own *ego* ; for this *ego* is inevitably led dimly to divine hidden relations between things which are akin in having deeply impressed itself.

EDMUND GURNEY.

IV.—ON CAUSATION.

THE ordinary notion of causation, with which we must begin as a preliminary, may be taken to consist of two essentials, first, the notion of power or efficacy, and second, the order or rule under which that power works. Neither of these alone constitutes causation, and at the same time nothing else but these is requisite. Neither alone is sufficient ; for take power alone, and there is nothing to connect it either with cause or with effect, and therefore nothing to connect cause and effect with each other ; some order or rule of the power is required. So with order or rule taken alone ; it is not the order in causation, unless some movement or change is pre-supposed in the phenomena, of which it is the order. The order of the squares on a chessboard is not an order of causation.

Again, nothing else but these two notions is requisite. To include the notion of originating in the efficacy, and thus transform it into creative efficacy, or to include necessity or uniformity in the notion of the rule, would be including too much. These notions may possibly turn out to be legitimately derived from that of causation (of this I say nothing at present), but they are not *primâ facie* included in it. They are not suggested to the non-speculative mind by the word, and therefore not required to be justified as valid, in order to justify the ordinary notion of causation.

What I propose to do in the present paper is, first, to examine the ordinary notion of causation, and see what it logically includes, supposing it to be a valid notion ; in the next place to see in what that validity consists, and what the range over which it extends. Having done this, the result may be summed up in a definition or set of definitions, supplementary to the analysis which we shall obtain of causation.

This task is naturally and, in my opinion, inevitably reserved for that method or school of philosophy which is content with simple analysis of phenomena on their subjective side, content to occupy the position of a critical spectator of the panorama of experience, without theorising about its origin. The reason of this may be stated in few words. Modern absolutism assumes as an ultimate notion,—assumes, that is, as something which, not needing explanation itself, contributes to explain everything

else,—either the notion of efficacy itself, or some special mode of it, efficacy or power being, as we have seen, one of the two constituents of causation. It cannot therefore be competent to explain the notion of causation, when it accounts for one of its essential ingredients by an *assumption* which involves it.

Take, for instance, philosophical Materialism, which is an absolutist doctrine. It assumes, over and above phenomenal force, which is always reducible to an expression in terms of the relative positions and motions of portions of matter, another force not apprehensible *per se*, which is supposed to be either inherent in matter, or, if prior to it, to issue in its formation and produce its changes. Take Hegelianism, which is an idealistic absolutism. It assumes an efficacy in pure Thought, by which *Nothing becomes Being*. Take Schopenhauer's or Von Hartmann's theories, in which a creative efficacy is ascribed to Will. Now, however different these theories may be among themselves, and whatever may be alleged in their favour in other respects, a question which this is not the place to discuss, one thing is true of them in common, and that is, that since they all assume, as an ultimate source of explanation, the notion of unconditioned efficacy, they cannot be competent to examine the validity of the notion of causation, of which efficacy is an essential constituent. It is open to them to examine its other constituent, the notion of order or rule; but causation as a whole is closed to them by their own act.

Nor is it open to them to plead, and this is important, that what they assume is merely the *phenomenon* of change or motion, which for convenience may be summed up in the term power or efficacy, that they merely take the phenomena as they find them, and that they find them with change and motion inseparably involved in them. That indeed is true, but it is not true that they assume no more than that. When they assert not merely power or efficacy in the abstract, but a particular mode of it (for Force, Thought, Will, are such particular modes), as part of their ultimate account of existence, they show plainly that they assume more than the phenomena alone contain. And where, I would ask, has been given the proof, by Materialist or by Idealist, that his particular mode of efficacy is a necessary and ultimate reality; where is the assumption of it justified as a necessary element of all philosophical explanation?

The question, then, escapes the Creationists and falls into the hands of the Critics. What does the critical school make of it? Hitherto not much, I am bound to admit, judging at least by one of its latest attempts at solution, Mr. T. S. Barrett's *Philosophy of Science* (2nd edition, 1872). His solution is, that the notion of power or efficacy in causation is analysable into

the notion of logical (which is also conditional) necessity (pp. 120, 124, and 131); and that to this extent, that is to say so far as *observation* warrants our logic (p. 134), our logic warrants the attribution of causal necessity to phenomena objectively, in opposition to Hume's doctrine that the attribution in question was wholly illegitimate, being an illogical result of habit and custom.

But this is no real solution, for two reasons. First, it is not final, for if causal efficacy is a creature of logical necessity, a further need arises for an analysis of logical necessity. And secondly, its range is limited, for only so far as *observation* bears it out is the attribution of necessity to *phenomena* justified. The professed solution lands us and leaves us in the midst of all the old questions as to the relation between logical and objective necessity, and the limit between legitimate and illegitimate attribution of the latter is left as shadowy as ever. Part of nature would be reduced under the sceptre of law, part left possibly subject to chance. It is a fallacy to make objective necessity depend on logical, and logical on observation, unless you can show in observation itself, prior to logic, at least the rudiments of necessity. Your ultimate source of objective necessity is observation of phenomena, which according to your own account can never yield it, only that this is masked by interposing logical necessity to render the transformation plausible. Logical necessity limited by observation is as illegitimate a source as habit or custom.

Unless, I repeat, you can show in observation itself, prior to logic, the rudiments of necessity;—for there it is that, to my mind, the kernel of the whole matter lies. The necessity in causation is not merely a logical but a metaphysical necessity; it cleaves to sensation and perception, prior to logic and to thought, and it cleaves to every instance of them. It is not *in intellectu* merely, but *in sensu*. It is something which observation does and always will justify, because it is involved in the process of observation itself.

Returning, then, to the two constituents of causation, efficacy and the rule under which it works, let us bring these two face to face with the process of observation. By saying this I mean to put aside the inquiry, what particular phenomena it was which probably gave us our first notion of efficacy, or of rule; whether it was the sense of our own agency in volition which originated the notion of efficacy, which notion we afterwards applied to physical events, or whether the perception of physical force first gave us this notion, and we afterwards applied it to explain volition. Again as to the notion of rule, we need not now inquire whether perceived purpose in our own volitions,

with the perception of the means to their attainment, was the origin of the notion, or on the other hand the observed regularity in physical occurrences.

Let us observe the process of observation as we now have it in our power to do, and with the advantage of previous experience in our minds. Let it be another condition of the inquiry, that we observe the process of observation and not its results, which in other words is to observe the subjective side of the process, as a series of states of consciousness, not the objective side, as a series of objective events. Phenomena objectively taken give no indication of the *nexus* between them. It is in vain to look in that direction for the rule in causation. This is now admitted on all hands. But, taking the stream of states of consciousness as our object, let us see whether we do not find both efficacy and rule involved in it, and that in such a shape as to show them to be the rudiments of necessity and uniformity.

Yet another condition. There is one feature in the process of observation, subjectively taken, from which we must abstract, in order to satisfy the requirement of its being *prior to logic*. The process of observation is already a logical process, being a volitional one. We must therefore abstract from the element of attention for the purpose of knowing, which is its logical element, if we would see whether, in what remains of it, the rudiments of causation can be found. We must take the process of observation and reduce it to a process of what I have elsewhere called spontaneous redintegration, in order to see whether it contains a *nexus* between its states of consciousness, which is the foundation of the causal nexus.

I think I shall then be able to show, that *efficacy* which consists in the irresistibility and continuity of the stream of consciousness, and *rule* which consists in the fact that the stream, though continuous, is distinguished into portions by similarity as well as difference in the states composing it, are together the rudiments of the full notion of necessary and uniform causation.

But before entering on this examination, it will be better to make another approach from the side of cause, in order to see more precisely what it is that we are required to find in the rudimentary stream of consciousness. When we ask for the cause of anything, we are asking for some particular circumstance or combination of circumstances, upon which the effect in question depends; we are not asking for the *whole* set of circumstances of which the effect is a *part*. We want some circumstance or combination of circumstances to be singled out from the whole, and shown to be that upon the occurrence of

which the effect occurs, no matter what the other circumstances may be. It is a partial inquiry into the dependence of one part of the whole upon another part of the whole.

We may make this inquiry in two ways, which may be distinguished as judicial and scientific. In judicial inquiries we want to know the single cause of a single effect, for instance, the cause of A's death. In scientific inquiries we want to know the common cause of a common effect, for instance, what gives fire its power of burning wood, in all the cases where fire and wood are found. But alike in both kinds of inquiry the dependence between cause and effect is a particular one, in the sense that we are asking for one circumstance or set of circumstances, whether these are repeated in several similar cases, or are found only in a single case. We leave apart, as being outside causation and irrelevant to our purpose, the inquiry what the *other* circumstances may be in which fire is found, *e.g.*, whether it is in London or in Paris, and seek to discover only those circumstances which determine its burning quality.

There is clearly some dependence, some *nexus*, between cause and effect, which we call causation; the question is, in what does it consist? Some have recourse for an answer to the notion of efficacy; others to that of rule. That causation is efficacy operating under rule is clear, but in *which* of the two notions are we to look for the source of the causal nexus? Kant's answer was, in the *efficacy*, which notion we import *a priori* into phenomena from a category or form of thought involved in all mental action. In virtue of this alone we can say "the sun warms the stone," as distinguished from "the sun shines and the stone gets warm". The Humian answer is, in the *rule*, which we get *a posteriori* from observing phenomena to be regular, and upon which we, by force of habit, superinduce illogically the notion of efficacy.

Upon Kant's answer arises the further question—How comes the mind by its category? Upon Hume's,—How come phenomena to be regular? To which questions I know not that any answer has yet been given, unless it be by the *assumptions* which are made by the materialistic and idealistic absolutists respectively, as was shown at the outset of this paper. Nor, I think, can any answer be given, so long as we keep within the lines of the partial view in which, as we have seen, the question arose. Just as we can never see a reason or causal nexus, other than sequence or co-existence, between this particular phenomenon and that, say between fire and its burning of wood, so neither can we see any between this instance of its burning wood and that instance of it—any reason why the event should happen in that way twice, merely because it has happened so once.

Two things are requisite: we must go back to the perceptual order from the conceptual, and we must extend the instance of the perceptual order till it embraces the whole history of the universe. I mean by this, that we must first take the *judicial* way of inquiry as distinguished from the *scientific*, and secondly that we must consider the particular event under discussion as occupying its *one* place in the whole series of events which is the history of the universe.

Take for instance the cause of combustion of wood. It will not help us to put the question as one into the *invariable antecedents* of the combustion of wood. *Combustion of wood* is a general term covering innumerable instances, each of which has antecedents of its own. If you had discovered the invariable antecedents of the combustion of wood, they also would be described by a general term covering innumerable instances. The general term for the cause and the general term for the effect are short-hand ways of expressing the whole series of instances which each of them covers. They stand for these instances, and the truth of propositions concerning them depends on the truth of propositions concerning the instances which they cover. No doctrine is more strongly insisted on by the inductive experientialists than this. It is in vain to expect to find the secret of causation by any juggling with the symbol apart from the things symbolised. General terms, as they are (perhaps improperly) called, cannot as such disclose the causal nexus. If it is to be disclosed at all, it must be by the particulars which the general terms represent. In other words, we must go back to the perceptual, instead of keeping to the conceptual order, to the judicial instead of the scientific order of inquiry.

But in this order, one event has one and only one possible cause, one and only one combination of circumstances, upon which it rises on the scene of being. To imagine that a plurality of causes for one and the same event is possible, is to be deluded by the fallacy of taking the general term, by which the effect is described, for the name of a single event, when in reality it covers an indefinite number of events describable by the same name; the combustion of wood, for instance, as a single instead of an indefinitely plural event. Then, no doubt, it is true that a plurality of causes is possible, and not only possible but necessary, one for each case of combustion. If however the event is really single, that is, is taken as the object of *perception*, e.g., A's death, then it has and can have but one combination of circumstances as its cause; and that one combination of circumstances no other than this single and sole effect.

Farther, our ignorance of the combination of circumstances

causing A's death, which renders us liable to fall into the fallacy of considering a plurality of causes possible, and which gives rise to the rule of logic, *posito consequente nihil probatur*,—this our ignorance of the cause would be removed, if we had a more determinate knowledge of the effect as an event *in perception*. The more complete knowledge of the physical circumstances composing the event of A's dying would go far in most cases to reveal the circumstances which immediately preceded and accompanied them. The effect would be seen as growing out of its cause, the cause as being transformed into its effect, so that the distinction between them which is drawn by the instrumentality of language would appear what it is, a coarse and clumsy artifice, inadequate even as an expression of our thoughts in conceptual order, the creature of which it is; how much more inadequate then to give back the infinite subtilty and the infinite variety of the perceptual order, of that order which is nature herself.

Names are the creatures of the modification of perceptions by thought, and the objects or events which they signify are roughly hewn, roughly kneaded, compositions of perceptions, on the principle of classing like with like, and excluding unlike perceptions. The excluded perceptions really belong to the individual objects marked by general names, though the name excludes them. "Death" for instance is a general name, marking certain common features of every particular case. It is only by saying "A's death" that we can mark the fact of its singularity, because we know from other sources, that this is an event which can occur but once. But the same thing is true of every event and every object that can be named. Nothing occurs more than once.

Again, when by considerations like the foregoing we have restored their perceptual meaning to general names, and so take the objects signified by them as single objects of perception, even then the objects so signified are rough and coarse masses, of which but one or two prominent features are indicated by the names, the rest being left as it were in shadow. The subtilty and variety of nature is not seen in them, but merely suspected. We do not perceive it as it is, but make the discovery of it as it is the purpose of our study. It is a mass of perception which we *might* have, but have not. We know it in outline only, or rather we know it as an indefinite outline wavering round a prominent point which is the circumstance from which the name of it is taken. "A's death" is the mass of phenomena immediately preceding and immediately following what we call the *moment* of death.

Every object or event, then, for the cause of which we ask, is

a mass of perceptions occupying some portion of time ; and the circumstance of its having duration explains why it is that causes are simultaneous or co-existent with their effects, as well as previous to them. For unless other circumstances continued to exist, along with those which we call the effect, and besides those which have preceded it, the effect also would cease. In building a house, there are actions of the builder which precede his actual raising of the walls ; he handles the bricks before he lays them ; but the ground on which the house stands continues to exist during and after the whole process of building. In other words, causes are concomitant as well as antecedent to their effects.

Why then do we usually speak of them as antecedent only ? For the same reason which leads us to characterise them as *invariable* antecedents, namely, that in asking for a cause we not only adopt a partial point of view, but we adopt the order of thought, instead of perception, in putting the question. We first separate the effect in thought, and then ask what must be pre-supposed in order that we may *understand* its arising. We ask for a cause which may render it intelligible, and then treat this cause, which is previous to our understanding the effect, as if it were also previous to the production of it. When, however, we see that perception, not thought, is decisive, then we speak no longer either of antecedent or invariable antecedent as synonymous with cause ; we speak of *conditions* antecedent and co-existent. The distinction of the two classes, antecedent and co-existent, makes us break up the unity of our previous conception of *cause*, which is always an unity, and replace it by the conception of condition, which admits of plurality.

These are not the only consequences of adopting the conceptual instead of the perceptual order of thought in discussing causation. Another consequence is the divergence of men of science as to what is really intended by the tenet of the uniformity of nature. One man holds it to mean that the same conditions will invariably be followed or accompanied by the same results, *e.g.*, that the boiling point of water will always be 212° F., *if* water remains water, *if* it continues subject to an atmospheric pressure of 15 lbs. to the square inch of surface, and so on ;—which gives the tenet all the undeniable validity of an identical proposition, but only at the cost of withdrawing from the range of its positive assertion all facts which can be regarded as conditions, that is to say, virtually, all facts whatever.

Another maintains that much more than this is intended by the tenet, namely, that water *will* remain water, that it *will* continue subject to an atmospheric pressure of 15 lbs. to the square inch of surface, &c., and that the boiling point of water *will* conse-

quently remain 212° F.;—which renders the tenet indemonstrable, except so far as it is a mere record of past experience.

The reason of this divergence is, that both parties take *sameness* in a sense exclusive of difference, that is, in its logical and not its perceptual sense; and then the one sees that the sameness of the conditions involves the sameness of the results, the other that difference in the conditions can be only hypothetically excluded from the phenomena. Difference as well as sameness is involved in every sequence of phenomena; and it is the sameness *in the midst of difference* that is the ground of uniformity. Without difference there could be no change; but change is of the essence of nature. The sameness attributed to the laws of nature, therefore, can mean only a high degree of similarity between the phenomena and phenomenal relations of which those laws are the expression. How much variety and newness, how much similarity and repetition, are to be expected in nature, where we have not had actual experience, is a thing to be judged of by inductive *a posteriori* methods. Who can tell, for instance, whether the boiling point of water will be subject to change, within what limits of degree, and whether the change will be sudden or secular, except by probabilities founded on observation and experiment?

In this way it is that we arrive at what has been called the *material continuity* of nature, the graduation of its changes,—*natura non facit saltum, non patitur hiatus*. And this law or principle of material continuity is, I think, the practically serviceable outcome of the tenet of uniformity, since it is applicable to the unknown content of nature, and not merely, like uniformity, to the form or framework of nature, which is known of every part alike, because involved in every instance of knowing.

The tenet of uniformity, if it is to have any significance at all, cannot be taken either to exclude the possibility of change in phenomena, or to exclude it only by a logical hypothesis. Taken in the first sense, it would not be true; taken in the second sense, it would not be an objective fact of nature. What then is the sense in which it is both true and an objective fact of nature? It can be only this: as we find perfect sameness between two phenomena only when we reduce them in thought to *one* phenomenon, for nothing short of this excludes objective difference between them, so with the course of nature as a whole, there is no strict sameness in it, until you consider that it is the one and only course of nature in existence. It has an identity equal to that expressed by the logical Postulate of Identity, *A is A*. At the same time, all its parts are necessarily connected one with another, including the similarities which are observed between-

them. And these similarities, in the midst of dissimilarities, are what is meant by uniformity. But the uniformity is perceived as necessary and objective, only by being perceived to be contained in and to form part of the analysis of the whole course of nature, as one and the same course. This view of things brings us back to the perceptual order, which, as already said, is the order of nature itself, subsisting before and subsisting after *our* modification of it into general terms, by logical processes based on *A* is *A*, which is the point of contact between perception and thought.

Imagine a curtain, as at a theatre, painted with variously coloured stars, gradually unrolled and half-way lowered; and let its unrolling represent the course of time from past to present, and the stars the individual objects and events which compose experience and are the content of time. The lowest horizontal line of stars, which is the latest unrolled into view, will stand for the effects last produced, the world as we actually see it, and each star may be imagined as receiving rays from some or all of the stars in the line above, and as both giving and receiving rays in interchange with those right and left of it, in the same line. The stars are objects of perception; and those stars from which rays come to others are the conditions of those others. The stars again which are the conditions of these are the remoter conditions of those. And the whole surface of stars is one network of causes and effects, the stars in each line containing the antecedent conditions of the stars in the line below it, and the stars in the same line containing the concomitant conditions of each other. The efficacy of the conditions consists in the fact of the unrolling of the curtain; the rule which it follows consists in each star having its own place and no other upon the surface of it; and the necessity of the rule in the fact that, owing to the continuity of Time, there is no Universe but one.

Still it may possibly be asked, But whence the uniformity, whence the regularity? You have shown, it may be said, that the rule by which objects and events take their place on the scene of existence is a reality, but it would be equally a reality whatever might be the character of its content, if it were chaotic equally as if it were regular and uniform? What is the reason of its being regular and uniform? We are still in want of an answer to that question which arises, as noted above, upon Hume's view of causation. True, the mind is capable of perceiving similarity and difference, of retaining and comparing its impressions, of classing similars together and so forming the individual objects of experience, such as fire, wood, and burning. But that is not the question. Neither is it the question, how there comes to be *necessity* in the order of phenomena, for this

there might be if nothing ever recurred again, but the phenomena were a series of units totally different from each other, without any similarity in their difference. But the present question is this,—How comes the series of impressions to be such that similarity as well as dissimilarity can be observed in them, and again, such that sequences between them are observable as similar? This question seems to hunt the problem into its last retreat. Let us therefore pay exact attention to the process of observing similarity and difference; which brings us back to the point from which we diverged at p. 503, in order to make a second approach to this the main question.

The process of observation includes voluntary attention to states of consciousness, which are only then said to be observed, when we bestow that attention upon them. But what states of consciousness are those which we observe? Do they consist only of what Hume called *impressions*, or do they also contain what he called *ideas* of impressions? It is plain that they include both. For an impression continually recurs, and its recurrence is an idea, as for instance, when I think of a friend immediately after he has left the room. The idea is similar to the impression. When I see him again, I have an impression, and now the impression is similar to the idea. Though impressions are the sources of ideas, yet I cannot compare the impressions made by a single thing without comparing an impression with an idea. Time carries away, as it brings, our impressions, and transforms them into ideas. The train of what I have called spontaneous redintegration, a train of states of consciousness previous to paying it any conscious attention for the purpose of classification, previous to thought being exercised upon it, is the true object of observation, and not the impressions alone which are the sources of the train. We never have impressions unmixed with ideas; they do not come isolated, but bound into a train by ideas which connect them. Our earliest trains of consciousness include ideas as well as impressions, memories as well as presentations. If they did not, the result would be that we should have no unity of consciousness. There would be, in place of a train of consciousness, a succession of separate states of consciousness without any nexus between them, and one in which the perception of self could not possibly arise.

Not that the perception of self is given by the mere fact of consciousness being a train, still less that the perception of self is the condition of its being so, as some idealists hold. On the contrary, that consciousness is a train, is the condition of self-consciousness arising in it. Many trains consisting of similar and dissimilar states of consciousness must have existed, before there can arise in one of them a perception having for its content,

or object, the unity of the previous trains. The unity of the trains of spontaneous reintegration, and of the several portions of any one of them, is the fact known as the unity of consciousness; and its existence is the indispensable condition of its being observed and perceived as an object called *self*.

How does this bear upon the question of the ultimate source of uniformity? In this way. Just as the unity in trains of consciousness is the condition of its being perceived *as unity* and called *self*, so the similarity of perceptions contained in trains of spontaneous reintegration is the condition of its being perceived *as similarity* in classifying states of consciousness. Similarity and difference in the perceptions of spontaneous reintegration (which is the most rudimentary shape of consciousness), bound together by the nexus of time, as for instance when an "impression" occurs simultaneously with its "idea," and either together or in sequence with other ideas and impressions, *are* the things about which our question was put,—Whence came they? To ask whence *they* come is to ask whence consciousness altogether and as a whole comes; and this is a question which cannot be asked without getting the answer *from eternity*. Consciousness has no *whence*, for every *whence* must be stated in terms of consciousness.

Observe the difference between the Humian position and the present one, with regard to the source of uniformity in phenomena. To the Humian, uniformity is a particular fact of observation, which requires to be, but never can be, accounted for. To us it is an universal fact of observation, which does not require to be accounted for because it is already found in every instance of that from which alone the account could be drawn, namely, consciousness. Hume saw no necessity in phenomena, probably because in the first instance he expected to find it in the shape of something corresponding to the terms will or force; disappointed there, he turned to the observation of order in phenomena. Humians see no necessary uniformity in phenomena because they expect some logical law to which uniformity may be referred. Both are looking in a wrong direction. The analysis of consciousness furnishes what they ask for, though certainly not what they expect to be told of. They want an answer in terms of will or force or self-evident axiom; but this is not the answer of analysis.

Still it must not be supposed that we find in spontaneous reintegration the necessity and uniformity of nature full-blown. We find there only their rudiments. There is uniformity, but it is not yet seen to be universal; there is necessity, but it is not yet seen to be inevitable. As perception is developed into thought, and consciousness into self-consciousness, and as the

laws of the world are gradually discovered and take their place in our conception of it, so *pari passu* is developed the perception of the full range of the facts of similarity, dissimilarity, sequence, and co-existence, which are found in all rudimentary experience. This experience, which has been called spontaneous reintegration, is a varied stream or moving mosaic of consciousness, in which the continuity of the pieces is the source of our conception of necessity, and their similarity, in the midst of dissimilarity, that of our conception of uniformity.

Without continuity there can be no unity of consciousness; and without *some* similarity at any rate there can be no continuity. Similarity is not confined to the matter or content of consciousness, but belongs to the form of it as well. When, for instance, I run my finger along the edge of the table from corner to corner, I am conscious of a continuous succession of feelings in time, all alike in point of content, being feelings of touch, and all alike in point of form, being feelings occupying space and time. Before arriving at the second corner, my feelings in moving from the first corner have become "ideas," and I compare them with my feelings on approaching the second corner, only by means of memory. The continuity of feeling includes, in this case at any rate, a similarity of form as well as of content. Putting aside however the peculiarity which some feelings have of occupying space, we may say of all feelings alike that they occupy time. And we may represent the continuity of time as a case of similarity, if we assume that feelings come to us originally as different from one another. Even on this assumption, the different feelings have similarity as well as difference, in their alike occupying time. *Some* similarity therefore remains, even when we assume the feelings to be different in their material quality, and at the same time abstract from their continuity. But when we again attend, as we must, to the fact of their continuity, then what was similarity rises into sameness, inasmuch as one continuous time is common to all the different feelings. The sources of the necessity and uniformity of causation, which are also the explication of its two constituent notions, efficacy and rule, are thus closely bound up with each other in the most rudimentary process of consciousness. And these and these only are the answer to the questions,—Whence the regularity, whence the uniformity of nature?

Causation, then, as existing between objective phenomena or "things," is invisible so long as we look at them from the objective side; and becomes visible only when we take them subjectively, as conglomerates of conscious states. We must take causation *as we know it*, just as we must also take "things". Then and then only can their nexus be seen. But it is not the

nexus which the objectivist expected to see. Causation between "things" is just what causation between states of consciousness is, namely, a *relation* between portions of one ever-changing stream of phenomena, to which neither beginning nor end can be assigned. The notion of force, or influence of any kind, moving from or exerted by one object upon another, or originating the train of existences itself, vanishes entirely from this point of view, and is replaced by the relation just spoken of.

But force and influence, it must be added, are quite as invisible from the objective side, as they are from the subjective. If we conceive causation as objective force or influence, then we must regard the objects exerting it as *substantia*, and if we apply this conception to the whole train of existences, we must imagine a hyper-existent *substantia* to exert the original creative force or influence. And both are fictions of the imagination, which have no warrant in facts. On the other hand, the moving mosaic of consciousness affords, when analysed, a sufficient account of our whole notion of causation; and there is no further account possible of the moving mosaic itself, because every account that can be given must be a part of that mosaic, and therefore analysable in the same way.

Before quitting this part of the subject, I will notice a remarkable parallelism, which may throw some little light on the origin of our notion of force. What change is in consciousness, that motion is in physical matter; that is to say, it is its most fundamental state, as change is of consciousness, having no state of rest prior to it, all portions of matter being from the first in motion. The rest which we perceive empirically in matter is a result of motions opposed to each other, and is more properly to be called equilibrium, whether obtaining between masses, as in the balance, or between molecules, as in cohesion.¹

Nor is this conception forbidden by what is known as the *inertia* of matter. This, as it is often falsely understood, is, in the first place, not a percept but a concept, and one without any percept behind it. By this I mean, that, when we try to construe motion in thought, we do so by contrasting it with rest as its condition or correlative in *thought*; and this *thought* of rest we are then tempted to erect into a condition of real motion, calling it *inertia*, though there is nothing prior to motion in matter. *Inertia* properly understood, and according to Newton's explanation (Def. III.), is likewise a concept, but it is not conceived as the condition of motion. It is identified by Newton with *vis insita* or *vis inertiae*, and means that power of resistance (namely,

¹ See Professor P. G. Tait's Lecture on Force, in his *Recent Advances in Physical Science*, p. 359, 2nd edition.

to an external *vis impressa*, if exerted upon it) by which a body perseveres in its state *either* of rest *or* of uniform motion in a straight line, and which is always proportional to the mass of the body to which it belongs. This *vis insita* or *inertia*, says Newton, differs not at all from *inertia* itself, except in our mode of conceiving it; by which I understand him to mean, that the term *inertia* describes the very same thing as a property or attribute of mass, which the term *vis insita*, or *vis inertiae*, describes as an agency of mass, opposed to an external agency, the *vis impressa*.

Thus *inertia* is conceived as the antithesis, not of motion, but of change from any prior state of matter, whatever that state may be; where nothing whatever is asserted about the ultimate or elementary constitution of matter, but the prior state is taken to be, indifferently, either one of empirical rest or one of empirical motion. The change spoken of is between *successive* states of matter, whereas, if we understood it of its elementary constitution, (as we do, when we erect the correlative *thought* into a *real* condition), we should have to imagine rest and motion *simultaneous* in every single least particle of it, which is a contradiction. The elementary constitution of matter, if we take it in this isolated way, as we sometimes must, to clear it of cobwebs, includes motion only and not rest; but this involves action and reaction of its parts, and these cover the entire phenomena.

There is therefore no ground for identifying the concept of *inertia*, assumed as an aid to thought in construing either the phenomenon of motion, or that of action and reaction, with the empirical perception of rest; much less for attributing it to matter as its essential property, and as the condition of motion. If it indeed were so, then motion, not being original, would require an originating cause to account for its existence. But as it is, action and reaction, which involve motion, are, so far as we can see, involved in the very existence of matter. Matter in motion being assumed to exist, then the laws of physical nature are the laws of the action and reaction of portions of matter on each other; the motion is the efficacy, the laws are the rule under which it works; and the distinguishing any portions of matter as separate from one another necessitates our conceiving the motions, to which they are subject, as motions belonging to and residing in each several portion; whereby arises the imagination of a *vis insita* and a *vis impressa*, each *separated* motion becoming particularised as a force or agency exerted by each *separated* mass.

Action and reaction are, in point of range, co-extensive with the conception of potential and kinetic energy, and they cover the whole phenomena of matter; they *are* the phenomena. But

inertia, and *force* the cause of motion in it, are fictitious conceptions concerning the supposed elementary constitution of matter, a thing already covered by action and reaction. But they derive their origin, and therefore it is that they possess an appearance of validity, from legitimate conceptions of the same name, which are introduced as part of the machinery of thought in interpreting the phenomena of action and reaction.

We have next to see how a working definition of cause can be framed, supplementary to the analysis of causation, without running counter to any of the results just obtained. First, we must not include (though we need not deny) the notion of force or influence. Secondly, we must frame our definition so as to be applicable to events and objects in their perceptual character, as well as their conceptual, or in other words as considered by the judicial mode of enquiry as well as by the scientific. This requirement will be satisfied if we can omit the notion of invariability in the antecedents, without injuring the universality of the definition. In what quarter shall we look? We must go, I think, to the notion of *condition*, that notion which, as we have seen, admits of plurality; and in order to define a condition, we must look to the character which all conditions bear, namely, their negative, limiting, or *sine qua non* character. The sum of these will then yield the positive character of a cause.

It must be remembered also, that all inquiry into causation is a partial enquiry; it pre-supposes a whole to be already broken up into parts, the connexion of which with each other is what is sought for in causation. Anything considered either as a cause, or as an effect, is taken as an *unit* for the purpose of that consideration; its analysis into parts within its own limits is omitted. Still a conception of causation which could not be extended, so as to be applied within as well as without such an arbitrary distinction as this, when, as we have seen, the texture of consciousness is the same moving mosaic throughout, would be but an imperfect one. We always practically look at a thing as determined not only by what lies outside it, but by its own constitution as well. We look upon the parts of a thing as in some sort determining the whole. Whether the whole may also be held to determine the parts, and in what way, are further questions which it is not here the place to consider. They lead on into another branch of the subject, to Teleology, or the theory of Final Causes, which is not necessary for the consideration of causation as usually understood. And it will be remembered that the curtain of stars, in our illustration, was imagined to be only half unrolled.

Lastly, the conception of causation must be applicable to our knowledge of things, as well as to the things themselves.

Evidences may just as fairly be considered to be causes or conditions of *beliefs*, as events of events; they are in fact subjective events. Causes and conditions of this character are properly called *causæ cognoscendi*; while those of the objective order are called *causæ existendi*. Causes and conditions again, which express the analysis of a whole into its parts, as opposed to the relation of the parts to one another, are a third order of causes. In this order are united the objective and subjective characters of the two former, since we must always take a thing to be what its analysis, if complete, would make it *known as being*; and the causes belonging to it are therefore properly to be called *causæ essendi*. Strictly, no doubt, analysis is not causation; still usage has determined that the name and the notion of causation should be applied directly to that distinction, of whole and parts, which was the ground out of which by limitation it sprang, namely, as relation between the parts only.

Our definitions then may be taken thus:

Existendi.

Condition: Something without which another given thing would not exist.

Cause: That combination of its conditions upon the completion of which another given thing begins and continues to exist.

Cognoscendi.

Condition: Something without knowledge of which another given thing would not be known.

Cause: That combination of its conditions upon the completion of which a complete knowledge of another given thing arises.

Essendi.

Condition: Something without possessing which a given thing would not be what it is.

Cause: That combination of its conditions the completion of which is the complete analysis of the thing itself.

These definitions will, I think, be found to satisfy the requirements of the ordinary notion of causation, for they are based on the analysis of those rudimentary trains of consciousness, on which the validity of the notion itself depends. In the ordinary notion of causation is included a positive though always a phenomenal efficacy, not a noumenal one. This positive character of the efficacy is expressed in the definition of cause by the words "begins and continues to exist". It is absent from the definition of condition, where it is merely said that without the condition the effect *would not* exist. The combination of the negative conditions gives them their positive character; yet

without assigning to them a noumenal efficacy of production. The effect occurs as a fact, in immediate sequence to those of the conditions which are antecedent, and in immediate co-existence with those of them which are concomitant; and there is no room, so to speak, for a noumenal efficacy to intervene.

Are then such things as Force, Thought, Will, and Substance, excluded by this analysis from the kingdom of realities? Certainly not. They are phenomenal realities, and as such analysable like everything else. It is only their *explanatory* power over phenomena which the analysis takes from them. We know them no more, the moment they are assumed to account for phenomena in time, for that assumption changes their phenomenal character.

They may be useful, and two of them at least, Will and Thought, are in my opinion even indispensable to help us to formulate our ideas, when we tax our mental vision to the utmost, and try to penetrate as far as we can into the unknown regions of the universe. But this is very different from using them as an explanation of its entire mystery. There are greater things beyond them.

For a long time indeed they have served to round off systems of philosophy, to give a smallness and comprehensibility to the universe. But their best and truest admirers would be consoled for their disappearance, if they reflected that what we thus lose in the apparent comprehensibility of the universe, we gain in another direction, namely, in the richness and extent of the phenomenal universe which replaces theirs. They disappear as noumena existing *behind* phenomena, but only to reappear as ideals *in* phenomena beyond our means of direct investigation. Phenomena lose their supposed anchorage on noumena, but only to have it replaced by the perception that the anchorage is phenomenal also. Let neither friend nor enemy imagine that philosophy is the poorer, or its universe less mysterious, for the change. We no longer assume that *man's ideas* are the measure of all things, that the universe can be explained as the result of force, thought, will, or the substance which is their source,—provided only we add that these are noumenal, not phenomenal. We no longer imagine that we can see the universe from outside, or ask how it came to be there; we submit to look at it from within, where nature has placed us, and where the whole, of which we are a part, appears of infinite variety and magnitude and duration.

Any whole which we see only from the inside is an infinite from that point of view. The universe, which is that whole which we can by no possibility see or construe to thought but from the inside, is the infinite *par excellence*. It is a whole

because it is continuous, and everything else is a part of it. But this does not imply that it has the property, which other wholes have, of being limited on the outside by something not itself. It is a whole when considered in relation to its parts; it is infinite when considered in relation to perceptive consciousness.

It is to the remoter parts of this infinite universe that we refer those ideals which replace the noumenal anchorage. Whether we rightly conceive those ideals, whether our notions of them have *truth*, may be debatable. But of the *reality* of the ideals, that is, of the existence of *something* which we image by their means, there can be no doubt. Is light a fable because moles are blind? Is the universe finite because *we* are limited? The object of our subjective ideals is real, when we provide in thought for the error, imperfection, and ignorance, which our ideals contain.

The popular notion of reality is excessively misty. It is usually confused with the notion of truth; that is to say, we do not usually call a thing real, unless we imagine that we have got the true notion of it in our heads. The object of that supposed true notion we call the real, as opposed to the apparent thing. But in this way of understanding reality, reality vanishes; the notion is suicidal; of no single thing in the world have we the true notion. Truth itself is an *ideal*; and it is suspending reality upon an ideal when we suspend it upon truth. The popular notion needs much correction.

The point where reality and truth are in contact is the point where consciousness is in immediate contact with its object. And that point is the instant of presentative perception. Real existence becomes actual for consciousness at and for that instant; and such instants are the tests of truth in the notions which we form of real existence. Imagine a cog-wheel biting upon another wheel of indefinitely greater radius. The two wheels are in contact at every point successively, as each revolves. So is consciousness with regard to real existence or nature; always in contact with it at a single point, but for the *other* points in the two circumferences left to its memory and its imagination, until, or rather unless, they can be tested in their turn by actual contact. I say *unless*, because here the illustration breaks down; real existence is not finite, and cannot be adequately pictured by a closed circumference; no point in it ever returns again. Similarities and analogies, not strict identities, are the tests which presentation brings.

Now popular thinking tends, in its misty manner, to regard as non-existent whatever cannot be proved to exist in this or that definite way, whatever we cannot prove to be a true conception as well as an existing thing. Until it is *reduced into possession*,

so to speak, existence is regarded as non-existent. And in this way of thinking the popular mind is encouraged by the scientific. For the business of science lies with definite cognitions and definite existences. Those elements of knowledge which are universal and affect all existences alike, and consequently have no *specific* influence on phenomena, are for scientific purposes disregarded, and properly so. But it is otherwise when we come to examine the question between existence and non-existence, and to determine the limits of the former. The possibility of our reducing into possession a particular conception is not the condition of our possessing the knowledge that it exists. For this purpose it is sufficient if we possess an indefinite knowledge of what it is, and of its connexion with other assured parts of our knowledge. It is a *chance in action*, (as lawyers would say), which may be of great value to those whom it concerns.

Of this nature are the ideals under which we picture that real existence which lies beyond the reach of knowledge based on sense-perception alone. Whether it is truly pictured by us or not, it is at any rate a part of the chain of conditions, the same endless chain of causation, of which our visible and material world is a part. It shares its mysterious property of ceaseless change circumscribed by changelessness; since that is common to all objects which perception offers to thought. Room is left within the unchanging infinite for the infinite variety and contingency of natural processes, and among these for the changes wrought by human choice and action, and their unforeseeable issues. Just as it is with the material world in this respect, so it is with the invisible world beyond it; *this* is not a kingdom of necessity, *that* a kingdom of change; but both are parts of the unchanging infinite, both are subject to variety and contingency in their processes of evolution and development. And it is possible that the development and perfecting of human organisms may depend on modes of brain activity, of which a conscious converse with the existence pictured by our ideal world is the only evidence, and for the purpose of effectuating which it is the only guide.

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