moment a number of actions which they suggest to me, and in particular the action of going on speaking. There are a great number of elements of complexity which I cannot describe, because I am so faintly conscious of them that I cannot remember them. Any state of our consciousness, then, as we are at present constituted, is an exceedingly complex thing; but it certainly possesses this property, that if two feelings have occurred together, and one of them afterwards occurs again, it is very likely that the other will be called up by it. That is to

say, two states of consciousness which have taken place at the same moment produce a link between them, so that a repetition of the one calls up a repetition of the other.

Again I find a certain train of facts between my sensations and my exertions. When I see a thing, I may go through a long process of deliberation as to what I shall do with it, and then afterwards I may do that which I have deliberated and decided upon. But, on the other hand, I may, by seeing a thing, be quite suddenly forced into doing something without any chance of deliberation at all. If I suddenly see a cab coming upon me from the corner of a street where I did not at all expect it, I jump out of the way without thinking that it is a very desirable thing to get out of the way of the cab. But if I see a cab a little while before, and have more time to think about it, then it occurs to me that it will be unpleasant and undesirable to be run over by that cab, and that I can avoid it by walking out of the way. You here see that there are in the case of the mind two distinct trains of facts between sensation and exertion. There is an involuntary train of facts when the exertion follows the sensation without asking my leave, and there is a voluntary train in which it does ask my leave.

Then, again, there is this fact: that even when there is no actual sensation and no actual exertion, there may still be a long train of facts and sensations which hang together; there may be faint reproductions of sensation which are not so vivid as are the sensations themselves, but which form a series of pictures of sensations which pass continually before my mind; and

there will be faint beginnings of action. Now the sense in which those are faint beginnings of action is very instructive. Any beginning of an action is what we call a judgment. When you see a thing, you in the first instance form no judgment about it at all—you are not prepared to assert any proposition—you merely have the feeling of a certain sight or sound presented to you; but after a very short space of time, so short that you cannot perceive it, you begin to frame propositions. If you consider what a proposition means, you will see it must correspond to the beginning of some sort of exertion. When you say that A is B, you mean that you are going to act as if A were B. If I see water with a particularly dull surface, and with stones resting upon the surface of it, then, first of all, I have merely an impression of a certain sheet of colour, and of certain objects which interrupt the colour of that sheet. But the second thing that I do is to come to the conclusion that the water is frozen, and that therefore I may walk upon it. The assertion that the water is frozen implies a bundle of resolves; which means, given certain other conditions, I shall go and walk upon it. So, then, an act of judgment or an assertion of any kind implies a certain incipient action of the muscles, not actually carried out at that time and place, but preparing a certain condition of the mind such as afterwards, when the occasion comes, will guide the action that we shall take up.

Now, then, what is it that we mean by the *character* of a person? You judge of a person's character by what he thinks and does under certain circumstances. Let us see what determines this. We

can only be speaking here of voluntary actions—those actions in which the person is consulted, and which are not done by his body without his leave. In those voluntary actions what takes place is that a certain sensation is communicated to the mind, the sensation is manipulated by the mind, and conclusions are drawn from it, and then a message is sent out which causes certain motions to take place. The character of the person is evidently determined by the nature of this manipulation. If the sensation suggests a wrong thing, the character of the person will be bad; if the sensation suggests in the great majority of cases a right thing, you will say that the character of the person is good. So, then, it is the character of the mind which determines what it will do with a given sensation, and what act will follow from it,—which determines what we call the personality of any person; and that character is persistent in the main, although it is continually changing a little. The vast mass of it is a thing which lasts through the whole of every individual's life, although everything which happens to him makes some small change in it, and that constitutes the education of the man.

Then the question arises, is there anything else in your consciousness of a different nature from what we have here described? That is a question which every man has to decide by examining his own consciousness. I do not find anything else in mine. If you find anything else in yours, it is extremely important that you should analyse it and find out all that you possibly can about it, and state it in the clearest form to other people; because it is one of the most important problems of

philosophy to account for the whole of consciousness out of individual feelings. It seems to me that the account of which I have only given a very rough sketch, which was begun by Locke and Hume, and has been carried out by their successors, chiefly in this country, is in its great general features complete, and leaves nothing but more detailed explanations to be desired. It seems to me that I find nothing in myself which is not accounted for when I describe myself as a stream of feelings such that each of them is capable of a faint repetition, and that when two of them have occurred together the repetition of the one calls up the other, and that there are rules according to which the resuscitated feeling calls up its fellows. These are, in the main, fixed rules which determine and are determined by my character; but my character is gradually changing in consequence of the education of life. It seems to me that this is a complete account of all the kinds of facts which I can find in myself; and, as I said before, if anybody finds any other kinds of facts in himself, it is an exceedingly important thing that he should describe them as clearly as he possibly can.

We have described two classes of facts; let us now notice the parallelism between them. First, we have these two parallel facts, that two actions of the brain which occur together form a link between themselves, so that the one being called up the other is called up; and two states of consciousness which occur together form a link between them, so that when one is called up the other is called up. But also we find a train of facts between the physical fact of the stimulus of light going into the eye and the physical fact of the motion of the

muscles. Corresponding to a part of that train, we have found a train of facts between sensation, the mental fact which corresponds to a message arriving from the eye, and exertion, the mental fact which corresponds to the motion of the hand by a message going out along the nerves. And we have found a correspondence between the continuous action of the brain and the continuous existence of consciousness apparently independent of sensation and exertion.

But let us look at this correspondence a little more closely; we shall find that there are one or two things which can be established with practical certainty. In the first place, it is not the whole of the physical train of facts which corresponds to the mental train of facts. The beginning of the physical train consists of light going into the eye and exciting the retina, and then of that wave of excitation being carried along the optic nerve to the ganglion. For all we know, and it is a very probable thing, the mental fact begins here, at the ganglion. There is no sensation till the message has got to the optic ganglion, for this reason, that if you press the optic nerve behind the eye you can produce the sensation of light. It is like tapping a telegraph, and sending a message which has not come from the station from which it ought to have come; nobody at the other end can tell whether it has come from that station or not. The optic ganglion cannot tell whether this message which comes along the nerve has come from the eye or is the result of a tapping of the telegraph, whether it is produced by light or by pressure upon the nerve. It is a fact of immense importance that all these nerves are exactly of the same kind. The only thing which the nerve

does is to transmit a message which has been given to it; it does not transmit a message in any other way than the telegraph wire transmits a message—that is to say, it is excited at certain intervals, and the succession of these intervals determines what this message is, not the nature of the excitation which passes along the wire. So that if we watched the nerve excited by pressure the message going along to the ganglion would be exactly the same as if it were the actual sight of the eye. We may draw from this the conclusion that the mental fact does not begin anywhere before the optic ganglion. Again, a man who has had one of his legs cut off can try to move his toes, which he feels as if they were still there; and that shows that the consciousness of the motor impulse which is sent out along the nerve does not go to the end to see whether it is obeyed or not. The only way in which we know whether our orders, given to any parts of our body, are obeyed, is by having a message sent back to say that they are obeyed. If I tell my hand to press against this black-board the only way in which I know that it does press is by having a message sent back by my skin to say that it is pressed. But supposing there is no skin there, I can have the exertion that precedes the action without actually performing it, because I can send out a message, and consciousness stops with the sending of the message, and does not know anything further. So that the mental fact is somewhere or other in the region R C C B of the diagram, and does not include the two ends. That is to say, it is not the whole of the bodily fact that the mental fact corresponds to, but only an intermediate part of it. If it just passes through the points R B, without going

round the loop from C to C, then we merely have the sensation that something has taken place—we have had no voice in the nature of it and no choice about it. If it has gone round from C to C, we have a much larger fact—we have that fact which we call choice, or the exercise of volition. We may conclude, then—I am not able in so short a space as I have to give you the whole evidence which goes to an assertion of this kind; but there is evidence which is sufficient to satisfy any competent scientific man of this day—that every fact of consciousness is parallel to some disturbance of nerve matter, although there are some nervous disturbances which have no parallel in consciousness, properly so called; that is to say, disturbances of my nerves may exist which have no parallel in my consciousness.

We have now observed two classes of facts and the parallelism between them. Let us next observe what an enormous gulf there is between these two classes of facts.

The state of a man's brain and the actions which go along with it are things which every other man can perceive, observe, measure, and tabulate; but the state of a man's own consciousness is known to him only, and not to any other person. Things which appear to us and which we can observe are called *objects* or *phenomena*. Facts in a man's consciousness are not objects or phenomena to any other man; they are capable of being observed only by him. We have no possible ground, therefore, for speaking of another man's consciousness as in any sense a part of the physical world of objects or phenomena. It is a thing entirely separate from it; and all the

evidence that we have goes to show that the physical world gets along entirely by itself, according to practically universal rules. That is to say, the laws which hold good in the physical world hold good everywhere in it—they hold good with practical universality, and there is no reason to suppose anything else but those laws in order to account for any physical fact; there is no reason to suppose anything but the universal laws of mechanics in order to account for the motion of organic bodies. The train of physical facts between the stimulus sent into the eye, or to any one of our senses, and the exertion which follows it, and the train of physical facts which goes on in the brain, even when there is no stimulus and no exertion,—these are perfectly complete physical trains, and every step is fully accounted for by mechanical conditions. In order to show what is meant by that, I will endeavour to explain another supposition which might be made. When a stimulus comes into the eye there is a certain amount of energy transferred from the ether, which fills space, to this nerve; and this energy travels along into the ganglion, and sets the ganglion into a state of disturbance which may use up some energy previously stored in it. The amount of energy is the same as before by the law of the conservation of energy. That energy is spread over a number of threads which go out to the brain, and it comes back again and is reflected from there. It may be supposed that a very small portion of energy is created in that process, and that while the stimulus is going round this loop-line it gets a little push somewhere, and then, when it comes back to the ganglia, it goes away to the muscle and sets loose a store of energy in the muscle so that it

moves the limb. Now the question is, Is there any creation of energy anywhere? Is there any part of the physical progress which cannot be included within ordinary physical laws? It has been supposed, I say, by some people, as it seems to me merely by a confusion of ideas, that there is, at some part or other of this process, a creation of energy; but there is no reason whatever why we should suppose this. The difficulty in proving a negative in these cases is similar to that in proving a negative about anything which exists on the other side of the moon. It is quite true that I am not absolutely certain that the law of the conservation of energy is exactly true; but there is no more reason why I should suppose a particular exception to occur in the brain than anywhere else. I might just as well assert that whenever anything passes over the Line, when it goes from the north side of the Equator to the south, there is a certain creation of energy, as that there is a creation of energy in the brain. If I chose to say that the amount was so small that none of our present measurements could appreciate it, it would be difficult or indeed impossible for anybody to disprove that assertion; but I should have no reason whatever for making it. There being, then, an absence of positive evidence that the conditions are exceptional, the reasons which lead us to assert that there is no loss of energy in organic any more than in inorganic bodies are absolutely overwhelming. There is no more reason to assert that there is a creation of energy in any part of an organic body, because we are not absolutely sure of the exact nature of the law, than there is reason, because we do not know what there is on the other side of the moon, to assert that

there is a sky-blue peacock there with forty-five eyes in his tail.

Therefore it is not a right thing to say, for example, that the mind is a force, because if the mind were a force we should be able to perceive it. I should be able to perceive your mind and to measure it, but I cannot; I have absolutely no means of perceiving your mind. I judge by analogy that it exists, and the instinct which leads me to come to that conclusion is the social instinct, as it has been formed in me by generations during which men have lived together; and they could not have lived together unless they had gone upon that supposition. But I may very well say that among the physical facts which go along at the same time with mental facts there are forces at work. That is perfectly true, but the two things are on two utterly different platforms—the physical facts go along by themselves, and the mental facts go along by themselves. There is a parallelism between them, but there is no interference of one with the other. Again, if anybody says that the will influences matter, the statement is not untrue, but it is nonsense. The will is not a material thing, it is not a mode of material motion. Such an assertion belongs to the crude materialism of the savage. The only thing which influences matter is the position of surrounding matter or the motion of surrounding matter. It may be conceived that at the same time with every exercise of volition there is a disturbance of the physical laws; but this disturbance, being perceptible to me, would be a physical fact accompanying the volition, and could not be the volition itself, which is not perceptible to me. Whether there is such a disturbance of the physical laws or no

is a question of fact to which we have the best of reasons for giving a negative answer; but the assertion that another man's volition, a feeling in his consciousness which I cannot perceive, is part of the train of physical facts which I may perceive,—this is neither true nor untrue, but nonsense; it is a combination of words whose corresponding ideas will not go together.

Thus we are to regard the body as a physical machine, which goes by itself according to a physical law, that is to say, is automatic. An automaton is a thing which goes by itself when it is wound up, and we go by ourselves when we have had food. Excepting the fact that other men are conscious, there is no reason why we should not regard the human body as merely an exceedingly complicated machine which is wound up by putting food into the mouth. But it is not *merely* a machine, because consciousness goes with it. The mind, then, is to be regarded as a stream of feelings which runs parallel to, and simultaneous with, a certain part of the action of the body, that is to say, that particular part of the action of the brain in which the cerebrum and the sensory tract are excited.

Then, you say, if we are automata what becomes of the freedom of the will? The freedom of the will, according to Kant, is that property which enables us to originate events independently of foreign determining causes; which, it seems to me, amounts to saying precisely that we are automata, that is, that we go by ourselves, and do not want anybody to push or pull us. The distinction between an automaton and a puppet is that the one goes by itself when it is wound up and the other requires to be pushed or pulled by wires or strings.

We do not want any stimulus from without, but we go by ourselves when we have had our food, and therefore so far as that distinction goes we are automata. But we are more than automata, because we are conscious; mental facts go along with the bodily facts. That does not hinder us from describing the bodily facts by themselves, and if we restrict our attention to them we must describe ourselves as automata.

The objection which many people feel to this doctrine is derived, I think, from the conception of such automata as are made by man. In that case there is somebody outside the automaton who has constructed it in a certain definite way, with definite intentions, and has meant it to go in that way; and the whole action of the automaton is determined by that person outside. If we consider, for example, a machine such as Frankenstein made, and imagine ourselves to have been put together as that fearful machine was put together by a German student, the conception naturally strikes us with horror; but if we consider the actual fact, we shall see that our own case is not an analogous one. For, as a matter of fact, we were not made by any Frankenstein, but we made ourselves. I do not mean that every individual has made the whole of his own character, but that the human race as a whole has made itself during the process of ages. The action of the whole race at any given time determines what the character of the race shall be in the future. From the continual storing up of the effects of such actions, graven into the character of the race, there arises in process of time that exact human constitution which we now have. By the process of natural selection all the actions of our

ancestors are built into us and form our character, and in that sense it may be said that the human race has made itself. In that sense also we are individually responsible for what the human race will be in the future, because every one of our actions goes to determine what the character of the race shall be to-morrow. If, on the contrary, we suppose that in the action of the brain there is some point where physical causes do not apply, and where there is a discontinuity, then it will follow that some of our actions are not dependent upon our character. Provided the action which goes on in my brain is a continuous one, subject to physical rules, then it will depend upon what the character of my brain is; or if I look at it from the mental side, it will depend upon what my mental character is; but if there is a certain point where the law of causation does not apply, where my action does not follow by regular physical causes from what I am, then I am not responsible for it, because it is not I that do it. So you see the notion that we are not automata destroys responsibility; because, if my actions are not determined by my character in accordance with the particular circumstances which occur, then I am not responsible for them, and it is not I that do them.

Moreover, if we once admit that physical causes are not continuous, but that there is some break, then we leave the way open for the doctrine of a destiny or a Providence outside of us, overruling human efforts and guiding history to a foregone conclusion. Now of course it is the business of the seeker after truth to find out whether a proposition is true or no, and not what are the moral consequences which may be expected to

follow from it. But I do think that if it is right to call any doctrine immoral, it is right so to call this doctrine, when we remember how often it has paralysed the efforts of those who were climbing honestly up the hill-side towards the light and the right, and how often it has nerved the sacrilegious arm of the fanatic or the adventurer who was conspiring against society.

I want now, very briefly indeed, to consider to what extent these doctrines furnish a bridge between the two classes of facts. I have said that the series of mental facts corresponds to only a portion of the action of the organism. But we have to consider not only ourselves, but also those animals which are next below us in the scale of organization, and we cannot help ascribing to them a consciousness which is analogous to our own. We find, when we attempt to enter into that, and to judge by their actions what sort of consciousness they possess, that it differs from our own in precisely the same way that their brains differ from our brains. There is less of the co-ordination which is implied by a message going round the loop-line. A much larger number of the messages which go in at a cat's eyes and come out at her paws go straight through without any loop-line at all than do so in the case of a man; but still there is a little loop-line left. And the lower we go down in the scale of organization the less of this loop-line there is; yet we cannot suppose that so enormous a jump from one creature to another should have occurred at any point in the process of evolution as the introduction of a fact entirely different and absolutely separate from the physical fact. It is impossible for anybody to point out the particular place in the line of descent where

that event can be supposed to have taken place. The only thing that we can come to, if we accept the doctrine of evolution at all, is that even in the very lowest organisms, even in the Amœba which swims about in our own blood, there is something or other, inconceivably simple to us, which is of the same nature with our own consciousness, although not of the same complexity—that is to say (for we cannot stop at organic matter, knowing as we do that it must have arisen by continuous physical processes out of inorganic matter), we are obliged to assume, in order to save continuity in our belief, that along with every motion of matter, whether organic or inorganic, there is some fact which corresponds to the mental fact in ourselves. The mental fact in ourselves is an exceedingly complex thing; so also our brain is an exceedingly complex thing. We may assume that the quasi-mental fact which corresponds and which goes along with the motion of every particle of matter is of such inconceivable simplicity, as compared with our own mental fact, with our consciousness, as the motion of a molecule of matter is of inconceivable simplicity when compared with the motion in our brain.

This doctrine is not merely a speculation, but is a result to which all the greatest minds that have studied this question in the right way have gradually been approximating for a long time.

Again, let us consider what takes place when we perceive anything by means of our eye. A certain picture is produced upon the retina of the eye, which is like the picture on the ground-glass plate in a photographic camera; but it is not there that the conscious-

ness begins, as I have shown before. When I see anything there is a picture produced on the retina, but I am not conscious of it there; and in order that I may be conscious the message must be taken from each point of this picture along the special nerve-fibre to the ganglion. These innumerable fine nerves which come away from the retina go each of them to a particular point of the ganglion, and the result is that, corresponding to that picture at the back of the retina, there is a disturbance of a great number of centres of grey matter in the ganglion. If certain parts of the retina of my eye, having light thrown upon them, are disturbed so as to produce the figure of a square, then certain little pieces of grey matter in this ganglion, which are distributed we do not know how, will also be disturbed, and the impression corresponding to that is a square. Consciousness belongs to this disturbance of the ganglion, and not to the picture in the eye; and therefore it is something quite different from the thing which is perceived. But at the same time, if we consider another man looking at something, we shall say that the fact is this—there is something outside of him which is matter in motion, and that which corresponds inside of him is also matter in motion. The external motion of matter produces in the optic ganglion something which corresponds to it, but is not like it. Although for every point in the object there is a point of disturbance in the optic ganglion, and for every connexion between two points in the object there is a connexion between two disturbances, yet they are not like one another. Nevertheless they are made of the same stuff; the object outside and the optic ganglion

are both matter, and that matter is made of molecules moving about in ether. When I consider the impression which is produced upon my mind of any fact, that is just a part of my mind; the impression is a part of me. The hall which I see now is just an impression produced on my mind by something outside of it, and that impression is a part of me.

We may conclude from this theory of sensation, which is established by the discoveries of Helmholtz, that the feeling which I have in my mind—the picture of this hall—is something corresponding, point for point, to the actual reality outside. Though every small part of the reality which is outside corresponds to a small part of my picture, though every connexion between two parts of that reality outside corresponds to a connexion between two parts of my picture, yet the two things are not alike. They correspond to one another, just as a map may be said in a certain sense to correspond with the country of which it is a map, or as a written sentence may be said to correspond to a spoken sentence. But then I may conclude from what I said before that, although the two corresponding things are not alike, yet they are made of the same stuff. Now what is my picture made of? My picture is made of exceedingly simple mental facts, so simple that I only feel them in groups. My picture is made up of these elements; and I am therefore to conclude that the real thing which is outside me, and which corresponds to my picture, is made up of similar things; that is to say, the reality which underlies matter, the reality which we perceive as matter, is that same stuff which, being compounded together in a

particular way, produces mind. What I perceive as your brain is really in itself your consciousness, is You; but then that which I call your brain, the material fact, is merely my perception. Suppose we put a certain man in the middle of the hall, and we all looked at him. We should all have perceptions of his brain; those would be facts in our consciousness, but they would be all different facts. My perception would be different from the picture produced upon you, and it would be another picture, although it might be very like it. So that corresponding to all those pictures which are produced in our minds from an external object, there is a reality which is not like the pictures, but which corresponds to them point for point, and which is made of the same stuff that the pictures are. The actual reality which underlies what we call matter is not the same thing as the mind, is not the same thing as our perception, but it is made of the same stuff. To use the words of the old disputants, we may say that matter is not of the *same* substance as mind, not *homoousion*, but it is of *like* substance, it is made of similar stuff differently compacted together, *homoiousion*.

With the exception of just this last bridge connecting the two great regions of inquiry that we have been discussing, the whole of what I have said is a body of doctrine which is accepted now, as far as I know, by all competent people who have considered the subject. There are, of course, individual exceptions with regard to particular points, such as that I have mentioned about the possible creation of energy in the brain; but these are few, and they occur mainly, I think, among

those who are so exceedingly well acquainted with one side of the subject that they regard the whole of it from the point of view of that side, and do not sufficiently weigh what may come from the other side. With such exceptions as those, and with the exception of the last speculation of all, the doctrine which I have expounded to you is the doctrine of Science at the present day.

These results may now be applied to the consideration of certain questions which have always been of great interest. The application which I shall make is a purely tentative one, and must be regarded as merely indicating that such an application becomes more possible every day. The first of these questions is that of the possible existence of consciousness apart from a nervous system, of mind without body. Let us first of all consider the effect upon this question of the doctrines which are admitted by all competent scientific men. All the consciousness that we know of is associated with a brain in a certain definite manner, namely, it is built up out of elements in the same way as part of the action of the brain is built up out of elements; an element of one corresponds to an element in the other; and the mode of connexion, the shape of the building, is the same in the two cases. The mere fact that all the consciousness we know of is associated with certain complex forms of matter need only make us exceedingly cautious not to imagine any consciousness apart from matter without very good reason indeed; just as the fact of all swans having turned out white up to a certain time made us quite rightly careful about accepting stories that involved black swans. But the fact that

mind and brain are associated in a definite way, and in that particular way that I have mentioned, affords a very strong presumption that we have here something which can be *explained*; that it is possible to find a reason for this exact correspondence. If such a reason can be found, the case is entirely altered; instead of a provisional probability which may rightly make us cautious, we should have the highest assurance that Science can give, a practical certainty on which we are bound to act, that there is no mind without a brain. Whatever, therefore, is the probability that an explanation exists of the connexion of mind with brain in action, such is also the probability that each of them involves the other.

If, however, that particular explanation which I have ventured to offer should turn out to be the true one, the case becomes even stronger. If mind is the reality or substance of that which appears to us as brain-action, the supposition of mind without brain is the supposition of an organized material substance not affecting other substances (for if it did it might be perceived), and therefore not affected by them; in other words, it is the supposition of immaterial matter, a contradiction in terms to the fundamental assumption of the uniformity of nature, without practically believing in which we should none of us have been here to-day. But if mind without brain is a contradiction, is it not still possible that an organization like the brain can exist without being perceived, without our being able to hold it fast, and weigh it, and cut it up? Now this is a physical question, and we know quite enough about the physical world to say, 'Certainly not.' It is made

of atoms and ether, and there is no room in it for ghosts.

The other question which may be asked is this: Can we regard the universe, or that part of it which immediately surrounds us, as a vast brain, and therefore the reality which underlies it as a conscious mind? This question has been considered by the great naturalist Du Bois Reymond, and has received from him that negative answer which I think we also must give. For we found that the particular organization of the brain which enables its action to run parallel with consciousness amounts to this—that disturbances run along definite channels, and that two disturbances which occur together establish links between the channels along which they run, so that they naturally occur together again. It will, I think, be clear to everyone that these are not characteristics of the great interplanetary spaces. Is it not possible, however, that the stars we can see are just atoms in some vast organism, bearing some such relation to it as the atoms which make up our brains bear to us? I am sure I do not know. But it seems clear that the knowledge of such an organism could not extend to events taking place on the earth, and that its volition could not be concerned in them. And if some vast brain existed far away in space, being invisible because not self-luminous, then, according to the laws of matter at present known to us, it could affect the solar system only by its weight.

On the whole, therefore, we seem entitled to conclude that during such time as we can have evidence of no intelligence or volition has been concerned in events happening within the range of the Solar system, except

that of animals living on the planets. The weight of such probabilities is, of course, estimated differently by different people, and the questions are only just beginning to receive the right sort of attention. But it does seem to me that we may expect in time to have negative evidence on this point of the same kind and of the same cogency as that which forbids us to assume the existence between the Earth and Venus of a planet as large as either of them.

Now, about these conclusions which I have described as probable ones, there are two things that may be said. In the first place, it may be said that they make the world a blank, because they take away the objects of very important and widespread emotions of hope and reverence and love, which are human faculties and require to be exercised, and that they destroy the motives for good conduct. To this it may be answered that we have no right to call the world a blank while it is full of men and women, even though our one friend may be lost to us. And in the regular everyday facts of this common life of men, and in the promise which it holds out for the future, there is room enough and to spare for all the high and noble emotions of which our nature is capable. Moreover, healthy emotions are felt about facts and not about phantoms; and the question is not 'What conclusion will be most pleasing or elevating to my feelings?' but 'What is the truth?' For it is not all human faculties that have to be exercised, but only the good ones. It is not right to exercise the faculty of feeling terror or of resisting evidence. And if there are any faculties which prevent us from accepting the truth and guiding our conduct by it, these

faculties ought not to be exercised. As for the assertion that these conclusions destroy the motive for good conduct, it seems to me that it is not only utterly untrue, but, because of its great influence upon human action, one of the most dangerous doctrines that can be set forth. The two questions which we have last discussed are exceedingly difficult and complex questions; the ideas and the knowledge which we used in their discussion are the product of long centuries of laborious investigation and thought; and perhaps, although we all make our little guesses, there is not one man in a million who has any right to a definite opinion about them. But it is not necessary to answer these questions in order to tell an honest man from a rogue. The distinction of right and wrong grows up in the broad light of day out of natural causes wherever men live together; and the only right motive to right action is to be found in the social instincts which have been bred into mankind by hundreds of generations of social life. In the target of every true Englishman's allegiance the bull's-eye belongs to his countrymen, who are visible and palpable and who stand around him; not to any far-off shadowy centre beyond the hills, *ultra montes*, either at Rome or in heaven. Duty to one's countrymen and fellow-citizens, which is the social instinct guided by reason, is in all healthy communities the one thing sacred and supreme. If the course of things is guided by some unseen intelligent person, then this instinct is his highest and clearest voice, and because of it we may call him good. But if the course of things is not so guided, that voice loses nothing of its sacredness, nothing of its clearness, nothing of its obligation.

In the second place it may be said that Science ought not to deal with these questions at all; that while scientific men are concerned with physical facts, they are *dans leur droit*, but that in treating of such subjects as these they are going out of their domain, and must do harm.

What is the domain of Science? It is all possible human knowledge which can rightly be used to guide human conduct.

In many parts of Europe it is customary to leave a part of the field untilled for the Brownie to live in, because he cannot live in cultivated ground. And if you grant him this grace, he will do a great deal of your household work for you in the night while you sleep. In Scotland the piece of ground which is left wild for him to live in is called 'the good man's croft.' Now there are people who indulge a hope that the ploughshare of Science will leave a sort of good man's croft around the field of reasoned truth; and they promise that in that case a good deal of our civilizing work shall be done for us in the dark, by means we know nothing of. I do not share this hope; and I feel very sure that it will not be realized: I think that we should do our work with our own hands in a healthy straightforward way. It is idle to set bounds to the purifying and organizing work of Science. Without mercy and without resentment she ploughs up weed and briar; from her footsteps behind her grow up corn and healing flowers; and no corner is far enough to escape her furrow. Provided only that we take as our motto and our rule of action, Man speed the plough.

ON THE NATURE OF THINGS-IN-THEMSELVES.[1]

Meaning of the Individual Object.

My feelings arrange and order themselves in two distinct ways. There is the internal or subjective order, in which sorrow succeeds the hearing of bad news, or the abstraction 'dog' symbolizes the perception of many different dogs. And there is the external or objective order, in which the sensation of letting go is followed by the sight of a falling object and the sound of its fall. The objective order, *quâ* order, is treated by physical science, which investigates the uniform relations of *objects* in time and space. Here the word *object* (or *phenomenon*) is taken merely to mean a group of my feelings, which persists as a group in a certain manner; for I am at present considering only the objective order of my feelings. The object, then, is a set of changes *in* my consciousness, and not anything out of it. Here is as yet no metaphysical doctrine, but only a fixing of the meaning of a word. We may subsequently find reason to infer that there is something which is not object, but which corresponds in a certain way with the object; this will be a metaphysical doctrine, and neither it nor its denial is involved in the present determination of meaning. But the determination must be taken as extending to all those inferences which are made by

[1] 'Mind,' January, 1878.