ON

THE DEVELOPEMENT

OF

THE UNDERSTANDING.

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LONDON:

TAYLOR AND WALTON,

UPPER GOWER STREET.

1848.

Printed by J. & H. COX (Brothers), 74 & 75, Great Queen Street,
Lincoln's-Inn Fields.

ADVERTISEMENT.

THE word *spontaneous* has been inadvertently used in the following pages in a sense that may perhaps mislead those who are not familiar with the writings of Cousin and his school, to signify instinctive or involuntary action; action, as it were, spontaneous in the immediate organ, and not proceeding from the deliberate will of the agent.

The reader is also requested, at page 53, line 2, to substitute the word 'apprehension' for 'manifestation.'

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ON THE

DEVELOPEMENT OF THE UNDERSTANDING.

I.—*Scope of the Work.*

THE history of Physical and Mental Science exhibits a striking contrast in the mode in which these great branches of philosophy have advanced towards maturity. The physical sciences are almost exclusively the growth of modern times, while the philosophy of mind attained to a high degree of cultivation at a very early period of the civilized world. Nor is it difficult, to this extent, to account for such an order of developement. Many conditions were necessary to the successful prosecution of the former branch of study, to which there were no corresponding impediments in the case of the latter.

A numerous class of natural phenomena could never have been observed without the use of

instruments demanding a more advanced state of the mechanical arts than was possessed by the ancients: other classes required a more extensive knowledge of the surface of the globe and its productions. In addition to this, a large and most important share of the results of physical science are obtained by the application of methods of abstract calculation, totally unknown to the ancients, —instruments, as they may be considered, by which the reach of the understanding, in the sphere of their action, has been as much extended in modern times as that of the senses by the instruments invented for their assistance.

The phenomena of mind, on the other hand, have always lain open to inquiry: they need no expensive apparatus to observe, no abstruse calculation to turn the observation to account. The intellect of man was as vigorous, his faculties as fully developed, in the days of Plato as in our own.

There is, therefore, as little reason to be surprised at the advanced position of mental philosophy in the classic times, as at the backward station of the physical sciences.

The contrast to which the reader's attention is directed is that between the progress of the two philosophies since the revival of learning, when the true mode of scientific investigation began to be practically understood, and the conditions

above mentioned as essential to the successful prosecution of the study of nature were gradually fulfilled. Since that period the course of physical knowledge has steadily advanced, as the regions of nature were successively unfolded before the eye of the inquirer; and although a false system might for a while dazzle by its brilliancy, and national partialities mislead the disciples of particular countries, yet there was now an acknowledged test whereby to try the truth of every theory,—a test becoming every day better understood, which was sure, in the long run, to overcome all temporary prejudices and causes of error. Thus divisions were gradually removed, so that at the present day the great body of physical doctrine is common to the whole scientific world.

The case is widely different in metaphysical speculations. The schisms of the moderns are as numerous as those which divided the ancient schools, no man having hitherto been able to support his opinions by arguments so cogent as to silence all opponents, or even to propose a system of arrangement sufficiently founded in reason to obtain very general acceptance with parties differing upon isolated points. The history of metaphysics, as well before as after the promulgation of the Baconian philosophy, exhibits a series of disputes, hotly contested for a while, and subsequently falling, for the most part undecided, into

neglect, to make room for others more interesting to the new generation.

If we inquire into the cause of so great a contrast, we shall find that the successful cultivation of every branch of physical science has been founded on the conception of powers,* operating according to definite laws, and thereby giving rise to the phenomena which form the subject-matter of the science. A given phenomenon will then be accounted for in a satisfactory manner, when it is shewn to be the regular effect of a known power, and each step in advance, in prosecution of the science, will consist in thus accounting for a new class of phenomena, in which the operation of the power in question has hitherto not been recognised.

The force of gravity is originally made known by the weight of bodies and their behaviour when falling freely through the air, and a great step was taken in the science of Dynamics when the force manifested in these phenomena was found to account for the curvilinear motion of projectiles. It was a repetition of the same step on a grander scale, when Newton shewed that the same force which brought bodies to the ground at the surface of the earth, was precisely that which would be required to retain the moon in her orbit, supposing its in-

* The view here taken of the object of physical inquiry, is derived from the lectures of the Rev. A. J. Scott, delivered at the Marylebone Institution in the spring of 1842.

fluence to extend to the lunar regions with an intensity diminished in proportion to the square of the increased distance from the centre of the earth; and thus the sphere of gravitation was continually extended, until it was made to account for the whole of the motions of the heavenly bodies, however irregular they might appear in the first instance.

In geology the observation of the changes taking place in the constitution of the earth (as far as we can penetrate it), in the climate, the proportion of the sea and land, in the distribution of the races, animal and vegetable, by which it is inhabited, makes us acquainted with certain powers of nature, continually effecting changes of the foregoing description; and the object of the science is to shew how the present condition of things may have been brought about by the operation of the same powers in by-gone ages.

In like manner it might be shewn, that the same system has prevailed in the cultivation of all the other branches of physical science. In the cultivation of mental science, on the other hand, we can discern no uniform plan of procedure, nor any settled notions of the kind of information which ought to be the object of research, beyond a general impression that all things of an immaterial nature should be comprehended in the inquiry.

It is evident that Augustine, in the passage so

often quoted—"Quid ergo est Tempus? Quis hoc mihi facile explicuerit? Si nemo a me quærat —scio. Si quærenti explicare velim—nescio,"— is looking for what, if the subject were of a material nature, would be a purely physical account. He is conscious of a distinct conception of what he means by *time*; but is totally unable to elucidate that idea by reference to other things of a similar nature. He finds no superior genus including Time together with other objects, no laws to which it is liable in common with them, and no kind of action that it is capable of suffering from them.

The essential character of metaphysical inquiry ought, in truth, to be placed, not so much in the immaterial nature of the subject discussed, as in the point of view in which it is brought under the attention of the student.

Every object of thought may be considered in two lights.

In the first place, with reference to its relations with other objects.—Of what is it composed? What are the actions which it may exert upon other objects, or to which it is liable from them?

And secondly, with reference to its relations with the thinking being himself.—By the exertion of which of his faculties, by what train of mental action is it discerned amidst the multifarious scene, which is in a constant course of representation in

the region of sense, or among the objects already developed in the understanding?

By following out the latter branch of inquiry, we shall construct the fabric of mental science upon a plan precisely analogous to that which has proved so successful in natural philosophy; the powers of which the operation is to be traced being here the various elementary modes of acquiring information belonging to man; and the phenomena to be accounted for, the universal stock of thought with which his understanding is stored.

The explanation on such a principle of our thoughts, knowledge, and belief, was the original object of the Essay on the Human Understanding,* and it was, perhaps, the enunciation of a definite purpose, the practical nature of which was readily comprehensible by the unlearned, that tended as much as any thing to the early and lasting reputation of that work.

"It shall suffice," says Locke (c. 1, § 2), "to my present purpose to consider the discerning faculties of a man as they are employed about the objects which they have to do with. And I shall imagine I have not wholly misemployed myself in

* Sans doute ce n'est pas Locke qui a le premier institué la question de l'origine des idées; mais c'est Locke qui, le premier, l'a élevée à la hauteur de la question philosophique par excellence, et c'est depuis Locke qu'elle a resté à ce rang dans son école.—*Cousin, Hist. de la Phil.* xvii.

the thoughts I shall have on this occasion, if in this historical plain method I can give any account of the way whereby our understandings come to attain those notions of things which we have." And shortly afterwards, he states his purpose more formally.

"First, I shall inquire into the *original* of those *ideas*, notions, or whatever else you please to call them, which a man observes and is conscious to himself he has in his mind, and the ways whereby the understanding comes to be furnished with them.

"Secondly, I shall endeavour to shew what knowledge the understanding hath by those ideas, and the certainty, evidence, and extent of it.

"Thirdly, I shall make some inquiry into the nature and grounds of faith or opinion, whereby I mean that assent which we give to a proposition as true, of whose truth we have no certain knowledge. And here we shall have occasion to examine the reason and degrees of assent."

The method traced out in the foregoing passages, has of late been found fault with as if the project of the author were a mere historical inquiry into the original acquisition of ideas, and the chronological order of their developement in infancy and savage life; or as if the precedency given to the question of origin implied a carelessness of the actual condition of our ideas and their logical relations. Nothing can be more unfounded than

these objections. It was no part of the project of Locke to attempt any thing like a natural history of the infant's mind. It was matter of indifference to him in what order any two ideas were originally conceived, provided they were neither of them instrumental in the developement of the other. He saw that the only final answer to the question, what a certain idea *was*, must be an exposition of the mode in which it is conceived; that no farther account can be given of the nature of *sound* or of *colour*, beyond the fact that it is that which is perceived by the ear or by the eye; and that all the logical relations of a subject must be brought most clearly to light by an authentic history of the process of conception, founded on the consciousness of what is going on in our own mind, and aided by such rare illustrations as can be drawn from the observation of infants or other intelligences in exceptional circumstances.

Unfortunately Locke has not carried out his system with the rigour necessary to wring from it an authoritative decision in many of the great questions respecting the foundations of knowledge; but it would be a great dereliction of his spirit, if we allowed ourselves to be deterred by the authority of his name from attempting a different solution of the problem wherever we fail to find satisfaction in that which he has left us.

The object of our present endeavour will accord-

ingly be to indicate faculties and motives to action belonging to the constitution of man, by the exercise and under the influence of which he might be led from the first dawn of his intercourse with nature to the knowledge of matters such as space and form, body, necessity, power, cause, and the like, that have ever composed the main subjects of metaphysical inquiry.

In this pursuit we shall seek our safety in a circumstance which has sometimes been complained of as a difficulty in the way of researches of this nature; viz., the necessity of working in these refined speculations with the rough tools of ordinary language.

The thoughts for which we have to account must be expressed in some shape or other in the rudest languages. The faculties to which we appeal must be exercised by the most uncultivated understandings. We shall accordingly endeavour to trace the one from the other as much as possible in the language of ordinary life, when our thorough familiarity with the meaning of what we are saying will be our best security for the immediate detection of any lapse into truism or positive error, too often concealed by the use of technical language or vague generalities not easily brought to the test of agreement with actual experience.

II.—*Sensation and Thought.*

The experience of the five senses must occupy an important position in the foundation of every system professing to account for the origin of thought.

The exercise of these faculties requires no effort on the part of the sentient being himself. If we imagine a human being at the stage antecedent to the appearance of a single phenomenon within the sphere of his consciousness, and prick him with a pin in any part of his body, or burn him with a hot iron, he will manifestly feel pain; if we place a candle before his eyes, he will unquestionably see the light.

Here, then, we have an ultimate fact in a metaphysical point of view; for, whatever insight the physiologist may obtain into the mechanism of organic action, however striking may be the adaptation of the eye to form a picture upon the retina, or of the ear to receive the most delicate vibrations of the air, yet the sentient being himself has no direct knowledge of these corporeal modifications; and therefore they lie without the scope of the metaphysician, who is only concerned with the phenomena of his own consciousness. He will accordingly take his stand upon the fact that we become sensible, without any effort of our own, of

colour, sound, taste, smell, and feeling, on the subjection of the proper organ to certain material influences.

The exercise of the senses in the mature condition of the understanding is so universally accompanied by some degree of thought, that it is extremely difficult to picture to ourselves the condition of a being alive only to sensation, but as yet entirely destitute of thought. It is not, however, necessary that we should form a very complete notion of such a state of being; it will be sufficient if we come to a clear understanding of the part performed by each of the two faculties in the actual apprehension of things.

It must not be supposed that sensation and thought are distinguished as having reference to the present and the absent respectively. We think of the object actually before our eyes, as well as of that which is absent in time or space. In sensation, indeed, the attention is exclusively directed to the immediate phenomenon of the present instant. The function of the faculty is exhausted in introducing us to that which is, without comparing or connecting it with what is other than itself. In thought, on the other hand, we deal as well with the phenomenon of the present instant, as with the stores laid up in the memory by past experience. We gather up the phenomena displayed during a certain course of sensation, and regard them as the

manifestation of a single *thing*—as the clothing in which the object of thought is exhibited in actual existence, or fundamentally represented in the memory or imagination.

The question then arises, what first gives rise to thought? How is it that the attention is originally diverted from the phenomenon of the present instant to the dormant stores of memory? How are we to be roused from absorption in mere sensation to the exercise of thought?

To me it appears that the transition from sensation to thought is accomplished in the impression of *resemblance*.

In the mature condition of the mind, the sight of a face bearing any considerable resemblance to one antecedently known, has a tendency to bring the latter spontaneously to our recollection—to make us *think* of the face to which the resemblance is felt.

We recognise in the lineaments actually before our eyes a character that spontaneously engages our attention, and offers itself as the object of a faculty distinct from mere sensibility to form and colour. We discern something in the actual features that leads us into the region of memory—prompting us to an effort of recollection, which finally succeeds in bringing to mind, with more or less distinctness, the face formerly apprehended, as

the original type of that which appears familiar in the features before us.

Now as this perception of resemblance, even in the mature condition of the understanding, is in the first instance a spontaneous act, there is no reason why it should not equally take place with a being in the purely sentient state. We have only to suppose a certain course of phenomena to be brought before his notice with sufficient frequency, and sooner or later it must appear to him in a different light from a course of perfectly fresh phenomena. He will discern in the recurring phenomena something in addition to the bare sensible elements of the display; something which, instead of occupying his merely passive attention in the region of sense, will present itself as the object of a totally different faculty, inciting him to active pursuit in the region of memory; where at last he will recognise the same object of thought clothed in the phenomena experienced on some former occasion, as it now is in those of actual sense.

This recognition in the experience of the present of something in common with the past, is sufficient, as it appears to me, to account, not only for the comprehension under a general notion, of objects already conceived under separate characters (as of a sheep, a horse, an ox, under the notion of qua-

drupeds), but for the original act of thought, by which the continuous succession of phenomena taking place in the region of sense is cut up into the world of distinct *things* which we recognise around us.

The first impression of resemblance made on the sentient being from without will, in his eyes, separate the phenomena in which the resemblance is discerned from the surrounding world; presenting to him in the group so defined an example of the same *kind* or mode of being that has already, on some former occasion, passed within the sphere of his experience. He will recognise, in the phenomena before his eyes, a *thing* of the same kind with one that has formerly been within view.

In this apprehension of a definite *thing*, it will be seen that faculties of two entirely different classes combine their functions. The faculties of direct information make us acquainted with certain sensible phenomena, as taste, smell, form, bodily substance, &c., while the recognition in these of the character stamping the whole as a thing of a certain kind, is exclusively the office of the understanding, comparing phenomena witnessed on different occasions, and discerning that in which they mutually resemble or differ from each other.

The proper object of the understanding is thus the principle in things by which they impress us with the sense of definite resemblances; and accordingly, if

the same articulate sounds be associated in the minds of all men with the various modes of resemblance or kinds of being discerned in nature, we shall need only to pronounce a certain word in order to raise the corresponding thought in the mind of our fellow-men,—the articulate sound standing in the place of the associated resemblance, and becoming the name of every thing in nature in which that resemblance can be recognised.

The theory of language which has hitherto met with most general approbation, is nearly the converse of the foregoing. It was supposed by Locke, that as all our ideas were derived from the perception of particular existences, our ideas must necessarily, in the first instance, be particular also,—that is, accompanied by certain circumstances of time, place, or other accidents. But as it was plainly impossible that each such particular idea should have a name, it was necessary to bring forward some principle on which language could be generalized, and accordingly (B. II. c. 11, § 9) we are informed that "the particular ideas received from particular objects are made to become general by considering them as they are in the mind such appearances, separate from all other existences and the circumstances of real existence, as time, place, or other concomitant ideas;" or, as our author elsewhere (B. III. c. 3, §§ 6, 7) explains himself, "by abstracting from the individuals of a species

that which is peculiar to each, retaining only that which is common to all."

The currency of such a theory is a proof how little it has been the custom to bring metaphysical doctrine to the test of practical experience. For who can suppose that a notion of a leaf, for instance, or a hair of the head, is formed by a minute acquaintance with individual leaves or hairs, and subsequent comparison and rejection of the points in which they differ from each other? Is it not manifest in all such cases, that the general notion is formed from the direct recognition of a peculiar mode of resemblance in actual existence, long before our thoughts are particularly directed to any single individual of the class characterized by such resemblance?

The formation of general notions has been very clearly traced by Thomas Brown to the recognition of resemblance in the objects of perception. "We perceive two or more objects," he says (Lect. 46), "we are struck with their resemblance in certain respects. We invent a general name to denote this feeling of resemblance, and we class under this general name every particular object, the perception of which is followed by the same feeling of resemblance, and no object but these alone." "We perceive objects, we have a feeling, or general notion of their resemblance—we express this notion by a general term." At the same time he supposed

the perception of particular objects to be a totally distinct operation, remarking in the same lecture that "the feeling of the relation of similarity is no part of the *perception* or *conception* of the separate objects which suggest it. It is a feeling of a different species, absolutely new, a relation and nothing more; and the general term which is not expressive of what can strictly be termed a conception is invented to express all that multitude of objects which, however different in other respects, agree in exciting one common feeling of relation—the relation of similarity."

The obstacle in the mind of Brown which cramped his view, and led him to denote the working of his principle, by the name of generalization, appearing to confine it to the formation of a restricted class of notions, was the ordinary doctrine that the effect of every act of perception is to stamp an image on the mind, and thus to add to the stock of particular notions which constitute the original furniture of the understanding.

There is in reality no class of notions which can properly be designated as *particular*, in opposition to *general* notions. The proper object to the understanding or faculty of thought—the kind or fundamental substance, the discernment of which in actual existence, constitutes the perception of a particular thing—is, in itself, essentially general. The notion of Julius Cæsar does not differ in

essential character from that of man, but only in the comparative range of the circumstances in which the subject in each of the two cases lies open to actual observation.

By the view here taken of perception, we cut through the meshes of the great *ontological* problem respecting the knowledge of real existence, with which metaphysicians have laboriously entangled their own footing, while they have the greatest difficulty in making the unlearned sensible of the impediment. The whole fabric of our knowledge (it is argued) must ultimately rest upon Sensation, including in that term the exercise of every original faculty of direct information. But what is a *sensation* but a modification of the consciousness of our own being? And if so, how can we be justified by the experience of sensation in stepping beyond ourselves, and inferring the existence of an external world?

The fundamental fallacy in this line of argument, from the consequences of which, when once admitted, there is no escape, is the position that the immediate object of knowledge in actual apprehension is composed of our own sensations. The expression is directly opposed to the common sense of mankind.

Sensation is not a mere modification of the consciousness of *self:* it appears far earlier as the channel between the understanding and the ele-

mentary phenomena of nature. The sensation of *sound* or of *colour* originally consists in the manifestation of a positive phenomenon, wholly independent of any thought of the percipient himself, which is not developed in his mind until long after he has a distinct conception of much of the surrounding world. But even then, the knowledge of his own existence—the consciousness that it is *he* who perceives, does but introduce a new element into the fact of perception, without destroying the fundamental nature of the act, which still consists in the manifestation of a substantive object, with the additional consciousness of a distinct being, to which the object is displayed.

The ultimate basis of knowledge then is not the consciousness of certain modifications of *self*, but the direct revelation of objects in actual existence; and having shewn how that revelation is accomplished in *perception*, it will remain only to account for the external character of material things in relation to ourselves. To the problem brought within such limits an answer will be given in the sequel, by tracing out the path, by which, among the objects discovered during our intercourse with actual existence, I come to recognise myself as a being of a totally different nature from any of those comprehended in the material universe. We shall then have accounted for the knowledge of solid extended things, distinct from ourselves,

and endowed with various sensible qualities; and what higher degree of reality than this is it possible to imagine?

The direct perception of things is in such entire accordance with ordinary language and all our practical convictions, that the sufficiency of the evidence it supplies of actual existence could never have been called in question, had it not been for difficulties connected with the notion of substance, for the direct acquisition of which there was no recognised channel in the current systems of philosophy. It was supposed that substance, or the principle of real existence, was not known by the direct action of any of our faculties, but only inferred from our own incapacity of conceiving sensible qualities without a subject supporting them. Hence it naturally followed, that the real existence of things (which plainly depended upon that of the substance uniting in one and supporting their sensible qualities) was in like manner matter of inference only. It was the substance that was supposed to constitute the inmost being of the thing; and if the reality of the substance were matter of question, it was impossible to save the reality of the thing itself from the attacks of scepticism.

But in our system the entire perception of the substantive thing is a direct intuition, by the united operation of the understanding and the senses; and

if the thing perceived be resolved into *substance* and *quality*, all that is implied by the use of these correlatives is, that the substance is the fundamental object of the understanding, immediately discerned in the undivided scene of sensible experience, while the quality is discerned by a secondary act in a distinct object of thought already individualized and brought within the grasp of the understanding by a different character.

There is no solid ground for the opposition between *substance* and *phenomenon*, which are sometimes contrasted together. It cannot truly be said that it is impossible to experience a sensible phenomenon without the reason immediately suggesting the notion of a substance supporting it. The understanding rests with perfect satisfaction in the contemplation of either sound or colour, without requiring further support. What does the clown imagine the substance of a flash of lightning or a clap of thunder to be? It is true that experience teaches the scientific man that all sound proceeds from some material cause; but the bell is no more the substance of the sound which it gives, than is the knife of the pain we feel in cutting our finger.

Where there is no reference to any particular quality, the substance of the thing is for the most part not distinguishable from the thing itself. Thus colour is the substance of visual, sound of

audible phenomena, and the phenomenon displayed in toothache has no other substance than that made known by the bare sensation. The tooth itself has as little claim to be considered as the substance of the pain, as the eye has to be treated as the substance of the visible universe. The real nature of the relation between the sensible phenomenon in toothache, or similar affections, and the bodily organ by which they are felt, will be explained at a subsequent stage of the inquiry.

In point of fact, the notion of substance, when not expressly opposed to quality, rarely occurs except in relation to body, insomuch that the terms body and substance are frequently used as synonymous expressions. Thus we speak of gold, earth, water, &c., as substances of different kinds; but it would sound strange to speak in the same manner of colours, or sounds, although these phenomena are unquestionably as substantive objects of thought as body itself.

The reason of this peculiarity will also appear at a future stage, when we have made ourselves familiar with the nature of the process by which we attain to the conception of *Body*.

III.—*Number.*

THE recognition of resemblance between objects, necessarily involves the capacity of discriminating that in which they differ, and hence the apprehension of a second object will frequently give rise to the conception of qualities, both of first and second, which could not have been distinguished independently in either.

It is plain, that a being who had only experienced sounds pitched in a single note, could have no idea of the quality of tone or musical pitch; but let him hear a second series of sounds pitched in a higher key, and he will immediately recognise in them a quality in which they differ from the former series. He will call the second series of sounds *shrill*, or if he set out from the opposite quarter and consider the second series as the standard of ordinary sound, he will conceive the former series as consisting of *base* or *low* notes.

Next let him experience a still shriller sound, he will recognise the difference between this and the notes of the second series, as an object of the same kind with the difference between the second series and the first. He will therefore conceive the third note as *high* or *shrill* with respect to those of the second series, or the latter as *low* with respect to the third. In other words, he will recognise the difference between the notes of the first and third

series as including the whole difference between the first and second, and more of the same kind of difference in addition. Thus he will conceive the ideas of *high* and *low* notes as relative qualities admitting of degrees of *more* or *less*.

In nearly the same words we might account for the relative qualities expressed by the terms, *bright and dark*, substituting only the sense of sight for that of hearing.

To such cases as these, the idea of number bears a close analogy. It would be as impossible for a person whose attention had never been directed to that which is more than one, to separate the idea of *unity* from any given object of thought, as it would for a person, whose whole experience had been confined to a single note, to detect in it the quality of musical pitch, or for a person born blind to form a notion of the phenomenon of black or darkness. It is only on apprehending a second object that we consider things as either *one* or *two*.

The *relative* character of the idea of unity, was entirely overlooked by Locke, in accordance with the faulty views he entertained respecting the developement of our ideas by the process of *abstraction*. He teaches (B. II. c. 16, § 1) that "every object our senses are employed about, every idea in our understanding, every thought of our minds brings the idea of unity along with it;" that

"whatever we can consider as one thing, whether a real being or an idea, suggests to the understanding the idea of unity." (II. 7, 7.)

On so imperfect a foundation, it is hopeless to look for much solid instruction respecting the conception of number. We learn only that number is a *mode of unity*, and that "by adding one to one, we have the complex idea of a couple, by putting twelve units together we have the complex idea of a dozen, and of a score, or a million, or any other number." (II. 16, 2.) That is to say, the ideas of number are acquired by the act of *counting*; but what is *counting*, but the very operation, the nature of which is the entire matter in question in the metaphysics of number?

We have said, that a being whose attention had never been directed to what is more than one, could never have conceived the notion of unity. But let such a being apprehend a second object, while the impression of a former one is still fresh in his memory. The apprehension of the second object will be accompanied by the recollection of an object of the same kind apprehended on a certain previous occasion, when the apprehension was accompanied by no such recollection.

The relation between objects, thus distinguished from each other, is that which we express by the terms *first* and *second*, the significations of which

will thus be simultaneously developed in the understanding.

In the same way a third object is characterized by the recollection of having previously apprehended a second object of the same kind, and so on with the higher numbers *ad infinitum*; the numerical rank of the last individual being distinguished by a mental reference to each successive occasion on which an object of the class enumerated has been brought under notice.

After enumerating in this manner a succession of objects, we may bring the whole at once before the mind, as a class or complex object of thought which may obviously be designated by the character common to each individual of the class, and the numerical rank of the one last enumerated.

It appears, then, that the numerical relation may be applied to distinguish as well the rank of an individual in a class, as the degree of complexity of the class itself; in the former case it is designated by the ordinal numbers first, second, third, &c.; in the latter, by the cardinals one, two, three, &c.; and as we are much more frequently, as well as earlier, concerned with the numbers of a class, than with the numerical order of the individuals in it, the cardinal numbers are expressed by the radical, the ordinal by the derivative forms of the numerals.

We have thus a series of fundamental definitions.

(1.) One and one are two.

(2.) One and one and one are three.

(3.) One and one and one and one are four.

And so on, from which may be demonstrated the whole fabric of arithmetic.

It will be seen from these definitions how rapidly the ideas of number increase in complexity as we advance in the series, and how impossible it must be to retain completely before the mind any but the very lowest. If we consider how complicated a process must be brought to mind, in order to decide whether a certain object is the fifth or sixth of its kind, we may easily understand the slowness of children in acquiring distinct ideas of number, and may readily believe that it would be entirely impossible to distinguish even comparatively low numbers, were it not for the aid of the artificial memory supplied by the names of the numerals. When once we are familiar with the order of the ten digits, and the method of combining them in decimal arithmetic, we proceed in the enumeration of a series with no greater stress upon the memory than the mere recollection of the numeral last told off; while without such assistance, it would be necessary in keeping count of each additional individual to pass the whole of the preceding series in review.

The process of counting is evidently one to which there is no natural termination in the upward

direction. However great may be the number of things enumerated, it is always possible that there may still remain an indefinite number of the same kind unenumerated. It is always as easy to add one more to the count, as it was at the very first step in addition ; and the case is conceivable in which, for however long a period, and with whatever rapidity the process of numeration may be carried on, no appreciable approach will yet be made to the end of the series.

A number in this manner baffling our powers of computation is said to be *infinite*, and the negative nature of the idea is witnessed by the best possible evidence, viz., the form of the name given it by those who had occasion to use the term unhampered by any theory as to the origin of the conception.

A positive notion of any thing appears to me to comprehend the consciousness of being able distinctly to bring before the mind the entire process, by which the thing itself is apprehended in actual existence. Thus we have a positive notion of all finite numbers, because, although we are unable to retain at once before the mind, a perfect image of any but a very few at the bottom of the series (of which we may be said to have an explicit conception), yet we are distinctly conscious of a process at our command, by which we can rise to any height in the scale, distinguishing each step as we proceed from its immediate neighbours, with the

same accuracy as at the commencement of the operation. We have thus a positive, though an implicit, notion of the higher numbers, as an explicit one of a few of the lowest.

On the other hand, since our notion of infinite number is founded on the impossibility of accomplishing the process which is required in order actually to ascertain the numerical character of an infinite series, the supposition of a positive notion of infinity would imply the capacity of bringing completely before the mind in thought a process intrinsically incapable of actual accomplishment.

When it is said that the ideas of the finite and the infinite are reciprocally dependent on each other, and are equally necessary for the purpose of limiting and defining each other, it is forgotten that the different degrees of the finite quality effectually serve to define each other. If the idea of the infinite in number be a necessary concomitant in the mind of man of the idea of finite numbers, why is not the conception of every other quality admitting of degrees of more or less, such as *high* or *low* in musical pitch, *bright* in visible, *loud* in audible phenomena, &c., carried with equal certainty to the height of infinity?

IV.—*Body and Space.*

The origin of our notions of space and form is very slightly touched in the Essay on the Human

Understanding. The author simply remarks (II. 13, 2) that the idea of space is acquired by the sight and touch, but how the same simple idea could be derived from the exercise of two distinct faculties, or how far the touch, as understood by him, could be considered as an elementary faculty, it did not occur to him to inquire.

A closer examination of the mental phenomena made it evident to the disciples of Locke, that the faculty of sight was no essential element in the matter, inasmuch as those who are born blind are remarkable for their delicate appreciation of form, and are known to be as capable of geometrical reasoning as other persons.

It was also observed that it is impossible, by the merely passive sense of touch, to distinguish the shape of a small object in contact with any part of the body, as for instance the shape of a small cube pressed against the back of the hand held flat upon the table; and thus it was found necessary to admit that the knowledge of space cannot be derived from the sensations of touch alone, independent of the influence of muscular exertion.

On the other hand, a logical difficulty seemed to forbid the obvious supposition, that the ideas in question are acquired by the motion of the hand or other organ. The knowledge of the movement of such an organ, it was argued, plainly involves the knowledge of the organ itself, that is, the know-

ledge of a body of certain form and size and place; and thus the attempt to account for the original conception of form and magnitude, from the notion of the hand, seemed to end in a hopeless paralogism. It is substantially the same difficulty from which Cousin attempts to escape by the distinction so much insisted on between the logical and chronological order of our ideas. The utmost, he says, that can be attained by touch (including the power of muscular action) and sight, is the knowledge of body. (Hist. de la Phil. iii. 169.) But all bodies are endowed with a certain form and size—they occupy a certain place. The idea of space then (in which those of place and form and size are comprehended) is logically involved in that of body, or, in the Kantean language, space is the form of our perceptions of body, as of all external phenomena. Chronologically, on the contrary, the idea of body is antecedent to that of space. We have no idea of space until we have become acquainted with body, but simultaneous with the first apprehension of body the idea of space enters the mind, by a principle or law of the understanding, in virtue of which we necessarily judge that every body is comprehended in space.

The doctrine of this opposition between the logical and chronological order of correlative ideas is applied by Cousin in many other cases besides that of body and space; the conception of the

logical antecedent, in the case of each pair of correlatives being accounted for on the supposition of a separate principle of necessary judgment. It is not pretended, however, that we have any knowledge of such a principle, except as exemplified in the particular circumstances which it is made to account for; to what therefore does the explanation amount beyond an indication of a common difficulty in all these cases, and an avowal of ignorance of the means of surmounting it?

The fallacy arises from neglect of the directly perceptive function of muscular exertion. When I press my hand against the table, I feel the solid substance of which it is composed, as a positive object of thought, as completely independent of any logical reference to the notion of my hand, or of the motion prevented from taking place by the interposition of the table, as is the thought of colour or of sound, of any logical reference to the mechanism of the eye or the ear. It is no doubt true, that as soon as my attention is directed to the instrumentality of my hand in the matter, I recognise the substance of the table as that which offers resistance to external pressure; but a careful examination would, I believe, shew that it is the idea of solidity that is involved in that of resistance, and not *vice versâ*—that solidity is the original, resistance the derivative conception.

The apprehension of body appears to me to be

an immediate act of perception, in which the muscular exertion of the arm or fingers is a merely physiological condition, analogous to the principle upon which the affection of the eye by the rays of light, or of the ear by the undulations of sound, is instrumental in the perception of the phenomena of sight or hearing. The difference is that in the latter case the organic condition, instrumental in the act of perception, is the effect of forces external to the percipient being—forces, of the immediate action of which he is entirely unconscious; while the essence of the condition in the apprehension of body, is the exertion of his own muscular power by the percipient himself. Thus it is that we are conscious, in the actual perception of *body*, of the condition instrumental in the act of apprehension, and we accordingly are apt to suppose that the thought of the means is an essential element in the conception of the object apprehended; or, in other words, that the idea of body is logically dependent on the idea of resistance. It is evident that the ground of such a conclusion is totally removed by the admission of muscular effort as a condition physiologically essential to the apprehension of body; and there will then be no difficulty in supposing the original apprehension of body to take place antecedent, as well to the first acquaintance with our own corporeal frame, as the first *voluntary* exercise of muscular power.

It is well remarked by Cousin, that voluntary action in every case must be preceded by the spontaneous exercise of the same faculty; the characteristic of voluntary action being the previous conception of the act to be performed, while the capacity of forming that conception can only be acquired by the experience of the action itself. We are born with no instinctive knowledge of our own anatomy, or of the various kinds of muscular exertion in which our bodily frame can be employed; and if we were not so constituted as to be roused to spontaneous action by influences operating otherwise than through the medium of the understanding, we should perish from ignorance of the exertions necessary for our own preservation. The life of the infant would end at the moment of birth, if the function of respiration were intrusted to his voluntary efforts; but happily there is no need of any previous comprehension of the advantage to be gained, or of the mode of proceeding, in order to teach him to breathe; provision being made in the original constitution of the body for the continued exercise of the lungs during the whole of life, even in periods of entire unconsciousness on the part of the agent; but whenever his attention is actually directed to the exertion, he has the testimony of his consciousness, that breathing is his own act, and it thus affords us the most familiar instance of spontaneous action.

Of a similar nature is the principle by which the infant is led to suck, the first time the breast is pressed against his lips, or to close his hand upon an unseen finger placed within his grasp. On the other hand, we see him instinctively withdraw his limb from a burn or irritation of a painful nature, at a period when, as remarked by Sir Charles Bell, he makes no attempt with his hand to ward off the most painful operation from a different part of his body, shewing plainly, that he has no objective knowledge of the member in which the pain is seated. In like manner we see the horse twitch the skin of his back in the place where a fly has settled, of which he can have no other knowledge than that conveyed by the sensation.

From these and similar facts, it would appear, that there is a physiological connection between the faculties, in virtue of which the sensations of touch operate as motives to muscular exertion, instinctively inciting the sentient being to spontaneous action in pursuit, in resistance, or avoidance of the material cause of the sensation, and guiding him at a subsequent period in the voluntary execution of the like purposes.

Now let us trace the operation of this principle upon a being as yet without conception of body, or thought of himself, whose life has hitherto been confined to the passive experience of his five senses, and let us suppose his curiosity to be excited by

the sensation arising from the accidental contact of his finger with a foreign body. In the same way, then, that the endeavour to obtain a more distinct apprehension of a bright object appearing obliquely in the field of view seems sufficient to give rise to an instinctive exertion by which the axis of the eye is brought directly to bear upon the visual object; the desire of becoming better acquainted with the phenomenon displayed by the sense of touch may be supposed to lead the subject of our experiment (under the guidance, above indicated, of the constitutional connection between the sense of touch and the muscular power) to the exertion adapted to give him the most complete apprehension of the object of his curiosity. He will thus be brought spontaneously to press against the body in contact with his finger in the direction in which the effort exerted is entirely absorbed by the corresponding resistance, without the diversion of any portion in the production of lateral motion.

Now, although the characteristic of spontaneous action is the operation of a motive independent of the understanding, it must not be supposed that the action accomplished is placed beyond the bounds of consciousness. Spontaneous action may escape the actual notice of the agent for any length of time, but it falls as truly within his power of observation as voluntary action. We cannot doubt that the infant will feel the solid substance opposed

to his muscular efforts the first time he closes his lips upon the breast in the act of sucking, or instinctively grasps the finger which we place within his hand. In like manner, as soon as the subject of our experiment is brought to press against the body in contact with his finger, the condition physiologically instrumental in the apprehension of body will be fulfilled: and the resistance opposed to his muscular exertion will reveal to him underneath and in addition to the tactual phenomenon to which his effort was originally directed (now displayed with increased intensity), an object of peculiar nature, totally different from that of any sensible phenomenon. The object thus made known by opposition to muscular exertion, is the original type of substance, subsequently (when we come to discern *qualities* in the simple phenomena of sense, as colours, sounds, tastes, &c.) distinguished as *bodily* substance, while the complex object apprehended by the united function of touch and muscular exertion, presents us with the fundamental notion of *body*, uninvested as yet with form and magnitude.

The relation between body and space may be illustrated by comparison with the case of light and darkness, colour and black, the second of the two correlatives belonging in each case to the class called by Locke *positive ideas from negative causes*.

It is certain that a man born blind can have as little idea of darkness or of black, as he has of light or colour; but as soon as his eye has once been opened to the visible world, and he is again replaced in *darkness*, he will learn the meaning of that term from his sensations on attempting to exercise his newly-acquired faculty. He will now be able to try to see in the absence of the conditions necessary for actual sight, or to look in a direction from whence no light reaches the eye, and the result of the effort will be the apprehension of a phenomenon, which under the name of black or darkness, will be as positive an object of thought as that which is produced by the actual impact of light upon the retina. In like manner, as I believe, the idea of *space* is acquired by the attempt to apprehend *body* in the absence of the external conditions necessary for the accomplishment of that purpose.

It is generally admitted that the human being, antecedent to the first apprehension of body, can have no knowledge of the space by which he is surrounded; he is in the position of the man born blind, with respect to the knowledge of darkness. But as soon as he has once apprehended *body*, without as yet having any thought of his own corporeal frame, he will be able, like the blind man, who, after recovering his sight, looks in a direction from whence no light reaches the eye, to

seek with the proper organ after the phenomenon with which he has newly become acquainted; that is, to feel for body in a direction in which there is none within his reach, when of course he will move his hand freely through space.

The question is, what effect will such an action produce on the knowledge of the agent? under what aspect will it be represented in the theatre of his consciousness? It would be a most gratuitous assumption to suppose that the impressions by which, in the mature condition of our faculties we appreciate and modify the space traversed by the hand on such an occasion, would be wholly wanting under the circumstances of our experiment; while, on the other hand, the result of the effort cannot, by the agent, be contemplated under the form of *motion;* since, by the hypothesis, he has as yet no knowledge of the instrumentality of a bodily organ in the exercise of muscular power. It seems to me that the analogy with the case of the man lately blind looking for the first time for colour in a direction from whence no light reaches the eye, will still hold good; and as, in the latter case, the black colour of the spot to which the eye is directed appears as positive an object of thought as the illumined portion of the field of view, so it appears to me that the *space* through which the agent moves his hand, will appear to him as a positive phenomenon, the idea of which will thus be acquired

in the same empirical manner, and by the exercise of the same faculties as the idea of body.

The negative foundation of the idea of space accounts in a satisfactory manner for a difference between space and body, upon which so much stress has been laid, that it has been thought necessary to attribute to the former notion an origin perfectly distinct from the perception of the thing itself in nature. It is said, that we can conceive the destruction of all the bodies in the universe, but not the destruction of a single particle of space, and hence it is argued, the idea of body is *contingent*, or dependent on experience, while the idea of space is *necessary;* meaning thereby (though perhaps the notion will not bear probing very deeply), that it is logically independent of all that is actually perceived in extended things, arising in some incomprehensible manner from the fundamental constitution of the mind.

If such be really the amount of what is implied by the term *necessary*, it would be hard to establish any logical connection between the necessity of an idea, and the impossibility of conceiving the destruction of the thing conceived. On the other hand, the indestructibility of space, is the natural consequence of the negative foundation of the idea as expounded in the foregoing pages. The sole condition of the apprehension of space being the exercise of the muscular faculty in the absence

of body, the destruction of body necessarily gives room for the apprehension of space, and thus to imagine the simultaneous destruction, both of body and space, would be to require a thing both to be and not to be at the same time. So long, therefore, as we retain the consciousness of muscular activity, we find it impossible to escape from the conception of the space which surrounds us. But take the case of a being in a merely sentient stage of existence, whose whole experience is confined to sounds, and smells, and tastes, and passive touch. For such a being there will be no inlet to the knowledge of space, and there will be no difficulty in supposing for him the non-existence of the thing itself.

Another consequence of the negative foundation of the idea of space is the uniform character of that conception, so that individual spaces (putting position out of the question) appear to differ only in the quantity of the material of which they consist. Hence arises the conception of the relations of magnitude.

When two spaces appear to be the same in quantity, the comparison suggests the relation of *equality*.

But when the one appears to contain the whole material of the other, and more in addition, the comparison suggests the relations of *greater* and *less*, the containing magnitude being the greater, the contained the less.

The idea of space concealed underneath the surface, and occupying the place of body, arises from the fundamental relation between the two conceptions. When once space is known as that which meets the muscular sense in the absence of body, the occurrence of body in the course of an effort to advance in a certain direction will be felt as resistance to the apprehension of space of which we are seeking to obtain actual experience—the space, viz. lying beyond the bodily surface in the direction in which it stops our further progress. Thus the notion of body will be made to comprehend the notion of space extending beneath the surface in every direction in which we are prevented from penetrating the solid substance. The lateral extension of surface is empirically learned by passing our hand over the surface of body; when we apprehend in a single act both body and space, and thus become acquainted with the *magnitude* of the body along the path in which it is subjected to actual apprehension.

We will next suppose the being on whom we are experimenting to pass his hand over a smooth uneven surface, making each superficial element as it comes successively under notice the object of distinct apprehension, and accordingly (on the principle formerly explained) pressing against it in a direction immediately opposed to the resistance.

In thus moving over a smooth surface there will occasionally, as for instance, in passing one of the sharp edges of a rectangular solid, be so sudden a change in the muscular arrangement required to meet the resistance of the surface in successive instants of time, that the difference in the character of the effort cannot fail to make itself felt by the agent. But he, having as yet no thoughts of his own agency in the adaptation of his effort to the altered circumstances of the experiment, will refer every change in his feelings to a modification of the object in the examination of which the effort is expended. He will accordingly conceive the surface as exhibiting a difference in character on opposite sides of the ridge, and his experience will speedily furnish him with other examples of the same kind of difference. He will thus distinguish a horizontal from a perpendicular surface, and among upright surfaces will recognise a difference between a surface directly in front, and one sloping to the right or to the left. In the same way then that the experience of particular notes gives rise to the idea of musical tone, as an elementary relation in sounds of a certain class; the comparison of different surfaces will give rise to the equally elementary conception of *inclination*, as a variable character, of which one phase or another must necessarily be exhibited by every individual element of bodily surface.

Again, as space is the object made known by means of unresisted muscular effort, aimed at the apprehension of imaginary body, it was to be expected that every relation of bodily surface depending on variations in the character of resisted effort, would be represented by an analogous relation in the space made known by the same effort in the absence of resistance.

Let us suppose the agent to press his finger in succession against two surfaces, one horizontal, and the other perpendicular and directly opposite, and while he remains impressed with a lively sense of the difference in inclination, let the resisting surfaces be suddenly withdrawn, allowing his finger to move freely in pursuit of the retiring surface, in the one case downwards, and in the other directly forwards.

The same peculiarity in the effort which led the agent to distinguish the *inclination* of the two surfaces will still continue to be felt in the unresisted exertion. The same unconsciousness of his own agency in the matter still compel him to refer every sensible change in the nature of the muscular effort, to the external object apprehended by the exertion; that is, in the present instance, to the spaces traversed by the finger in a downward and a forward direction respectively.

The agent will thus be enabled to distinguish

the space traversed by an exertion adapted to meet the resistance of a horizontal surface from the space related in a similar manner to a perpendicular surface; and by a course of like experience he will form the idea of *direction*, as an elementary mode of extension in space; a certain phase of *direction* corresponding to every particular *inclination* in which bodily surface can present itself to his apprehension.

There will thus be this distinction between inclination and direction, that whereas the experience of this or that particular inclination depends on the positive action of an external object on the bodily frame, the experience of a definite direction in space depends upon the adaptation of our own muscular effort to meet the peculiar action of an object existing only in imagination—of an imaginary surface of particular inclination. Hence may be explained the accuracy with which, in passing our finger over a smooth surface, we distinguish the slightest variation in the inclination, while in motion through space, unguided by external resistance, as for instance in drawing a straight line on a sheet of paper with the eyes shut, we find great difficulty in keeping constant to the same direction for any length of time—a fact for which it would not be easy to account, if the two relations stood on the same footing with respect to the mode of

their manifestation in actual existence, and which did in reality much perplex the author before he arrived at the present explanation.

It will probably occur as a difficulty in the foregoing theory of distance and direction, that these relations are distinguished by the eye as well as by the hand, and we are undoubtedly called on to account for the acquisition of the same notions, by the exercise of organs apparently so dissimilar. It must be remembered, however, that the eye as well as the hand is an organ of muscular exertion; the axis of the eye being brought directly to bear on the object in distinct vision, and thus being carried successively over every part of the outline in the apprehension of visual figure. The organic action is thus fundamentally of the same nature in the apprehension of visual and of tactual extension, viz., the exertion of unresisted muscular effort, and according as the exertion is more or less comprehensive, the space apprehended will appear greater or less in the visual scene, as well as in the material world.

The function performed by the experience of bodily surface of different inclinations in leading us to distinguish the directions in which space may be traversed by the tactual organ, is accomplished in the case of visual extension, by the appearance of light in eccentric portions of the field of view, spontaneously exciting us to an effort of different

character according to the particular quarter in which the light makes its appearance.

At a very early period we see the infant slowly learning to direct his eyes to different objects, but his earliest efforts in that endeavour must ultimately rest upon a physiological connection between the impression of light on the retina, and the muscular action of the eye, similar to that which we have seen between the sensation of touch, and the muscular action of the member on which the impression is made; as without such a principle the most lively curiosity respecting an object seen with the corner of the eye would fail to teach the infant the first step in the operation, necessary to give him a distinct apprehension of the visual object.

When once we have learned to discriminate the directions in which space is extended around us, we shall have frequent occasions to consider objects with reference to the extent and direction of the space by which they are separated from ourselves. The combination of these elementary relations constitutes the *position* of the object—a complex relation, the more exact determination of which must be postponed until after we have acquired some knowledge of the principles of causation, necessarily involved in a complete investigation of the subject.

V.—*Cause.*

Among the modes of direct perception, the oversight of which has exercised a most fatal influence in the course of philosophy, is to be reckoned, as it seems to me, the instrumentality of our moral affections in the apprehension of personal being. So long as we are without thought of ourselves, every change in our feelings, every modification of our consciousness arising from without, takes effect in our understanding in the conception of a corresponding modification of the object from whence the impression is received.

Now it is impossible to contemplate the behaviour of the infant from the first dawning of the understanding, without becoming aware that he recognises his mother or his nurse, as a being of a perfectly distinct nature from any inanimate object. He obtains his chief gratification from the breast, but it is his mother herself that is the object of his affection; it is her countenance, and not the breast, that calls forth his earliest smile.

It is manifest in the case of some of the higher animals that the expression of the disposition towards them, either of their own fellow-creatures, or of man himself, produces an appropriate effect upon them, independent of any experience of the mode in which such a disposition has a tendency to shew itself in action; and why should we

be startled at the same thing taking place in man? We frighten a young puppy that has never experienced actual ill-usage by speaking to him in a harsh tone of voice, and put him in spirits by coaxing him. So it is with the human infant—his love is instinctively excited by the expression of kindness—his fear by the expression of anger.

The emotions thus excited, being modifications in the disposition of the infant towards the object of his love or his fear, will present that object to him in a peculiar point of view—will reveal to him something in its nature beyond the merely sensible features of the bodily frame—viz. the *personal* character of the being exercising this peculiar influence over his affections.

The main characteristic of personal existence, and the vehicle by which its phenomena are chiefly displayed to other persons, consists in *action*. The mother expresses her love towards her child by pressing him against the breast, kissing him, talking to him, and the infant in return recognises the same personal being in the various kinds of action of which he is the object.

In process of time, as the understanding becomes expanded, the child perceives that other persons are made the object of action to those by whom he is surrounded, in a way that he understands from having experienced it in his own case. He finds

himself competing with others for the notice of some one in whom he is interested, and his thoughts being thus thrown back upon himself, he recognises in his own living frame a *personal being* —an object of the same kind with that which presents itself to his thoughts in his fellow-men, and he now becomes acquainted with the nature of *personal existence* in a far more complete manner than when merely contemplated from without in another person. He now understands the motives and affections of other persons, by sympathy with his own feelings, and not merely as the external object to which those feelings are directed.

When we come to contemplate action from within, we find that that which makes us consider an act as our own is the consciousness of effort directed to a certain end, and felt in the accomplishment of it. Thus we attribute to ourselves the act of breathing, because, although it equally takes place whether we think of it or not, yet when our attention is directed to the question, we are conscious of effort in the exertion of the lungs; but we do not consider the pulsation of the heart as belonging to ourselves, because we can detect no effort in the act—we cannot attempt to accelerate or retard the action, which lies wholly without the scope of our effort. We accordingly say we breathe, the heart beats.

In like manner we are conscious of effort in

following out a train of thought—in directing our attention to this, rather than to that other sensible phenomenon; and accordingly we regard the direction of our thoughts as much our own act as our muscular exertions.

Between bodily and mental action, however, there is this broad distinction; viz., that the former can be made the object of direct observation from without, either to ourselves or to other persons, while the latter can only be immediately known to the agent himself, by internal consciousness, and cannot be directly perceived in any way by another person, but only indirectly inferred, with more or less confidence, from the expression of countenance, the words or gestures of the agent.

When I am made the object of bodily action, I am forced, in order to preserve my position unaltered—in order to avoid being pushed aside or disagreeably pressed upon, to exert my own muscular force in opposition to the external action, being instinctively guided by the sensation felt in the part of my body subjected to pressure. The effort so exerted will reveal to me the active condition or *force* of the body pressing upon me; on precisely the same principle that the effort exerted against a body at rest was formerly shewn to be efficient in the direct apprehension of bodily substance itself. The exertion then on our part of our

own muscular power is equally essential to the manifestation in the material world, either of active force, or of mere resistance: and hence, perhaps, may be explained the recognition, as a necessary law, of the mechanical principle that action and reaction are equal and in opposite directions.

The exercise of our own muscular power, and the observation of that of other persons, very soon teaches us that our power of bodily action is not confined to objects in actual contact with our own living frame. We speedily become acquainted with the use of intermediate *instruments*, and learn to avail ourselves of any thing, that may be applicable to that purpose, in pushing or pulling objects at a distance. Still we consider as our own act the accomplishment of every end that we have in view in the exertion of the effort. The breaking of the glass that I strike with a stick is as much my own doing, as if I knock the glass itself wilfully against the table with my hand. We are thus initiated by the earliest experience in the use of the simplest kinds of instruments, and the sphere of our action becomes more and more enlarged as we get better acquainted, by reasoning and observation, with the regular course in which force is transmitted through the material world.

A large proportion of bodily action consists in modification of the form, or position of things essential to our well-being, and leaves its traces

behind it, clearly cognizable after the action is finished, and all connection with the agent cut off. When I witness such traces of action, my thoughts are led to the agent from whose hands I have been accustomed to see the work proceed. The child for whom I have been in the habit of cutting out figures in paper will think of me as the author, when he meets with figures of my workmanship, and in like manner he will recognise by far the greater part of the condition of things essential to his daily life, as the doing of some person or another.

Some facts, however, take place, which, as far as the observer is concerned, are exactly the same as if they were done by a personal agent, while experience shews the absence of any human or animal agency in the matter. The child sees a door fly open, and runs to see who opened it. He finds no one within reach, and if he tries to shut the door, it pushes against him, while the wind blows in gusts through the opening. He traces the force which he feels in the opening of the door to the wind behind it, in precisely the same way that he might have traced it on other occasions to a human agent; and he says, *the wind did it.* As far as action is externally known, the wind and the living body of the person who shut the door, stand in the same relation to the fact observed.

To this relation, considered irrespective of the

source from whence the action originally proceeds, we give the name of cause and effect; the immediate source of the power, the transmission of which gives rise to the conception of the relation, being *the cause;* the phenomenon in which that power is finally manifested, *the effect*.

It is incorrect then to consider the idea of cause as exclusively derived either from the consciousness of effort, or from the observation of external things. Causation is internally known from the consciousness of our own personal agency, and externally from experience of the mode in which force is propagated through the material world.

Force is the necessary connection of which Hume was in search. It unites events together and presents them to us in a certain order, giving them their character as cause or effect respectively. Whenever we are able to trace the transmission of a force through a series of bodies, the fact in which the force is manifested at an earlier period of its course, is the *cause;* the fact placed at a lower point in the stream of force, the *effect;* while any intermediate body through which the force is transmitted from one to the other is an *instrument* of the action.

Let A, B, C, &c., be a series of bricks standing on end, within reach of each other, and let an impulse be given to A, sufficient to tilt it over

against B, and let B, in falling, strike against C, and so on to the end of the series. Here we see that each brick in falling, strikes against its neighbour with a certain force which is thus communicated from one end of the series to the other; we conceive accordingly the fall of every brick as the *effect* of the fall of the preceding, the *cause* of that of the succeeding one. The body from whence proceeds the force, producing a certain effect, is called the material cause; thus in the preceding case, each brick in the series is the material cause of the fall of the next succeeding one.

The origination of the notion of cause, on the foregoing principle, is attended by little difficulty, so long as we confine our attention to phenomena, such as motion, pressure, &c., comprised in what are called the primary qualities of body, being apprehended by the same faculty with bodily substance and with force itself. We have seen that the notion of space is originally derived from the experience of unresisted force, directed from within, through a definite element of our bodily frame, and we readily conceive that unresisted force in any other body, must in like manner, manifest itself by motion. But, by what anatomy can force be detected in a sound or a smell? and how is it then, that the relation of cause and effect is applied to the phenomena of our other faculties, besides that of muscular power—that we inquire

after the causes of colours, tastes, sounds, and smells, as well as of motion ?

It is, probably, under the pressure of such inquiries proposed with more or less distinctness in their own minds, that some philosophers have asserted that the relation of cause and effect is nothing but an invariable law of sequence in the related phenomena, while others have been driven to a supposed principle of causality inherent in our nature, in virtue of which, they assert, the first instant we witness a single phenomenon, we conceive it as being produced by an unknown cause.

The former of these theories in the hands of Thomas Brown, who has worked it out with the greatest assiduity, leads to a distinct denial of any essential difference between desire and will, and reduces man to the rank of a passive instrument of every power that his own constitution or external circumstances may bring to bear upon him. The utter insufficiency of the theory of Brown, cannot be placed in a stronger light than by his analysis of a deliberate choice between competing motives.

In cases of this nature, he says that we give the name of will to "a desire combined with a deliberate preference, and often too with expectation of a particular result. We have previously considered different forms of good or evil. Some good appears to us greater on the whole than others, or

some evil less. We desire, therefore, the greater good, with the opinion that it is the greater good, or the less evil, with the opinion that it is the less evil, and having so weighed or preferred, we are said to will the greater good, when the attainment of it seems to depend on our choice, or the less evil, when by submitting to it, we think we can escape the evil that is greater."

So that according to Brown, the deliberate opinion that a certain object of desire is, upon the whole, the greatest good, is equivalent to willing the corresponding action, and necessarily draws with it the actual step by which the good in question is to be attained. Our virtue would be exposed to an easy trial, if it were thus to be tested by our clear-sightedness in discerning good and evil; but, "O wretched man that I am!—the good that I would I do not: but the evil which I would not, that I do:" nor is there any absurdity in supposing a man led by passion to an act, with the clearest conviction that he is rushing to his own destruction.

The other theory is based upon a bold assertion, which appears to me to have no foundation in fact. I can see no evidence in the mind of a child or of an uncultivated man, of any constant connection between the experience of a phenomenon and an inquiry after its cause. The story of Newton and the apple would never have obtained so great

popularity, if the fall of an apple were sufficient to set every clown on search after the cause of the phenomenon. The last thing that occurs to a child spinning a teetotum is to inquire what makes it stop. Nay, I believe, that if the question were propounded to a child, who fully understood its meaning, he would, as often as not, reply that it was rather for you to say what should make it go on. If the principle of causality be really true, what is to determine whether the stopping of the teetotum, or its continuing in motion for an indefinite period, is to constitute *a phenomenon?*

The key to our notion of the causation of sensations, is to be found in the original physiological connection between the sense of touch and the muscular faculty. We have seen that the primary effect of the contact of any member of our own living frame with a foreign body is to give rise to a sensation of touch—to bring within the sphere of observation a phenomenon of a character as substantive, as capable of being thought of apart from any reference to the sentient being himself, as a smell or a taste. We then proceeded to shew that the effort to obtain a more distinct apprehension of the purely tactual phenomenon, takes effect, through some unseen connection between the faculties, in an exertion of muscular power, instinctively directed against the foreign body in immediate contact with our own sentient frame.

We now perceive, not a merely passive phenomenon, but an object acting on us with a force of resistance, a force exactly reflecting our own muscular action; and as it is only in this reflection that our action, so long as we are without thought of ourselves in the matter, can be contemplated by us, we shall, in the first instance, attribute to the resistance of the external body, the accomplishment of every purpose in which our own effort is expended.

Now, in the case we are at present considering, the effort is directed, in the first instance, to the tactual phenomenon displayed at the moment of contact with a foreign body, and is exerted in obtaining a more intense apprehension as well of that phenomenon, as of the substance by which it is apparently supported.

We accordingly regard the manifestation of the tactual phenomenon, as the effect of the resistance opposed by the foreign body, and conversely the body itself from whence the resistance proceeds, as the material cause of the sensible manifestation; and in the mature condition of our understanding, when we come to regard the sensations of touch, as facts taking place within our own body, while we recognise the resistance of external bodies as the reflection of force originally exerted upon them, we regard the tactual sensations arising from the contact of a foreign body, as produced

indifferently, either by our own pressure against the external body, or by the resistance opposed by the latter to the action of our own bodily organ.

The train of unconscious reasoning in the case of taste and smell is of a very similar nature. There can be no doubt that the sensation of taste instinctively excites us to certain actions of the mouth, throat, and tongue. We become sensible of a phenomenon of taste, and are led by a like physiological connection between the faculties, as in the case of ordinary touch, to a spontaneous exertion of muscular power through the members above mentioned. But the effort so directed, at the same time that it gives us a more distinct apprehension of the taste itself, makes known to us the existence of a bodily substance, subjected to the action of our organs of deglutition. We find that the effort exerted in seeking to obtain a more complete apprehension of the phenomenon of taste, is met by the resistance of a foreign body in the mouth, just as in the case of ordinary touch, the attempt to obtain a more complete apprehension of the tactual phenomenon was met by the solid substance of the body in contact with the apprehending member. We have therefore the same reason for considering the body in our mouth as the cause of the taste to which our attention is directed, that we formerly had for considering the external

body as the cause of the tactual sensation felt at the moment it comes in contact with any portion of our own living frame.

In the case of smell, the muscular effort to which we are excited by the reflex action of the sensation is expended in sniffing the air through the nostrils, and thus we are led to regard the immediate cause of the smell as floating in the air in the neighbourhood of the nose; but further experience shewing that the smell becomes stronger and stronger as we approach some extraneous body, we conceive the action to come from that direction, and not being able to trace it any further, we consider the odoriferous body as the original cause of the sensation.

In the same way, at first doubtless by an instinctive connection between the motion of the head and the sense of hearing, and then by the increasing intensity of the sensation as we advance in a certain direction, we trace the phenomena of sound from the ear to some external body, which, unlike the cause of smell, is always found in a peculiar state of mechanical action; and on that account we are still more readily inclined to consider it as the cause of sound than we were in the case of smell.

So in the case of visual phenomena, I am conscious of exerting muscular effort in directing my eye to this or that object of sight; and thus making

use of a bodily instrument, I am led to conceive the intervention of material action in the fact of sight. I am, however, quite incapable of producing the smallest modification in the thing seen. I cannot even attempt to make it black or white, bright or dark. I therefore cannot attribute to myself the action efficient in the manifestation of the phenomenon. I must conceive it as coming in the opposite direction, and operating upon me instead of proceeding from me, and I am able, exactly as in the case of sound, to trace it to some external object in which the phenomenon appears to be exhibited.

Thus it is that we are able to conceive the operation of physical powers in the manifestation of phenomena of all classes, bringing them all equally with the primary qualities of matter within the domain of cause and effect.

VI.—*Free Will.*

The influence of motives on a personal agent must be carefully distinguished from the effect of forces on bodily substance, to which it bears a strong analogy.

It is an ultimate fact that we have pleasure or pain in certain thoughts, actions, and sensations, and it is in the very nature of these affections that we willingly seek the sources of pleasure, and shun

those of pain, as soon as we understand the course of action by which they are to be reached or avoided.

But besides the actions to which we are prompted by the contemplation of pleasure or pain to be derived from them, we find others to which we are led by instinct, as it is called, or by the immediate influence of our bodily constitution, independent of thought. Thus the infant, as we have observed, seizes the breast the first time it is made to touch his lips, when he can have no knowledge of the pleasure arising from the allaying of hunger; and thus we wink on the appearance of a dazzling light, without thought of the protection thereby afforded to the eye, or start without premeditation of danger to be escaped, on the occurrence of a sudden noise.

As we advance in the experience of life, the instinctive actions are gradually brought under the influence of the understanding. We learn the gratification they are calculated to give us, and weigh it against the satisfaction to be found in the dictates of the moral affections. We find ourselves solicited at the same time to a number of incompatible actions, between which it is necessary to make a selection, and to which the attraction is of a widely different nature. It may happen, for instance, that I am forced to choose between the obedience to duty and the satisfaction of my hunger.

I do the thing I ought, but I do not the less feel the call of appetite, and in giving the preference to duty I am conscious of a mental effort exerted in turning away from the object of sensual gratification.

I recognise a strong analogy between my own situation, and that of a body subjected to external action of a material nature, and only prevented from moving in a certain direction by my interference; and as in such a case I am made acquainted with the action on the body, by the effort exerted by myself in resistance, so in the case of the conflicting motives, I am led, by the effort of which I am conscious in rejecting the persuasions of sensual appetite, to attribute to the object of desire a power of attraction acting upon me, and taking effect, when not counteracted by my resistance, in my possessing myself of the sensual enjoyment.

Thus we see the actions of personal beings, as well as the phenomena of the material world, subjected in a certain sense to the relation of cause and effect, and in ordinary language we speak of the motives by which we are influenced as the causes of our actions. We must be careful, however, that in recognising that which there is in common in the dependence of actions upon motives, and that of effects upon causes, we do not overlook that which is essentially different, or transfer to the causes of personal action, conclusions derived

from the nature of the relation, as exhibited in the material world.

In the action of physical causes the subject is wholly passive; the physical powers all take effect according to their several natures, neutralizing that which is opposed to them in the competing powers, and leaving a residual effect often of an essentially different character from that which would have been produced by the separate action of any of the conflicting powers. A body, for instance, subjected to forces acting in two directions at an angle with each other, is made to move in a third direction, different from that of either of the elementary forces by which it is affected, but related to them according to a well-known law.

In the influence of motives upon a personal being, the circumstances are widely different. Whatever be the strength of the motives operating upon us, we are conscious that the action performed under their influence is wholly our own. It is not transmitted to us from any other source, but originates in ourselves, in that within us which perceives and thinks, rejoices and suffers, loves and dreads. The muscular effort I have to put forth in performing a certain bodily action, is precisely the same, whatever be the reason of the exertion.

The comparative strength of the motives to which we are subjected cannot be estimated *à*

priori by any external standard, but is first indicated in each particular case by their actual efficiency in influencing our conduct. Competing motives do not act against each other, nullifying opposing temptations, but each may be felt in full activity, even at the moment that we are acting on a rival motive. I need not the less feel the allurements of appetite, although I postpone them to some paramount duty. The motive on which I act, produces its full effect upon me, unaltered by any competing motives; while all motives incompatible with the one on which I act are wholly ineffectual. When circumstances throw in my way the choice of two tempting objects, I take the one and leave the other, and do not possess myself of a third object, intermediate between the two. The ass is not really starved between the two bundles of hay.

The characteristics of the two kinds of dependence thus distinguished in the actions of personal beings and the phenomena of the material world, have given rise to the correlative terms of Free Will and Necessity; the idea of Necessity being derived from experience of the mode in which physical causes act upon material things, and that of Freedom, from the mode in which motives act upon personal agents.

There is thus a strong analogy, as well as an essential difference between the laws which govern

the actions, respectively, of personal beings and of material things; and it is from the neglect by opposite parties of one or other of these elements—from the neglect either of the positive or negative side of the analogy—that those perplexing disputes have arisen, which long made the subject of free will and necessity so conspicuous a position in the field of metaphysical inquiry.

The fact from which both parties were compelled to start, was the consciousness, that in matters within the bounds of our physical ability, *we act as we will;* that I speak or keep silent, rise up or sit down as I choose. Both parties also would admit that, in making my choice, whether to do or leave undone a particular action, I am influenced more or less by the pleasure to be gained or pain to be avoided, by desire to be gratified, or duty to be fulfilled. The difficulty lay in the preservation of logical consistency throughout the statement of the entire fact; and this was found impossible (so long as only *one kind* of dependence or causation was recognised) without adjourning the question from the final act lying within the immediate view of consciousness, to the decisions of a supposed faculty of *willing*, concerning which assertions might more safely be made either on one side or the other, without calling forth in the mind any infallible witness of their truth or falsehood.

"Liberty," says Locke (II. c. 21, § 15), "is

the power a man has to do or forbear doing any particular action according as its doing or forbearance has the actual preference in the mind, which is the same thing as to say, as he himself wills it," and in the same section he defines volition or willing, as "an act of the mind, knowingly exerting that dominion it takes itself to have over any part of the man, by employing it in, or withholding it from any particular action."

Thus an intermediate act is interpolated between every action of the personal being and the motive by which it is determined, and an element is introduced of which we can by no possibility have any separate experience, as the act of will is never finally complete, except in the very accomplishment of the resulting action. There is no such thing as willing a present action apart from doing it; and when we form a determination as to the future (however closely impending), the determination and the fulfilment are essentially as distinct acts as if they were performed by different agents. The prior determination operates only in insuring its own fulfilment, in the same manner as the mandate of another person, and exercises the same kind of influence on our conduct, as the other motives with which it comes in competition.

We are thus wholly incapable of any separate experience of metaphysical *volition*, which accord-

ingly supplies us with a field where disputes concerning freedom and necessity become possible without danger of direct collision between either side of the argument and our own consciousness.

The knowledge which all parties agreed in claiming was, that we act as we will; but when the question arose, Are we free to will as well as to act? neither party could conclude the matter by a direct appeal to experience. Now the supposition that the will is governed by a necessity, of which the agent himself remains unconscious, would not only account for the acknowledged dependence of action upon motives, but it seemed to reconcile many logical difficulties by which the Necessarian was pressed. The most important of these consists in the apparent conflict between the foreknowledge of God, and our own consciousness of freedom. Since God foreknows all our actions, it is certain that we must necessarily, in all cases, act in accordance with his foreknowledge, and cannot in any instance do otherwise than as he foresees. How then can we be free to choose between the two alternatives?

The Necessarian answers that there is always one alternative which we really were not free to have chosen, although we never know which that is until after the action is passed. He considers the consciousness of liberty as justified by the accordance between the act and the dictate of our will;

we are conscious only of acting *as we will;* the action on the will itself by which it is necessarily led to the choice foreseen by God, cannot, by the nature of the case, be discerned by the agent, inasmuch as he can only be made sensible of compulsion by opposition between his will and the act to be performed.

To the advocate of Free-will this illusory show of freedom of action, while the will is bound by Necessity, appears an unworthy juggle. The practical freedom of choice is the one point of importance in his eyes; and he maintains that it will be found, whenever necessity can speciously be asserted of personal action, that the line of action affirmed to be necessary is marked by conditions implicitly depending on the choice of the agent himself.

Such, for instance, is the case with the proposition that we necessarily act on the strongest motive. The only test of the comparative strength of motives (as we have seen) is the degree in which they practically influence action. The very *meaning* of the strongest motive is that which finally prevails, and the proposition amounts to the mere truism that we must necessarily act on the motive which will finally influence our action.

The necessity of choosing the alternative foreseen by God is another instance of the same necessity of logical consequence. It is no diminution of

our freedom of choice between two alternatives, A and B, that we cannot prevent either God or an inferior being from foreseeing whether our choice will rest on A or B. We cannot do otherwise than as God foresees, because, by the supposition, he foresees what we shall do; and the necessity of acting in accordance with his foreknowledge is equally satisfied by either alternative.

The only necessity really incompatible with freedom is the necessity of doing a particular act defined by conditions independent of our choice in the matter in question; and with such a necessity, all moral responsibility, in the common sense of mankind, is utterly at variance. It is in vain for the Necessarian to spin his subtle distinctions; he cannot argue down the ineffaceable conviction that an act loses its moral character in proportion as it is really necessary, either by immediate compulsion, or by any train of intermediate agency discoverable by philosophical refinement. If we feel that the agent could not have done otherwise than as he has done, it is enough: we exonerate him *pro tanto* from praise or blame.

But if the Necessarian cannot establish his own case, he has the satisfaction of silencing his opponent. If (he argues) there be, as you suppose, a self-determining power in the will, if the will itself be free, then we not only act as we will, but we will as we will. We require a previous act of the will

to determine the one which governs the final act of the personal being, and a previous act of the will to determine that, and so on *ad infinitum.* Thus, as Locke and Edwards have urged, the original springs of action are lost behind an infinite series of acts of the will, each of which is required to determine its immediate successor.

The retort falls pointless against those who hold that the will is not an act or a faculty, but the disposition of the agent with respect to action. With them the will is determined by motives, the influence of which is discerned by the agent at the same moment with his own personal activity, and is not only compatible with, but the very root of moral approbation, since we praise or blame an action according as the *motive* to which it is due is of a pure, holy, and benevolent nature, or the contrary.

The moral, as well as logical, difficulties of the subject are thus avoided by the same view which erases metaphysical Volition from the map of personal agency.

"All mankind," says Sir James Mackintosh, whilst seeking to determine the real ground of dispute in the Necessarian controversy, "feel and own that their actions are at least very much affected by their situation, their opinions, their feelings, and their habits: yet no man would deserve the compliment of refutation, who seriously professed to

doubt the distinction between right and wrong, the reasonableness of moral approbation and disapprobation, the propriety of praising and censuring voluntary actions, and the justice of rewarding them according to their intention and tendency. No reasonable person, in whatever terms he may express himself concerning the will, has ever meant to deny that man has powers and faculties which justify the moral judgments of the human race. Every advocate of free will admits the fact of the influence of motives, from which the Necessarian infers the truth of his opinion. Every Necessarian must also admit those attributes of moral and responsible agency, for the sake of which the advocate of liberty considers his own doctrine as of such unspeakable importance. Both parties ought equally to own that the matter in dispute is a question relating to the mind, which must ultimately be decided by its own consciousness. The Necessarian is even bound to admit that no speculation is tenable on this subject, which is not reconcilable to the general opinions of mankind, and which does not afford a satisfactory explanation of that part of common language which at first sight appears to be most at variance with it.

"After the actual antecedents of volition had thus been admitted by one party, and its moral consequences by another, the subject of contention would be reduced to the question—What is the

state of the mind in the interval which passes between motive and action? or, to speak with still more strict propriety,—By what words is that state of mind most accurately described?" *

Now the interval here spoken of is precisely that which is occupied by the imaginary function of volition. Destroy that function—destroy the interval between the motive and the act, and, according to Mackintosh, the whole ground of dispute is taken away; although he himself had no thoughts of such a solution of the problem.

* Sir J. Mackintosh's Works, I., note O to Ethical Dissertation. See also the statement of Sir W. Hamilton in his learned edition of Reid (p. 599, n.):—"Moral liberty does not merely consist in the power of doing what we will, but in the power of willing what we will.....But then the question of questions remains (and this *ad infinitum*) —Have we a power (a will) over such anterior will? and until this question be definitively answered, which it never can, we must be unable to *conceive the possibility of the fact of Liberty*. But though inconceivable, this fact is not therefore false.....The philosophy, therefore, which I profess, annihilates the theoretical problem—How is the scheme of Necessity, or the scheme of Liberty, to be rendered comprehensible? by shewing that both are equally inconceivable; but it establishes Liberty practically as a fact, by shewing that it is either itself an immediate datum or is involved in an immediate datum of consciousness."

It seems to me, that such a collision between the understanding and the primary data of consciousness, should be taken as the strongest evidence of some fundamental error in the theory which gives occasion to the contradiction.

The ordinary theory of the will supposes that in every voluntary act two distinct processes may be distinguished, viz.: first, an act of volition, by which the agent *wills* the act to be performed; and secondly, the actual performance, which necessarily follows whenever the act in question is a matter within the physical ability of the agent. Moreover, this distinction must be supposed to hold good in the case of mental acts, as well as in those that are accomplished by means of muscular exertion, and thus have a visible existence in the material world. When I think steadily upon a certain subject, or turn away my thoughts from an object of temptation, there is both an *exercise of the will* on my part, and a fact accomplished (within the sphere of my own cognizance at least), viz., the actual flow of my thoughts in the current in accordance with my will; and accordingly, in the language of the ordinary theory, every instance of mental as well as bodily action must be decomposed into a volition and its accomplishment. I will to think on a certain subject, and thought follows the dictate of the will in precisely the same way that the bodily member does when I will a movement of the hand or the foot.

Now, I argue that this division of action into volition and performance, which lies at the root of the whole Necessarian controversy, is completely erroneous. I urge the absurdity of treating that

as a separate act of which no one can possibly have any separate experience; and as the most specious instance of a bare volition that can be brought forward is obviously a determination to do a future act, I endeavour to shew (as others have done before) that that is not the kind of volition with which the argument is really concerned. Between a previous determination and the final performance there is no necessary connection. We may or may not please to carry our determination into effect; but if we do, the act is performed, not in virtue of the previous determination, but of the energy exerted in the very moment of accomplishing the final act. The previous determination is a complete act in itself, which ought (on the ordinary theory) to admit of being split up into volition and effectuation; and if it do not seem easy to make such an analysis, it does not concern me, who altogether deny the separate existence of the elements sought for.

In voluntary action we are immediately conscious as well of the relation of *causation* between ourselves and the fact accomplished, as of the analogous but essentially different kind of dependence between the action and the *motives* by which we are influenced. The one relation ends where the other begins; and we at once imply our sense of the analogy, and expressly assert the essential

difference of the two by calling our actions *free.**

VII.—*Position.*

The analysis of the notion of Position would be comparatively a simple problem, if the relation were founded on the experience of a definite organ, as the eye or the ear, having no logical connection with the notions, in the acquisition of which it is physiologically instrumental.

But in the apprehension of Body and Space, the whole of our living frame is one multifarious organ of muscular power; and the elements of position, viz., the extent and direction of the motion by which the object is actually reached, will obviously differ, according as the position is ascertained by the exercise of the hand, or of the foot.

It is evident, then, that the knowledge of the particular member employed as the organ of apprehension is a necessary element in the precise determination of position; and it becomes our business

* The difference between the influence of motives and the efficiency of causes has often been insisted on, but the entire separation between the field of action of the two relations has not, I think, been maintained with sufficient steadiness, nor has it been practically observed that the precise extent of the distinction between these relations is the real gist of the whole Necessarian question.

to shew how the consciousness of muscular exertion, by which we estimate the extent and direction of the space traversed in reaching to a certain object, is made to include a reference to the particular portion of our own material frame, through which the exertion is effected.

In answer to the inquiry thus imposed upon us, it might perhaps appear sufficient to point to the sensation of touch either actually felt or represented to the imagination (on the principle formerly explained), in the apprehension of Body and Space. We have, in the mature condition of our faculties, such an immediate knowledge of the part of our body in which we seem to feel the sensations commonly classed under the sense of Touch, that we can hardly persuade ourselves but that a reference to definite place is an essential part of the sensation itself.

Yet a moment's reflection on the complex nature of the relations involved in the notion of place, should convince us of the untenableness of such a supposition. If it were true that the sensation of touch were sufficient of itself to convey information of the actual existence and relations in space of its own bodily organ, it would be an instance of experience giving rise to the knowledge of particulars more comprehensive than all that is directly perceived in the act itself: for no one pretends to say that the material substance and relative position

of the bodily organ are the objects of actual apprehension in tactual sensation.

The real source of the power of localizing the sensations of Touch in definite portions of the bodily frame appears to consist in the peculiar character of the effort to which they instinctively prompt the sentient being, in virtue of the physiological connection between the two faculties. The contact of a foreign body with any part of our own living frame is known to us in the first instance by the sense of Touch, and it is in the endeavour to obtain a more complete apprehension of the phenomenon then displayed, that we are instinctively led to the exertion of muscular power by which we apprehend the material cause of the sensation.

Now the ultimate fact upon which we must rest appears to me to be this, that we are immediately conscious, in the act of muscular exertion addressed to certain phenomena of Touch, of a fundamental difference depending on the part of the body affected by the physical cause of the sensation, and through the difference so recognized in the effort, we distinguish the sensations by which the effort is directed.

In process of time, indeed, the sensation belonging to each portion of the body becomes so intimately associated with the corresponding exertion of muscular power, that the inherent solicitation to action

seems sufficient to mark the sensation with its distinctive character, without the necessity of actual exertion; and we are generally able to say whereabouts a certain sensation is felt, without being conscious of the aid of muscular action. It will be observed, however, on close examination, that when endeavouring to satisfy ourselves of the precise seat of an obscure sensation, we can hardly help exerting some degree of muscular effort, either shrinking from the cause of the sensation or making it the object of pursuit.

It will also be found that the accuracy with which we are able to localize a tactual sensation in a definite organ varies considerably in different regions of the body, being pretty nearly in proportion to the perfection of our muscular control over the member on which the impression is made. We can indicate with very great nicety the position of the prick of a pin on the tip of the finger; with much great latitude that of a similar impression on the back or chest.

When the connection between the sense of Touch and the muscular power is entirely cut off by paralysis or other means, the power of discriminating the seat of the sensation is wholly lost.

A case is mentioned by M. Maine de Biran where experiments were made upon a paralytic patient who had lost the muscular command of one-half of his body, retaining the sense of Touch,

and it was found that when he was touched or pricked on the paralytic side under the bed-clothes, so that he could not see the place on which the impression was made, he was wholly unable to localize the sensation, not knowing whether it was felt in his arm or in his side. When he was allowed to see the whole of the operation, he seemed to feel the sensation in the part of the body on which he saw that the mechanical cause of the sensation took effect.

A similar fact may be observed in an inferior degree in that state of temporary paralysis in one of our limbs known as *the limb being asleep.*

It will be taken then as a fact that we do, in the act of muscular exertion under the guidance of tactual sensations, distinguish, as well the sensation by which we are guided, as the effort itself, from a sensation of similar character organically referable to a different bodily element, and from the effort corresponding to such sensation respectively.

When once the experience of tactual sensation has given rise to the spontaneous exercise of a certain bodily member, we shall be able, by recalling the sensation to the imagination and making it the object of muscular exertion, to exert our muscular power through the same organ in the absence of the actual stimulus of Touch; and thus we might acquire the command of our entire muscular frame, antecedent to any knowledge of the

corporeal nature of the instrument we were wielding.

At such a stage in the education of the understanding, the exercise of every separate member would give rise to a separate scheme of position without any common standard of comparison among themselves. All objects would appear to the muscular agent to be *present* at the instant of actual apprehension, but objects apprehended by his right hand would appear to be present *in a different manner* from those apprehended by his left, and the same distinction would be carried out through the entire scheme of Position determined by the use of different members.

The connecting link by which we pass from the knowledge of the object apprehended by muscular exertion, to that of the member employed as organ in the act of apprehension, is to be found in the sensation of touch, common to the apprehension of external body by means of any given member of our own muscular frame, and the actual apprehension of that particular member by a different organ.

Whenever a portion of our own body is made the object of actual apprehension (by the instrumentality of our finger for example), we necessarily, by the pressure of the finger in the act of apprehension, give rise to a tactual sensation in the element apprehended, of the same subjective cha-

racter with the sensation which is felt when the element so apprehended is organically employed in the apprehension of an external object. We shall thus, in passing our hand over the surface of our own body, become acquainted with a bodily frame of certain size and shape and texture, the whole of which is distinguished from all other bodies by sensibility to touch; whilst each separate element of which it is composed will be distinguished from every other by the peculiar organic character of the sensation felt in the instant of apprehension; a character, it must be observed, equally independent of position and of all reference to the particular organ employed in the act of apprehension.

The direction of the resistance in different parts of the surface of our body distinguished as above, will furnish us with a fundamental standard of direction applicable alike to the scheme of position determined by the exercise of every organ. The general direction of the resistance on the chest, coinciding with that in which we look when standing upright, will mark the line of front and back; the resistance on the side of our body will serve to define the opposite directions of right and left; while the action of gravity will lead us to distinguish the more permanent relation of up and down. At the same time, the distance from one known element of our bodily frame to

another will serve as a constant measure of distance, whatever be the organ of muscular exertion; while any individual element may be made the basis from whence all distances are measured in the determination of position; and thus at last we succeed in clearing the elements of position from all dependence on the particular member, by the exercise of which they are actually ascertained in any given instance.

Let us now imagine a person engaged in the apprehension of a certain element of his own body, the palm of his left hand for instance, by means of his right forefinger.

Then the sensation felt (as we say) in the palm of his hand will seem to vary in such exact accordance with the effort exerted in the apprehension of that member, as to impress him with the conviction that the sensation is produced by the same physical agency by which he takes notice of the bodily object submitted to his apprehension.

At the same time the sensation felt in the palm will solicit the subject of our experiment to react through that member against the pressure of the finger by which the sensation is produced.

The moment the agent gives effect to this inducement to secondary action, his understanding will be opened to the information poured in by two additional channels. He will be conscious, in the first place, of a force instinctively directed

from within against the material cause of the sensation inciting him to action; and he will, at the same time, through the perceptive agency of his right finger, be sensible of the reaction of his left hand, as of a force acting in opposition to the original effort by which he at once apprehends the bodily substance of the palm, and gives rise to the sensation distinguishing the object so apprehended as a definite member of his own body; while it exactly corresponds with every variation in the secondary effort instinctively directed against the physical cause of the same sensation. That is to say, the agent will at once be objectively sensible of a force acting through a certain bodily element in opposition to the effort by which he seems to give rise to the sensation characteristic of that particular member of his body; and will at the same time be internally conscious of exerting a perfectly similar force against the physical cause of the same sensation.

He will accordingly identify the two perceptions as different aspects of the same fact; the force appearing in the palm of his hand as the outward manifestation of the effort exerted from within against the physical cause of the sensation felt in the apprehension of that member: and, conversely, he will conceive the effort known by internal consciousness, as operating through the instrumentality of the bodily member characterized by the tactual

sensation by which his effort is immediately directed. Thus he will learn to recognize the bodily element defined by a certain tactual sensation as the organ of the muscular exertion made under the instinctive guidance of the same sensation; and, accordingly (as all our muscular exertion is originally made under the guidance of tactual sensation, either actually felt or represented to the imagination), whenever we are conscious of muscular effort in the apprehension of body or space, we conceive the action as taking place through the instrumentality of a definite member of our own body, known as the organ, not only of the muscular exertion, but also of the tactual sensation, in obtaining a more complete experience of which the effort is primarily exerted.

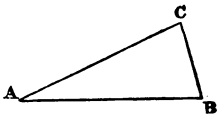
With respect to sensations such as the feeling of itching or the pain of inflammation, not produced by the resistance of an external body, we have a general notion of their organic position by the character of the effort exerted under their actuation; but when we wish to ascertain their organic seat with greater exactness, we move our finger on the surface of the body in the neighbourhood of the part affected, until the effort directed by the sensation arising from the contact of the finger, precisely agrees in subjective character with that exerted under the guidance of the sensation into which we are inquiring, when the spot on which

our finger is placed will be known as the organic seat of the sensation in question.

VIII.—*Position continued.*

The subject that next invites inquiry is the comparison of positions defined by different elements of distance and direction. So long as the path by which an object is reached on several occasions continues throughout to preserve the same direction at the same distance from the origin, the position of the object will, of course, remain unaltered; but supposing the paths to diverge more or less from each other, how then are the positions to be compared?

The place of an object may be determined by a path of any description; but, having thus attained the notion of a definite position in space, we recognize (in the mature condition of the understanding) the possibility of reaching the same place by an infinite variety of other routes. It is plain, then, that we must be guided by some fundamental standard discerned beneath the details of the particular path, by which the position of the point may actually be determined; must have some means of analyzing the spaces traversed by tracks of different descriptions, of recombining their elements, and of recognizing their aggregate identity in distance and direction.



To take the simplest case of the problem, we will suppose ourselves placed in one of the angles A of an imaginary triangle, ABC, existing in pure space; and will proceed to inquire how it is that we recognize (as we must do, in order to the very conception of the triangle) the identity of the point C determined by motion through the side AC, and through the crooked line ABC respectively.

The difficulty is masked in Euclid by the postulate which assumes that it is always possible to draw a straight line joining any two points in space. The importance of this assumption is perhaps not often observed. The student is rather inclined to wonder that it should have been thought necessary formally to require the admission of so self-evident a truth. But supposing the two points to be given, and the straight line to be drawn from one of the two, how is it to be known whether we have succeeded in making it pass through the other point?

The question may be thought a very simple one. What difficulty, it may be replied, can there be in seeing whether a certain point is struck by a line falling wholly within the range of observation? Are not our senses sufficient to inform us whether two known points coincide or not?

No doubt, if points and lines be marked by

sensible phenomena, if they be traced upon paper or cut out in wood, the fact of their coincidence will easily be determined by the evidence of our senses. But in geometry we are dealing with modifications of pure space. The sensible illustration, by which the proof is commonly accompanied, must be considered merely as an aid to the memory and imagination, and not as the actual subject of reasoning, which is to be grasped by the understanding alone. The points, concerning which we reason in geometry, are marked exclusively by *position*, and accordingly, the question of coincidence of given points must finally be determined by their identity of position, and not, conversely, the identity of their position by the fact of their coincidence. Now, the knowledge of a second point, at a distance from that in which the reasoning party is supposed to be placed, necessarily supposes an acquaintance with some definite line of communication between the two; and thus the postulate amounts to an assumption of the fact for which we propose to account, viz., the possibility of recognizing the identity of points attained by motion in a single continuous direction, and in a track of complex description respectively, or, what amounts to the same thing, the identity (in respect of distance and direction) of the spaces effectively traversed by paths of such a nature.

The first glimpse we obtain of the mutual rela-

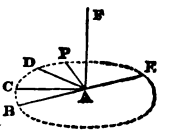
tions of distances in different directions, is caught from the experience of motion constrained by the interference of a bodily surface.

If I stand before a smooth wall, and move my hand to and fro over the surface, I feel the resistance of the wall opposing an absolute obstacle to any advance in a certain constant direction, while I am conscious of perfect freedom of motion along the surface. At the same time that I move my hand at a certain rate, up or down, right or left, I am as sensible of a total negation of motion in a direction perpendicular to the wall, as if I continued pressing against it in a single spot. My knowledge of the bodily organ of muscular action enables me to contemplate the actual motion of my hand as taking place in a direction right or left, up or down, while at the same time I am sensible of an absolute obstacle to any advance in the direction of the resistance. Thus I become acquainted with a series of directions bearing this relation to the direction of the resistance, viz., that distance to any extent in a direction of the former class is compatible with a total negation of distance in the latter direction, or in the one directly opposed to it—that distance in the one direction does *not* essentially constitute distance in the other.

Directions bearing such a relation to each other are known as *transverse* directions.

Having once been led to try to move in a direction transverse to that in which I am already traversing space with the same bodily organ, I shall be able, on the removal of the material obstacle, actually to advance in the direction of the removed resistance, without desisting from the original motion in the transverse direction. I shall be capable of moving my hand in a forward direction while I still continue to move it to the right, at the same rate as when I was guided by the surface of the wall in front of me. I shall thus be directly conscious of traversing space simultaneously in two directions transverse to each other. At the same time, the objective knowledge I have acquired of the bodily organ of muscular effort will teach me the absolute direction in which my hand is moving during the experiment. Thus I become acquainted with a definite direction, partaking of the nature of both of those from left to right, and from back to front; a direction, a given distance in which *does* essentially constitute distance to a certain extent towards the right, and distance to a certain extent towards the front.

If now AB, AC, AD, &c., be the series of directions transverse to a given direction AF, and any one of these, as AB, be taken as our point of departure, we shall find one of the others, as AP, transverse to AB;



and between AB and AP an infinite series of directions, AC, AD, &c., of an intermediate character, so that a given distance in any of these, as AC, consists of a larger proportion of distance in the direction of AP, and a less in the direction of AB, as we advance from left to right. On passing AP we commence a quadrant of directions in like manner intermediate between AP and AE, the opposite to AB; the proportion they contain of distance in the direction AP sinking to nothing in the line AE. Beyond AE we pass through two quadrants related to the opposites of AP and AB, in precisely the same manner that the two upper quadrants were related to AP and AB; and at the close of these we are brought again to the direction AB, from whence we originally set out. It appears, then, that only one other direction AP can be found among the entire series, AB, AC, &c., transverse to any one of the latter, as AB; every other individual of the series, as AC, partaking in certain proportions of the nature both of AB and AP; so that distance in the direction AC may be considered, in marking position, as equivalent to, or as composed of, distance in certain proportions in each of the two directions AB and AP.

But AC and AF, by the hypothesis are transverse to each other, that is, they bear the same relation to each other with that between AB and AP. In the same way, then, that we found a

quadrant of directions intermediate between AB and AP, we shall, by combining the directions AC and AF in different proportions, obtain a series of intermediate directions, a certain amount of distance in any one of which will be composed of distance to a certain amount in each of the directions AC and AF; that is (since distance in the direction AC consists of distance in certain proportions in the directions AB, AP), of distance to a certain extent in each of the three directions AB, AP, AF.

Thus we learn to conceive of space as extending in three directions transverse to each other.

If now we try to carry on our analysis a step further, and look out for a fourth direction transverse to the three previously determined, we shall find (as has already been shewn) that every direction transverse to AF is comprehended in the two AP, AD; that is to say, that distance in any direction transverse to AF is composed of distance in the directions AB and AP; and in like manner we shall see that distance in any direction transverse to AB or AP may be resolved in the two directions AP and AF, or AB and AF respectively; that is to say, that distance in a direction transverse to any one of the three co-ordinates, is wholly reducible to distance in the direction of the other two. Thus we find that there is in the whole expanse of space no direction transverse to each of the three

AB, AP, AF; no direction essentially different from or not comprehended in these; no other direction in which motion can take place that might not be completely resolved in the direction of the three AB, AP, AF.

If, therefore, we are informed of the distance advanced in the direction of the same co-ordinates in each successive instant of the period during which we are actually moving through a path of any description, we shall be sure that we have taken account of the whole extent of space that must be traversed in order to reach the point finally attained; and the position of the latter will be determined by the aggregate distance advanced in the direction of each of the three transverse co-ordinates.

In order, then, to compare the positions ascertained by tracks of different descriptions from a common origin, it will be necessary that the whole of the motion in the tracks compared should be reduced to the same co-ordinates; when the relative position of the points attained by different tracks will be measured by the difference of the aggregate motions in each such track in each of the three co-ordinate directions. When this difference is null, or the distance advanced in each of the three co-ordinates is the same in both cases, the position of the two points is identical, or the points coincide.

IX.—*Figure.*

We have seen that in passing our hand over the surface of a smooth body we are able, with more or less accuracy, to appreciate any change of the inclination from one instant to another. If then we bear in mind at the same time the nature of the path in which we traverse the surface of the body, and the particular inclination of the surface at each successive moment during our progress, we shall attain the very complex notion of the *shape* or *figure* of the body in the track in which it is subjected to examination—a notion analogous to the air of a piece of music, in which is combined a reference to the rapidity in the succession of the separate notes, and the musical tone and comparative loudness of each of the latter.

The recognition or imagination of fixed laws in the variation of the inclination, while the surface of the body is traversed in certain directions, will give rise to the conception of definite kinds of figure, as existing in bodily surface. The simplest case we can conceive, is when the inclination remains constantly the same in each successive element, whatever the nature of the track in which the surface is subjected to examination; and in this condition we have the fundamental definition of a corporeal *plane.*

We will next suppose that, in traversing the surface of a body in sections transverse to each other, and in a sufficient number of intermediate sections, we find it everywhere convex, and the inclination varying pretty nearly in the same manner in every section.

Then it is obvious that the larger the body in any given section, the greater the distance we shall have to slide along the surface in order to meet with a given change in the inclination; and on the contrary, as the body becomes smaller, the inclination will vary with greater rapidity in proportion to the distance advanced along the surface in the course of examination. By carrying the diminution to the utmost conceivable limit, we shall have the notion of a material *point*, as an object opposing a direct resistance to pressure in every direction, without affording to the organ of the observer the smallest extent of surface on which to slide in a lateral direction, whilst varying the direction of his pressure.

Having thus acquired the notion of an object without size, we may wholly dispense with the idea of resistance to external pressure, and consider the object exclusively as marking individuality of position, when it becomes what is called a *mathematical point.*

The conception of such a point moving through space in a certain track will give rise to the idea of

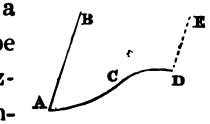
a mathematical line, and by varying the direction of the motion from one instant to another, under the guidance of given laws, we shall generate different kinds of linear figure, the definitions of which may be immediately deduced from the laws in question.

Thus, by supposing the point to move continuously for any length of time in a single constant direction, we shall have the notion of a straight line.*

* We have the high authority of Sir John Herschell in favour of the above definition, as exhibiting the fundamental analysis of a straight line; and doubtless he would also have given the same definition of parallelism with that adopted in the text, if his occasion had led him to mention the subject. In an article well known to come from his pen, he says, "Now the only clear notion we can form of straightness is uniformity of direction, for space in its ultimate analysis is nothing but an assemblage of distances and directions."—"We have considered the perception of space in its ultimate analysis as resolvable into perceptions of distance and direction, into line and angle; but it may be urged that our ideas of superficial and solid space involve something more than these elements—that surface and solidity are not in their essence resolvable into mere distance and direction. It is here that we trace, as we conceive the matter, the result of the mind's plastic faculty by which, out of the assemblage of simple perceptions, it forms to itself a picture or conception or idea in which those perceptions are mentally realized, but which seems to us to be something more than those perceptions—what the Lockian school terms, in short, *substance*; and which we consider to be no other than the mind's *perception of its own active effort* in this

If the generating point, after tracing a straight line for a certain period, and having diverged from thence in a path of any description, again begin and continue to move in the same direction with that of the original straight line, it will generate a second straight line *parallel* to the former one.

The principal question that can arise with respect to the legitimacy of such a mode of originating the idea of parallelism will be, whether, antecedent to the conception of that relation, we can be supposed capable of identifying a certain direction at different points in a known track,—whether, in moving from A to D along a definite track ACD, we can be supposed capable of recognizing at D a direction DE, identical with a certain direction AB, observed at A.



Now it is obvious, in the first place, that without the power of comparing the direction of motion from one instant to another it would be wholly impossible to keep any account of the track pursued, or any notion of the position occupied at any given period. It will therefore be incumbent upon those

process. The conception of solid extension stands, we apprehend, to these simple elementary perceptions of distance and direction in the same relation as that of body to the perceptions of resistance, extension, colour, figure, &c., which are all that common experience affords us of matter." —*Quart. Rev.* vol. lxviii. p. 209.

who deny the power of identifying a certain constant direction in different parts of a known course, to satisfy themselves how without such a power it would be possible to obtain any notion of the course itself, or of any linear shape whatever. It is, however, not sufficient to shew that we must have such a power; we are bound to deduce it in a positive manner from our theory of the idea of direction.

Now the power of distinguishing directions is derived according to the preceding theory from the recognition of differences in the *inclination* of bodily surface, and must accordingly follow the conditions under which we are capable of distinguishing or identifying the latter relation.

But in passing our hand over the surface of a body, we have seen the idea of shape arise out of the power (the possession of which is an ultimate fact of our nature) of distinguishing with more or less accuracy the *inclination* of the surface subjected to examination at each successive instant in the course of the experiment. We must accordingly in such an experiment suppose ourselves capable of recognizing the same inclination, whether presented to us continuously throughout, or recurring after a certain interval, and since the same *direction* is fundamentally that in which we move in empty space, in virtue of an effort adapted to meet the resistance of surface of the same *inclination*, it is

clear that we have the power of carrying on our standard of direction from place to place, and recognizing at any point in our course the direction identical with a certain direction observed at a previous instant.

It will be seen that the definitions of the three fundamental species of geometrical figure, straight and parallel lines and plane surfaces, obtained as above, are not expressed in homologous terms; for, while the two former species of figure are defined by reference to *direction*, a relation of pure space (the modifications of which alone are the proper object of geometry), the definition of the plane is based upon the conception of *inclination*, a relation essentially belonging to bodily surface.

In order to reduce the definition of a plane to the same terms with the other two, it must be remembered that in moving our finger over the surface of a body in any azimuth through a given point (not a ridge or a peak), we are conscious of an absolute resistance to pressure (or a total absence of motion) in the direction of the normal. If therefore we indicate a direction in which an object traversing the surface to be defined will be totally devoid of motion at any given point, in whatever azimuth the track may pass through the point in question, it will be equivalent to a complete determination of the *inclination* at that point; and we may accordingly, for geometrical purposes, define *a plane* as

a surface passing through every point that can be reached from a given point, under the condition of an entire negation of motion in a certain constant direction.

X.—*Reasoning.*

We have formerly seen that the fact on which every conception is originally grounded is an impression of resemblance discerned either in the undivided phenomena of sensation, or in the objects brought before the mind by thought, memory, or imagination. In the latter case, that is, when the resemblance is discerned in an object of thought, either exemplified in nature, or contemplated in the understanding, the impression takes effect in the conception or recognition of a second object, and presents the two together to the intelligence in the relation of *subject and attribute*, the object in which the resemblance is discerned being the *subject;* the kind or mode of being discerned in the former, the *attribute.*

The contemplation of two objects of thought as standing in this relation to each other constitutes a *judgment;* and the announcement of such a relation in language is a *proposition*, an assertion that the subject of discourse is a thing of a certain kind—is in the condition designated by a certain *predicate.*

My attention is directed by the circumstances of the case to a certain bird, in which I recognize the characteristics of a canary, the colour known to me as yellow, or the condition expressed by the term *singing;* and I express my judgment in the proposition, The bird is a canary—is yellow—is singing.

The substance of the judgment, or import of the proposition, is thus the aptitude or capacity of the subject to exhibit in actual existence, that is, by an actual impression on the appropriate faculties of the observer, the *kind*, or mode of resemblance designated by the predicate of the proposition. It is plain, therefore, that every proposition must necessarily have reference, either express or implied, to some class of intelligences capable of receiving definite impressions of objects; and the ultimate standard of truth will be the agreement of the proposition with what would be the impressions of those to whom it is addressed, supposing them to have actual apprehension of the subject-matter under the circumstances indicated by the nature of the case. When the proposition is not expressly limited to any class of intelligent beings, it must be understood to have reference to the impressions of persons exercising the ordinary faculties of man, in the circumstances under which the subject of discourse is commonly apprehended. When I assert, for instance, that the canary-bird is yellow,

I mean that it will produce the impression of that colour on a person of ordinary faculties, viewing it at the distance at which he is able to take in the entire object at a glance, and the assertion would in no degree be invalidated, if it could be shewn, by the aid of the microscope, that the yellow colour of the feathers was the effect of an intimate mixture of red and white filaments. In like manner, when I say that Venus is white, and Mars red, I put wholly out of consideration the colours which the surface of the planets may possibly present to their own inhabitants, and refer exclusively to the appearances they assume when viewed at the distance from which we are forced to contemplate them.

It will, perhaps, be objected to the foregoing theory, that it cuts away the foundation of all absolute truth, and reduces existence to the contingency of actual perception. Is there no difference, it will be asked, between what a thing is in itself, and what it appears to be?

The distinction between what a thing is, and what it appears to be, is founded on the correspondence between the faculties of touch and of sight, which leads us to identify the object apprehended by the hand and by the eye. By both of these organs we take notice of the form and magnitude of things; but the visual figure varies from one moment to another with every change in the circum-

stances under which the object is displayed, and sometimes misleads us altogether in our judgment respecting the *real* or tactual figure, as in the case of a bas-relief skilfully represented in light and shade.

The relation of *appearance and reality* thus derived from the varying and uncertain apprehension of figure attained by the eye, as contrasted with the permanent standard made known by touch, is subsequently extended by analogy to other cases, where the same object is known by a more and a less perfect mode of examination. I say, for instance, that the wall which, at a distance, *appears* green, is found, on approaching it more nearly, to be *really* coloured by patches of blue and yellow. So I speak of the *real* disposition of a man, as distinguished from the *apparent* character displayed in his words, his gestures, or his outward actions. It is these alone that are directly apprehensible to another person; and by them we judge, with more or less chance of being deceived, of that which *really* composes the man; of those sentiments of love and duty, or malignity and lust, which we should experience if we were able to penetrate within his breast.

Thus, whenever I speak of *reality*, I have in contemplation some more perfect means of examination than that which makes known to me the

appearance; and the only conception I can form of *absolute truth* consists in the thought of what would be discovered, supposing all imperfection in my modes of knowing to be removed, and my faculties to be carried to the highest conceivable degree of perfection.

When, therefore, I am required by the philosopher to satisfy him of the real existence of the material world, I am entitled to call upon him to indicate his standard of absolute reality; to shew some more perfect means of knowing *bodily substance* than that which the hand affords us; to explain what he means by the predicate he requires me to demonstrate.

If he replies that reality is an elementary conception, not admitting of definition; not acquired by the exercise of any faculty of actual perception, and consequently not to be tried by such: then, it is plain, on his own shewing, that absolute reality is not the subject of reasoning, and we must remain content with such belief concerning it, as it has pleased the Author of our being to implant in us.

On the other hand, on our theory of the relation between appearance and reality, there is one point of view in which the inquiry concerning the real nature of matter may rationally be pushed beyond a simple reference to the exercise of the hand; and the investigation will not be altogether fruit-

less, if it result only in a clear determination of the utmost bounds to which knowledge can reach in this direction.

We have endeavoured, in the chapter on causation, to trace the process by which we come to conceive the sensible qualities of things, as depending upon material forces operating in body, and constituting the ultimate *substance* apprehensible by our faculties.

Force, then, may be considered as the ultimate appearance to which our faculties can attain in the material world. But force is known to us under two opposite aspects; viz. as externally manifested by opposition to the muscular action of the observer, and as immediately known to the agent himself by the very act of muscular exertion. The experience, therefore, of any force in nature, suggests an inquiry as to the source from whence it proceeds; and (as our only conception of the absolute origin of force, is that which is taken from the act of muscular exertion), however extended the chain of intermediate instruments may be, through which we may be able to trace the force upwards, we can rest with complete satisfaction upon no other basis than the will of a voluntary agent. Thus the contemplation of the forces constituting the ultimate appearances in nature leads to the supposition of a Personal Being manifesting his power in every element of the material world, and sup-

porting the whole fabric of nature in being by his energy.

Concerning the personal character of such a Being, and his relations to ourselves, we may reason (as we do in Natural Theology) from the moral and physical constitution of the world. But when we speculate concerning the mode of his action, or seek to represent to ourselves the effort exerted in sustaining the powers of nature, we find ourselves stretching beyond the reach of human reason. The capacity of the imagination is limited by the extent of our actual experience, and (as all physical power of which we have subjective experience is exerted by means of a bodily instrument) to speculate concerning the nature of the action by which Body itself is supported in being, is for the blind and the deaf to dispute concerning the nature of colour and of sound. One thing, however, we do know respecting these forces, and that on the same principle and with the same assurance with which we know that blue is not yellow; viz., that they are not exerted by ourselves.

I have a perfect knowledge of the sense in which I speak of *my own action*, meaning thereby action in which I am conscious of *effort*; nor can I inquire whether that action may not also be mine which is altogether known by opposition to my effort, without a fundamental change in the meaning of language. Action, of which I have no

consciousness, is not what I mean by *my action*.*

When once we have come to a clear understanding of the nature of truth, we have advanced halfway towards a sound theory of knowledge and belief. The exercise of our perceptive faculties can directly make known to us the truth within that sphere only to which the reach of our bodily organs is confined in time and place. But while experience is storing the memory with the knowledge of particular facts, a far more important process is going on in the understanding, in the formation and gradual enlargement of our notions of the various kinds of being which we meet with in nature. We continually find the same things, which resemble each other in outward aspect, agreeing also in taste, in smell, in internal constitution, or moral disposition, or in other features, brought to light by innumerable modes of examination. The different groups of resemblances thus associated in nature give rise to the conception of *things*

* This seems the true answer to the question stated by Sir W. Hamilton as the only legitimate form of scepticism. We cannot doubt, he says, that the material world is perceived by us as something different from ourselves; that "it is given to us as a *not-me*;" but it is at least a possible question, whether it may not be a mere representation in our understanding of something different from ourselves, by some hidden energy of our own nature—whether it may not be "a representation of a *not-me* in and by the *me*?"

or *kinds*, characterized by the aggregate of the associated resemblances, any one of which may be sufficient to indicate the kind of an individual in actual existence. We recognize an apple by the taste, or a rose by the smell, although we may be precluded from actual apprehension of the object by sight or manual contact; and so the head of an elephant or a horse is as decisive as to the kind of animal to which it belongs, as if the whole body and limbs were displayed to view.

It is this conception of complex kinds, capable of being recognized by some partial aspect, that constitutes the foundation of all reasoning. The recognition in actual existence of some characteristic of a known kind leads us to conceive the object in which the character is discerned, either as an actual example of the kind in question, or as a portion of such an example, and thus induces the expectation of finding either in the actual subject of attention itself, or in union with it (when duly examined for that purpose), the other known properties or other elementary parts of the same kind. Thus the sight of an apple or a rose suggests the thought of the taste or the smell that would be experienced if the object were placed in the proper relation to my organs.

Or suppose I see the fore quarters of a horse standing out beyond a wall, by which the remainder of the animal is hidden from my sight. I

recognize in the part exposed to view the features of a Horse, the conception of which kind of animal includes the idea of hind quarters of certain form and character, and now suggests them to my imagination, as those which I am likely to find completing the outline of the individual actually seen, as soon as I advance beyond the intervening obstacle.

Or again, in travelling through a wintry forest I see a rough-looking animal in the distance rushing towards me, and I am alarmed at the thought of wolves. It approaches nearer, and I recognize it as a Newfoundland dog. I attribute to it the moral character belonging to my conception of that kind of animal, and am at once relieved from my alarm.

In each of the foregoing instances we have a complete example of the reasoning process, by which we advance from the region of knowledge to that of *belief*, through the medium of a natural kind; and from the partial aspect of the truth displayed by actual experience, infer or form a judgment respecting that which lies beyond the reach of direct observation.

The train of thought passing through the mind of the reasoning party during the foregoing process may always be expressed in a regular syllogism (as it is called), consisting of three propositions.

The subject of reasoning is a thing of a certain kind.

Things of that kind are in a certain predicament,—are possessed of certain properties, are composed of certain elements, or generally are in a condition to justify a certain assertion respecting them.

The subject of reasoning is in that predicament.

The two former propositions are called the minor and major premises respectively; the third, or conclusion, is the expression of the act of reasoning properly so called; the act, namely, by which we attribute to a certain object the character of some known kind of which it is recognized as a particular example.

The certainty of the knowledge thus arising from the recognition of the subject of discourse or reflection, as a thing of a certain complex kind, or the chances of our conclusion being really in accordance with the truth, will obviously be measured by the universality of the property attributed in our understanding to the kind which forms the medium of reasoning. If all things of the kind, to which the subject of reasoning is referred, are universally in the predicament of the conclusion, it is plain that we cannot be falsified by fact, in supposing the subject itself to be in that predicament. But if there be any conceivable exception to the rule, it is always possi-

ble that it may fall in the very case of which we are reasoning. Our confidence then in the conclusion must depend upon the connection in our mind between the kind which forms the medium of reasoning and the quality attributed to it—between the subject and attribute of the major premiss.

Hence the broad line of distinction between probable and demonstrative reasoning. In probable reasoning the connection between the kind and its properties is the result of experience alone. We meet with the same characters so constantly associated with the same kind of thing, that we come in the manner above described to consider them as parts more or less essential of a complex whole. Thus the notion of *horns* comes to form part of my idea of a *cow;* the notion of a *tail* is included in my idea of a *cat,* although I do not cease to consider an animal as a cow or a cat because it may want either horns or tail.

The opinion we form of the universality of the property of a kind does not depend upon any instinctive belief in the uniformity of the laws of nature, but upon a wide comparison of the analogies of which we have information.

I form, from a single specimen, a confident judgment of the colouring of a singing-bird, or a quadruped; but if from a single ruff or reeve I were to judge of the colouring of other birds of the same species, I should fall into considerable error.

We find in animals of the same kind (together with much individual variation) so strong a general resemblance in respect of temper and disposition, that we form an opinion of the character of the kind sufficiently distinct for our practical guidance in all the circumstances of life, although we are conscious of the probability to a certain extent of their misleading us in any given instance. In other respects, as in the fundamental principles of construction in animals and other things, we recognize such wide-spread uniformity in nature, that we look upon an exception as a thing beyond the bounds of possibility; and in matters of this nature we reason from the seen to the unseen, with confidence as complete in the *truth* of our conclusion, as that with which we rely upon the truth of the representation afforded by the freshest and clearest memory of a past transaction. In cases of this nature the judgment is considered as the subject of *knowledge*, rather than of *belief*, which commonly implies some defect, however small, from the confidence of absolute knowledge. Still in all cases of probable reasoning there is a physical possibility of error. The Newfoundland dog which I meet in the forest may prove to be of an unusually savage and ferocious temper for his kind; or it is conceivable that the horse's fore quarters actually seen beyond the wall may prove to join on to the tail of a serpent or a fish, instead of terminating in

the usual hind quarters of a quadruped. In demonstrative reasoning, on the other hand, the connection between the subject and attribute of the major premiss arises out of the essential constitution of the conceptions themselves. The character attributed to the kind through which the reasoning takes effect is not discovered by mere observation of particular examples, but is discerned in the very essence of the kind as contemplated in the understanding itself. Hence the absolute universality of the major premiss in demonstrative reasoning. An object of thought is distinctly conceived in proportion as the ideal representation approaches towards a complete recollection of the aspect of the thing in actual existence. Whatever, therefore, may be clearly discerned in the object as contemplated in the understanding, must *à fortiori* be cognizable in the same kind when clothed in the phenomena of actual existence, and may, consequently, be asserted of every conceivable example without the possibility of the assertion being falsified by actual experience.

I am able to bring distinctly before my mind the entire operation by which I count up a group composed of two and two, and I perceive that it essentially includes the operation by which I tell four, whatever be the nature of the object by which the numbers are exemplified in actual existence; and thus I recognize the proposition, that *two and two are four*, as a necessary truth.

It is true that propositions of this nature appear of trifling consequence, so long as the subject is sufficiently simple to be grasped in all its details at a single glance, because, in any particular application of such a proposition the predicate is at once discerned afresh in the particular example altogether independent of the prior establishment in our understanding of the relation between the subject and attribute of the general proposition. But in the demonstrative sciences we are continually combining and modifying the subjects of these elementary judgments, and discovering, in the complex kinds so constructed, relations, arising out of the principle of their construction, and the nature of their component elements, which are by no means necessarily apparent on the face of any particular example to which the proposition demonstrated may be applied; and now the result of the demonstration assumes the character of real information, of practical importance in enabling us to stretch our view beyond the limits of actual observation.

The great impediment to a successful investigation of the theory of demonstration has always arisen from the imperfect condition of the mathematical sciences, and mainly of geometry, to which the practical interest of the subject is chiefly confined. Instead of seeking for the requisites of a perfect demonstration, and openly admitting as

faulty every proof which falls short of the requirements of reason, inquirers have too often been tempted to bend their theory to square with the foundation on which the science is made to rest in the current systems of geometrical demonstration; to treat those foundations as the fact in which to study the theory of intuitive evidence.

The original premises in a system of perfect demonstration should carry on their face the evidence of their own universal truth, manifest at once to every one who rightly comprehends the terms in which they are enounced.

The first step then to be taken will be to secure such a comprehension of the terms employed in reasoning—to build up in the mind of the student a right conception of the kinds, whose relations are to constitute the subject-matter of the demonstration. The accomplishment of this purpose is the primary office of the definitions—propositions, asserting that the subject designated by the term defined (in the sense in which that term is to be understood by all who intend to bring themselves within the scope of the demonstration), is a thing of a certain kind (called the *genus* of the definition), qualified by certain special attributes (called the *differentia*).

Now as long as I truly attach unchanged to the term defined the meaning laid down in the definition, it is evident that I do *ipso facto* recognize

both *genus* and *differentia* as essential elements of the conception represented by that term; and I see *à priori* that every possible example of the kind defined must be in both of those predicaments, because it is only by the apprehension of them in an actual object that it can be recognized as an individual of the kind in question.

If I rigidly confine the meaning of the word *quadruped* to an animal having four legs, it is a mere truism to assert that every quadruped must necessarily have four legs; and if it be objected that a cat may by birth or accident be found with six legs or with three, I reply that in such a case the animal is not a quadruped in my sense of the term.

We have thus, in the fundamental condition under which all definitions are to be understood, a satisfactory ground of the judgment affirming their necessity, when presented in the shape of universal propositions; and it is admitted on all hands that it is desirable to construct the foundation of the demonstrative sciences, as far as possible, upon this principle. But then it is said that in geometry at least it is practically impossible to obtain an adequate basis composed exclusively of definitions. It is asserted that there are cases where we are able, by *intuition* (as it is called), or mere intellectual contemplation, to discern essential relations in the subject of mathematical reason-

ing which cannot be deduced from any definition of the subject itself; and it is supposed that the propositions (called *axioms*) enouncing such relations fill up in a satisfactory manner the gap in the demonstration there is so great a difficulty in supplying with definitions alone.

I can by no means assent to such a doctrine. The supposition that a complex conception built up in our understanding could possibly exhibit relations not derived from the nature of the materials employed, and the plan on which they are put together in our imagination, appears to be directly opposed to the fundamental principle that perception in actual existence is the only channel by which all the elements of knowledge are introduced into the understanding.

The province of the imagination is merely to combine the substantive materials supplied by experience in such variety of arrangement as their nature admits; and how the complex conception so originating can become endowed with essential attributes, other than such as are made up of the separate attributes of its own constituent elements, is a question to which no one has pretended to give an answer.

It is not denied that there are many cases in which we have the clearest apprehension of the necessity of a proposition, without being able to express in language or put into logical form the

process by which our conviction is produced; but if we carefully reflect on the train of thought by which we practically arrive at the conclusion in such cases, we shall find that it is precisely similar to that by which we discern the truth of many simple propositions, admitting of rigid demonstration. The proposition that *two and two are four* is commonly given as an example of axiomatic truth. We are capable, in so simple a case, of bringing the entire subject distinctly before the mind, when we see that the number made up of two and two is the same with that designated by the term *four*.

But the same fact may be demonstrated from the mere definitions of two and four.

The fundamental definitions of those numbers are as follows :—

(1.) One and one are two.

(2.) One and one and one and one are four; or, (one and one) and (one and one) are four.

Substituting for the expressions within the brackets their values by definition (1.), we have :—

Two and two are four. Q. E. D.

Surely then, in cases where we see that a complete conception must necessarily, under certain circumstances, fulfil conditions not deducible from our definitions of the subject-matter, we ought to be fully satisfied that the definitions exhibit the ultimate analysis of the conceptions involved in the

statement of the necessary law, before we are driven to assert that the authority of the law requires the support of principles of a different nature.

Now, how stands the matter in the case of geometry, the main battle-field of the entire question? Can it be said that the definitions, hitherto given in any system of the science, exhibit the fundamental analysis of straight and parallel lines, and of a plane surface?

Things substantially the same may be contemplated in the understanding under many different aspects, any one of which may afford an adequate definition of the common kind by which they are all exhibited in actual existence. The same individual triangle may be considered as a triangle having one right angle, or as a triangle having the square of one of its sides equal to the sum of the squares of the other two sides, or as a triangle capable of being inscribed in a semicircle. The question is, how, among such characters, we are to distinguish the one which constitutes the fundamental definition of the species exemplified in the triangle in question.

Let us examine, in the first place, the definition founded on the equality of the squares. It is plain that the specific character of this definition can only be recognized in actual existence by bodily comparison of the squares erected on the three sides of an

actual triangle. But the knowledge of the squares obviously pre-supposes the knowledge of the sides on which they are erected. The triangle, therefore, itself must be completely known as an object of direct experience, before it can be subjected to the operation necessary to recognize it as a specimen of the character described in the definition.

The same objection lies against Euclid's definition of a Plane. Under this definition the operation necessary for the apprehension of an actual Plane would consist in the comparison of a particular surface with every straight line joining any two points situated within the same surface. The entire surface, therefore, must be substantially known in the first instance, in order to supply us with the system of straight lines, by coincidence with which the *planeness* of the same surface is subsequently to be determined.

The fundamental definition of a species, on the contrary, should embody the analysis of the aspect by which the species defined is at once apprehended in actual existence—should consist in a statement of features cognizable by the same act, by which the fundamental substance of the species is brought within the grasp of direct experience.

Of such a nature is the definition of the plane given in the preceding pages. A surface must be of some inclination or another at every point, and the distinct apprehension of a solid surface at any given

point necessarily includes the apprehension of the inclination of that particular element, and thus, in the continued apprehension of a finite surface, we directly take notice of the degree in which it preserves the same inclination from one instant to another—that is, of the degree in which it approaches to our idea of a plane.

The same principle will apply in the definition of every species of figure. The fundamental definition of every kind of surface or line will be the expression of a specific character cognizable in an actual example by the same act by which the substance of the surface or line is itself apprehended; and as, in the actual apprehension of a surface or line, every individual element into which the substance may be resolved must be brought successively under notice, the specific character should be composed of relations separately cognizable in each such element by the same act which makes known to us the substance of the element itself—relations, therefore, which must admit of being absolutely determined by reference to the portions of the surface or line that have already passed in review at the moment of considering the element in question. A definition constructed in accordance with this condition will afford to all by whom the language is understood a direct rule for the construction of the figure defined either in a sensible representation, or (when the subject is sufficiently simple) in

the mere imagination; and will accordingly give rise to an object in the understanding, on which we can think, altogether independent of any logical conception of the essential relations between the ultimate elements of the system.

The instant we attempt to draw a line upon paper we must begin to move in one direction or another, and if we wish the line to be straight (under the definition adopted in the present treatise), we have only to continue the motion in the same direction in which we set out. We shall then have before our eyes a *shape* on which we can subsequently think without reference to the logical principle on which it was built up out of the ultimate elements of linear extension. At the same time it will be necessary only to call to mind the process, by which the conception was formed under the guidance of the definition, in order to see that it may again be decomposed in the manner described in that proposition. Or, even in cases where we have originally become acquainted with the subject of a definition by experience of the thing itself exhibited with more or less perfection in nature, we may be enabled by mere contemplation of the conception to recognize the correctness of the analysis enounced in the definition. In either case the definition itself will appear no longer as a mere truism, but as a substantive truth, a proposition concerning a substantive reality distinctly conceiv-

able apart from any logical recognition of the relations attributed to it. We may have a perfect notion of a straight line or a plane surface with a total inability to express the fundamental relation between the linear or superficial elements upon which the shape of the aggregate figure depends; but as soon as we understand the meaning of the words, we see that a line or a surface preserving throughout the same direction or inclination is precisely what we mean by *straight* or *plane;* and accordingly recognize, as a necessary truth, the proposition, that every straight line, or every plane surface preserves the same direction, or the same inclination, throughout its whole extent.

The distinct imagination of a subject, or power of representing it clearly to the mind under the aspect it would present to our faculties of direct apprehension, is conclusive evidence of the substantive reality of the conception; and whenever a definition is not sufficient of itself to build up such a conception in the mind of those by whom it is duly understood, but requires the support of an axiom asserting the capacity of the subject defined for actual existence, it should only be taken as a proof that the fundamental analysis of the conception is yet to seek.

XI.—*Right and Wrong.*

THE highest knowledge of which man is capable is that of moral duty, or right and wrong in action.

The fundamental grounds of moral distinctions and the authority from whence duty derives its sanction must be explained, in accordance with the rest of our system, by tracing to some elementary source of emotion the feelings of approbation and blame which point out a certain line of conduct, as that which ought to be pursued, independent of the pains or pleasures it may entail upon the agent. The foundation on which we shall build in this research will be the fact, that there is in man, and even in some of the lower animals, a tendency to acknowledge a will superior to their own, in conformity to which they find their highest gratification, while the consciousness of acting in opposition to it is the source of shame and sorrow.

We see a dog desert the society of his fellow-creatures for that of man. He devotes himself to his master's service evidently from no calculation of interest, and finds his greatest gratification in his notice and approval. His master's commands become to him motives of superior strength to his own natural appetites. Still the conflict often takes place between the two classes of motives, and obedience to his master gives way before tempta-

tion. The animal cannot resist the bent of his nature impelling him to run the hare or the sheep which comes across his path, or to make away with the forbidden bone. But what are his feelings when the crime is consummated and animal instinct no longer in the ascendant? He slinks back to his master, full of the thoughts of his displeasure, and himself betrays to him his misconduct by his guilty looks and slouching gait. He feels only that he has transgressed the rule laid down for his conduct, which had no reference to the strength of any temptation by which he might be assailed, and made no allowance for the seduction of appetite. His duty was absolute—he was not to run the sheep—and he has run them, and now he thinks of nothing but his master's displeasure, and comes before him oppressed with shame and a guilty conscience.

Here we see duty in its simplest form—the acceptance of a positive rule of conduct from an authority whose claims are admitted by the agent, by whose approval he is elevated in his own eyes, and whose disapproval is a source of grief and shame.

The same principle operates in the case of the child. From the first dawn of consciousness he finds himself under the care of parents whom he loves, and whose affection is the source of all his pleasures. He stands in need of their guidance

every hour of his life. But occasionally his own will comes in competition with theirs. He is seized with desire for some object he is forbidden to touch, and even at the moment he yields to the temptation, the thoughts of his parents arise in his mind, grieved at his disobedience, and warning him from the act he is about committing; and his satisfaction is poisoned by the thoughts of their displeasure in the same manner as it would be by the actual expression of it.

Here also we have an instance of duty in its simplest aspect. The sense of *wrong* in the child depends upon no balancing of the transitory pleasure accruing from the forbidden action against the permanent satisfaction of his parents' approbation; nor on consciousness of error of judgment in giving the preference to the former. It arises exclusively from the thoughts of his parents' disapprobation, and the peculiar nature of the uneasiness he finds in the conflict of his will with that of a being to whom he looks with reverence and love.

The human agent is not however left for any very long period to shape his conduct altogether by an external standard. His judgment in the long run inevitably comes to be modified more or less by his own moral constitution. We have seen that the notion of personal being was originally acquired from the effect produced on our own affections by the disposition towards us of another

person. Our love is excited by the exhibition of love, our fear by anger, and our hatred and indignation by malignity and cruelty. Nor is it necessary, in order to raise these feelings in our breast, that we should ourselves be the object of the action in which the disposition of the agent is displayed, although of course the feeling will be more lively in proportion as we are more nearly concerned in the matter. We have so much of sympathy with our fellow-creatures that the exhibition of love or of malice towards another person has a tendency to conciliate our feelings towards the beneficent agent—to alienate them from the malignant one. The action of the one is in accordance with our will, of the other in opposition to it, as much as if we had expressly commanded or forbidden the course of conduct actually pursued.

There is thus a region within us which is variously affected by different phases of personal character, independent of all prospect of pleasure or pain accruing to the agent or to ourselves from the action to which our attention is directed; and on the affections so originating is grounded the judgment which we form of the moral character of our own conduct as well as of that of others. When we reflect on our own conduct on a given occasion, we have as distinct an image of personal character before the mind, as that which the looking-glass affords us of our bodily features; and, as we are

equally sensible of the beauty or deformity of our own reflection in a glass, and of a countenance seen by direct vision, so, when we make ourselves spectators of our own personal character, we are affected in the moral region of the mind by emotions similar to those which would be produced by the like conduct in another person. We feel contempt for our own meanness, repugnance towards conscious indulgence of cruelty or malignity, and perfect satisfaction in obedience to the dictates of love.

Our will, in respect of action, is divided into two separate regions: one, contemplative, the seat of the moral emotions, to be gratified only by certain phases of personal character, for which it accordingly calls as well in our own conduct as in that of every other person; the other, the immediate seat of action, directly subjected to all the motives to which we may be exposed by the constitution of our body or mind, and among them, to the call for conformity with the requirements of our own moral nature. The consciousness of any want of obedience to the dictates of this part of our being constitutes the sense of moral wrong, and is attended by pain of a similar nature to that which we suffer from the disapprobation of a person whom we reverence and love.

The sensibility to moral impressions is a plant of very slow growth in a savage state of society, but

the seed is present in the heart of every man, ready to spring into life on the first touch of sunshine. It leaves no act of attention on our part unrewarded, but repays cultivation with a vigorous growth, and then only has attained its legitimate stature when it fills the whole atmosphere of the Will with its branches.

The first great laws of morals are founded on principles so deeply implanted in human nature, as to give them universal validity in all countries, and in all times.

There is no man who is not naturally attracted by the exhibition of love, or revolted by that of pure malignity. Hence the universal approbation of benevolence, and reprobation of the opposite principle, as morally right and wrong respectively.

The establishment, however, of these elementary principles leaves much room for reasoning as to the mode in which they are to be carried out in practice. It is not the truest love which always seeks the utmost immediate gratification of the object of affection, a regard for whose welfare may often require the infliction of positive suffering, both of body and mind. As we become far-sighted in calculating the consequences of action, the rule of conduct will often be complicated by the competition of different principles, or different applications of the same moral principle, soliciting the agent in opposite directions. The act, for instance,

which would be prompted by regard for an individual, may appear to be prejudicial to the community at large; or a conflict may arise, as in the case of a child commanded by his parent to injure another person, between the filial obedience of the child and his natural repugnance to give pain to others. In such a case both the alternatives between which the child has to decide are supported by motives that approve themselves in his conscience. It is right for him to obey his parent; right also to respect the feelings of the object of his parent's displeasure. Either motive may prevail over the other by its own intrinsic strength. The child may either be led by his habitual reverence for his parent to do the act he is required, or his pity for the victim may be strong enough to make him disobey his parent. Whichever alternative he may adopt (as long as these are the only motives that come into play), he will have the testimony of his conscience that he is acting right. But if his kindly feelings be overcome, not by reverential love or trust in the superior wisdom of his parent, but by fear of punishment in case of disobedience, the act will not be justified in his conscience; for Fear is recognized by the moral sense as a manifestation of the lower part of human nature, and the utmost that it meets with is pity and excuse.

It is not to be supposed that what we have here called the moral sense—that is, the capacity of being

attracted or repelled by certain phases of personal character—is always sufficient decisively to determine the due subordination of competing motives (as we certainly are not always able decisively to give the palm to this or to that particular form of physical beauty); but whenever it does give the preference to a particular motive, the reverence involuntarily paid by every man to this unimpassioned region of his own will impresses the corresponding act with the character of duty.

It will be seen from the foregoing analysis of the notions of Right and Wrong, that the voice of conscience sounds in our ears (if we choose to listen to it) as that of a personal Being, of a character embracing whatever we conceive of highest and holiest, not subject to sensual passions, but privy to every thought of our hearts, in the utmost depths of which he traces with more or less distinctness the course which it is his will for us to pursue in every conjuncture of our lives. Thus the notion of a personal God is brought within the limits of our apprehension, so as readily to be admitted as a truth when once suggested from without, or even to spring up of itself in a mind of reverential tone and original genius.

By the same Author.

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